

Федеральное государственное образовательное учреждение  
высшего образования  
«КАЗАНСКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ»  
Министерства здравоохранения Российской Федерации



«УТВЕРЖДАЮ»

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СБОРНИК СИЛЛАБУСОВ  
ДИСЦИПЛИН (МОДУЛЕЙ) И ПРОГРАММ ПРАКТИКИ  
ОСНОВНОЙ ПРОФЕССИОНАЛЬНОЙ ОБРАЗОВАТЕЛЬНОЙ ПРОГРАММЫ ВЫСШЕГО  
ОБРАЗОВАНИЯ  
по специальности  
31.05.01 Лечебное дело (на английском языке)

Квалификация: врач-лечебник

Уровень: специалитет

Форма обучения: очная

Срок обучения: 6 лет

Факультет: Иностранных студентов

Казань, 2022 г.

Federal State Educational Institution of Higher Education  
"KAZAN STATE MEDICAL UNIVERSITY"  
Ministry of Health of the Russian Federation

"APPROVED"  
Head of the GPEP  
Dean of the Faculty of International Students,  
Associate Professor  
\_\_\_\_\_ E.S. Koshpaeva

**DIGEST OF SYLLABUSES  
OF DISCIPLINES (MODULES) AND PRACTICAL PROGRAMS  
OF THE GENERAL PROFESSIONAL EDUCATIONAL PROGRAM OF HIGHER  
EDUCATION**  
in specialty  
31.05.01 General Medicine (medium of instruction: English)

Qualification: physician  
Level: specialist  
Form of study: full-time  
Duration of study: 6 years  
Faculty: International students

Kazan, 2022

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## CHEMISTRY

**Teachers: Prof. Liliya Nikitina, PhD Inna Fedyunina**

**Building, Department, classroom #** NUK, Department of General and Organic Chemistry, 629, 632

**Contact details:**

- Telephone number: 89033075070 (Prof. Liliya Nikitina)
- E-mail address: nikitl@mail.ru
- Office and working hours: 633 (9-17)

**Total hours — 108:**

- Lectures 16 hours;
- Practical classes 45 hours;
- Independent work 47 hours;

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University <https://e.kazangmu.ru/course/view.php?id=2562>

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **chemistry** discipline are formation of systematic knowledge and skills of calculating physicochemical parameters of processes for medical students, occurring in the human body, evaluating these processes on cellular and molecular levels, correctly interpreting the effect of chemicals and other environmental factors on the body, necessary for the study of other academic disciplines and the acquisition of professional medical qualities (hereinafter - discipline).

**Tasks of the discipline:**

To form knowledge in the field of:

- understanding the meaning of chemical phenomena occurring in living organism by student, using chemical laws in the diagnosis and treatment of diseases, the ability to understand physicochemical principles of work and organization of devices and apparatus, used in modern medicine;
- studying physicochemical aspects of the most important biochemical processes and homeostasis in the body;
- forming systematic knowledge of students on chemical transformations of low- and high-molecular organic compounds that take part in the processes of vital activity of the human body;
- development of the student's professional self-awareness, his ability to use the acquired knowledge in the analysis of organic medicines and in the research activity of the future specialist;

**Course topics:**

### **Calendar plan of lectures**

1. Surface phenomena. Adsorption on the solid surface.
2. Chromatography.
3. Classification of disperse and colloidal systems. Preparation and purification methods of colloidal solutions.
4. Molecular-kinetic and optical properties of colloidal systems.
5. Structure of lyophobic colloidal particles. Electrokinetic phenomena in colloidal systems.
6. Coagulation of colloidal solutions.
7. Semicolloids. Microheterogeneous (coarse) systems, their nature and variety. Emulsions.
8. High-molecular compounds.

### **Calendar plan of laboratory classes**

1. Safety rules in chemical laboratory. An introduction to chemistry.
2. Adsorption on the solid surface. Types of adsorption: physical adsorption and chemisorption. Langmuir's and BET equations. Surface-active substances. Gibbs equation. Solution of situational problems. Practical work "Adsorption on solid surface".
3. Chromatography. Practical work "Thin-layer chromatography".
4. Colloidal systems, their nature, varieties, preparation and purification, molecular-kinetic and optical properties. Methods of preparation of colloidal systems: dispersion and condensation methods. Purification of colloidal systems: dialysis, electrodialysis, ultrafiltration.
5. Molecular-kinetic properties: Brownian motion, osmotic pressure, diffusion, sedimentation. Tyndall effect as a result of light scattering on colloidal particles. Solution of situational problems.
6. Structure of lyophilic and lyophobic colloidal particles. Nucleus, granule, micelle, potential-determinative and counter-ions. Electrokinetic phenomena in colloidal systems: electrophoresis, electroosmosis, potential of sedimentation and flowing.
7. Solution of situational problems. Practical work "Determination of the charge sign of colloidal particles".
8. Module on topics 2-7.
9. Aggregate-kinetic stability of colloidal systems. Coagulation of colloidal solutions. Coagulation threshold. Schulze-Hardy valence rule.
10. Solution of situational problems. Practical work "Determination of the coagulation threshold".
11. Semicolloids, their properties and importance.
12. Microheterogeneous systems, their varieties, properties and practical significance. Emulsions, foams, powders. Types of emulsions, reversal of emulsions. Solution of situational problems. Practical work "Properties of emulsions and foams".
13. High-molecular compounds, their nature, properties and biomedical importance. Classes of HMC and their preparation. Solution of situational problems. Practical work "Salting out casein. Determination of the isoelectric point of casein".
14. Module on topics 9-13.
15. Outcoming testing. Final test.

### **Text books and required supplies:**

1. N.Lezhava, O.Gabrichidze. An introduction to medical chemistry / Tbilisi, - 2006. – 292 p.
2. Bruce M.Mahan, Rollie J.Myers. University Chemistry. Fourth edition : Addison Wesley Longman. – 1998. – 1076 p.
3. E.Mikrukova, L.Nikitina. An introduction to general chemistry / Kazan: KSMU, 2009. — 59 p
4. I.V. Fedyunina. An introduction to physical and colloidal chemistry. For English-speaking students of the faculty of general medicine/ Kazan: KSMU, 2011. — 78 c.
5. I.V. Fedyunina. Manual on laboratory classes on physical and colloidal chemistry course for English-speaking students of the faculty of general medicine / Kazan: KSMU, 2011. — 46 c.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

#### **Examples of module No. 1 questions**

##### **1. Adsorption equilibrium is:**

- a. state of the system in which the concentration of the adsorbent does not change on the surface of the adsorbent
- b. penetration of adsorbent molecules into the adsorbent
- c. formation of a monomolecular layer of adsorbent molecules on the surface of the adsorbent
- d. maximum filling of the adsorbent surface with adsorbent molecules

##### **2. Dynamic adsorption equilibrium can be shifted by:**

- a. all of the above ways
- b. changing the phase adjacent to the adsorbent
- c. changing the temperature
- d. destroying the adsorbent

##### **3. With increasing temperature physical adsorption:**

- a. increases
- b. does not change
- c. increases or decreases depending on the nature of the adsorbent
- d. decreases

##### **4. According to selective adsorption (Panet-Faience rule):**



- a. adsorbed primarily those substances that are part of the adsorbent
- b. during adsorption, the binding of certain ions is accompanied by the attraction of the corresponding number of oppositely charged ions
- c. with the extension of the hydrocarbon chain by one  $\text{CH}_2$  unit, the surface activity of surfactants increases by 3 times
- d. adsorption occurs before the formation of one layer of adsorbent molecules

**5. During ion exchange adsorption occurs:**

- a. exchange of oppositely charged ions
- b. the binding of certain ions is accompanied by the attraction of the corresponding number of oppositely charged ions
- c. exchange of like charged ions
- d. binding of only those ions that are part of the adsorbent

**Examples of module No. 2 questions**

**1. Coagulation in colloidal solution can be caused:**

- a. all the named effects
- b. by increasing the concentration of colloidal solution
- c. by adding an electrolyte
- d. by mechanical impact

**2. Hidden coagulation occurs due to the fact that:**

- a. with a small concentration of the added electrolyte, the charge of the particles is still large and therefore only some particles can overcome the forces of electrostatic repulsion
- b. as the concentration of the electrolyte increases, the charge of the particles is gradually neutralized and reduced, but not every collision of particles leads to their clumping and settling
- c. as the concentration of the electrolyte increases, the charge of the particles does not change and the rate of coagulation is determined selectively with respect to sols
- d. as the concentration of the electrolyte increases, the charge of the particles becomes zero, each collision leads to the aggregation and sedimentation of the particles

**3. The coagulation threshold is the minimum amount of electrolyte (in mmoles) that must be added to 1 liter of sol in order to:**

- a. precipitate completely the dispersed phase
- b. stop coagulation initiation.
- c. initiate obvious coagulation
- d. initiate dormant coagulation

**4. What coagulation is observed in the colloidal system if the electrolyte concentration becomes higher than the threshold concentration?**

- a. obvious quick
- b. obvious
- c. dormant
- d. obvious slow

**5. The micelle structure is expressed by the formula  $\{m\text{Au}, n\text{AuO}_2^{\cdot-} \cdot (n-x) \text{K}^+\}^{x-} \cdot x\text{K}^+$ . Which of the following electrolytes has the greatest coagulating ability?**

- a.  $\text{K}_4[\text{Fe}(\text{CN})_6]$
- b.  $\text{KCl}$
- c.  $\text{NaNO}_3$
- d.  $\text{MgSO}_4$

**EVALUATION OF ANSWER**

The ticket of the module consists of 10 tasks. Questions are evaluated by 10 points.  
Total:  $10 \times 10 = 100$  points

## PHYSICS, MATHEMATICS

**Teachers: PhD Elena Zhivotova**

**Building, Department, classroom #** NUK, Department of Medical and Biological Physics, 509, 501

**Contact details:**

- Telephone number: 89381530078 (PhD Elena Zhivotova)
- E-mail address: elzhivotova@gmail.com
- Office and working hours: 522 (9-17)

**Total hours — 108:**

- Lectures 16 hours;
- Practical classes 45 hours;
- Independent work 47 hours.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

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**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=3337>).

**Course objectives: The purpose of mastering the discipline**

The aim of achievement by medical students of mastery of course **physics, mathematics** is the formation of systematic knowledge on physical properties of matter and physical processes taking place in biological objects including human body as well as the learning of fundamental principles of mathematics and applied mathematics necessary for the study of some others educational courses and the acquisition of professional medical skills.

**Tasks of the discipline:**

To form knowledge in the field of:

- usage of physics concepts and procedures in the prevention, diagnosis, and treatment of disease;
- diagnostic imaging; medical imaging technologies, such as X rays MRI scans and CT scans;
- radiation therapy by facilitating targeting and destruction of cancer cells (accurate calculations regarding radiation doses and an understanding of how radiation interacts with tissue are crucial for ensuring treatment while minimizing harm to healthy cells);
- cardiovascular medicine (this field of medicine heavily relies on the principles of physics to comprehend how blood flows within the heart and blood vessels. Medical professionals utilize this understanding to diagnose and provide treatment, for heart related ailments);
- physical basics of laboratory analysis;
- statistical analysis of medical data.

## **Course topics:**

### **Calendar plan of lectures**

1. Properties of liquids. Physics of Blood and Circulatory System. Flow Rate and Its Relation to Velocity. Equation of continuity. Branching of the flow. Bernoulli's Equation. Viscosity. Laminar and turbulent flow. Auscultation method of blood pressure measurement. Poiseuille's Law. Resistance to flow in vascular system. Frank's model (two-element windkessel). Pulse wave. Surface tension
2. Sound. Physics of Hearing. Physics of Ultrasound Imaging.
3. Biological membranes. Fluid Mosaic Model. Transport of substances through biological membranes. Biopotentials. Physics of electrocardiography.
4. Geometric optics. Biological and medical applications. Total internal reflection in medicine. Fiber Optics: Endoscopes. Lenses. Ray diagrams. Vision Correction. Microscopes. Wave optics. Interference, diffraction, polarization. Biological and medical applications.
5. Radioactivity. Biological Effects of Exposure to Radiation. Radiation dosimetry. Ionizing radiation in diagnostics and therapy.
6. Atomic and molecular spectroscopy. Light absorption. Colorimetry. Spectroscopy of Biological Macromolecules. Photoelectric effect. Photomultiplier tubes. X-ray tubes. Medical uses of X-rays. Computed tomography.
7. Elements of probability theory and mathematical statistics. Random events and their classification. Full group of events. Classical and statistical definitions of probability. The theorem of addition of probabilities for incompatible events. The theorem of multiplication of probabilities for independent and dependent events. The formula of total probability. Repeated independent tests. Bernoulli's formula. Discrete and continuous random variables. The law of distribution of a discrete quantity, the distribution polygon. Numerical characteristics of a discrete random variable, their properties. Bernoulli distribution. Normal distribution law. The rule of "three sigma".
8. Problems of mathematical statistics. General and selective population. A typical sample. Statistical distribution of the sample, discrete and interval variational series. Polygon, histogram. Empirical probability distribution function. Point estimates of the distribution parameters. The general average and average value of the sample. The general variance. Unbiased and biased estimates of the total variance: selective and "corrected" sample variance. Confidence interval for the estimation of the mathematical expectation of normally distributed random variable based on small sample data. Student's distribution. Processing and analysis of experimental data. Measurement errors and their estimates. Statistical and functional dependencies. Linear correlation dependence. Linear regression equation, regression coefficients. Linear correlation coefficient, its properties. Calculation of sample linear correlation coefficient. Null and competing hypotheses. Statistical criteria. Significance level. Testing the significance of a linear correlation between values. Comparison of mean values of two normally distributed populations whose variances are unknown and equal based on the results of small independent samples. Testing the hypothesis of equality of variances of two normally distributed populations based on their estimates. Fisher-Snedecor criterion. Nonparametric criteria (sign test).

### **Calendar plan of laboratory classes**

1. Safety rules in physical laboratory. Determination of surface tension by capillary rise method. Determination of the surface tension by the drop counting method.
2. Determination of the viscosity by the Ostwald viscometer. Determination of the viscosity by the falling ball method.
3. Physical basics of the pure tone audiometry. Recording pure tone audiograms. Physical basics of ultrasound diagnostics.
4. Registration and interpretation of electrocardiograms. Physical basics of the auscultation method of blood pressure measurement.
5. Module on topics 1-4.

6. Microscope and measurement of microobjects. Refractometry. Optical Fiber Loss and Attenuation.
7. Interferometry measurement of concentration. Verification of Malus law. Polarimetry measurement of concentration. measuring the wavelength of monochromatic light by a diffraction grating. Studying the diffraction of white light.
8. Radioactivity. Interaction of nuclear radiation with matter. Detectors of ionizing radiation
9. Atomic and molecular spectroscopy. Light absorption. Colorimetry. Photoelectric effect.
10. Module on topics 5-8.
11. Random events. Classical and statistical definitions of probability. The theorem of addition of probabilities for incompatible events. The theorem of multiplication of probabilities for independent and dependent events. The formula of total probability. Repeated independent tests. Bernoulli's formula. Random values. The law of distribution of a discrete quantity, the distribution polygon. Numerical characteristics of a discrete random variable, their properties.
12. Problems of mathematical statistics. Polygon, histogram. Empirical probability distribution function. Estimates of distribution characteristics from sample data. Point estimates of the distribution parameters. Confidence interval and confidence. Estimation of the interval of confidence
13. Elements of correlation analysis. Linear correlation dependence
14. Testing of statistical hypotheses. Comparison of means of two normally distributed populations
15. Module on topics 9-12. Outcoming testing. Final test.

#### **Text books and required supplies:**

1. Davidovits, Paul. Physics in Biology and Medicine. Fifth Edition. Elsevier Science. 2018. – 358 p.
2. Hobbie, Russell K. R. Intermediate Physics for Medicine and Biology. 4th Edition. Springer. 2015. – 616 p.
3. College Physics. OpenStax. Open Education Resource (OER) LibreTexts Project.
4. Everitt B.S. Medical Statistics from A to Z. Cambridge University Press. 2006. – 249 p.
5. Janet L. Peacock. Oxford Handbook of Medical Statistics. Oxford University Press. 2011. – 517 p.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

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**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Example of test questions**

The auscultation method of blood pressure measurement is based on the detection of Korotkoff sounds caused by

- (a) turbulent blood flow in an artery.
- (b) laminar blood flow in an artery.
- (c) turbulent blood flow in capillaries.
- (d) laminar blood flow in capillaries.

Correct answer: (a)

Correct answer - 5 points.

An optician prescribes a lens of power -1.5 D for correction of vision of a person. What kind of defect in vision is the patient suffering from? What is the focal length of the corrective lens? What is the nature of the corrective lens?

- (a) Hypermetropia; 67 cm; convex lens.
- (b) Myopia; -67 cm; convex lens.
- (c) Hypermetropia; 67 cm; concave lens.
- (d) Myopia; -67 cm; concave lens.

Correct answer: (d)

Correct answer - 5 points.

A hospital claims, it ambulance response time is less than 10 minutes, it can be written as:

- (a)  $H_0 > 10 \text{ min}$ ,  $H_A \leq 10 \text{ min}$
  - (b)  $H_0 \leq 10 \text{ min}$ ,  $H_A > 10 \text{ min}$
  - (c)  $H_0 \neq 10 \text{ min}$ ,  $H_A = 10 \text{ min}$
  - (d)  $H_0 < 10 \text{ min}$ ,  $H_A \neq 10 \text{ min}$
- in normal distribution curve, mean of the data lie on the
- a. Right end
  - b. Centr
- in normal distribution curve, mean of the data lie on the
- a. Right end
  - b. Centr

Correct answer: (a)

Correct answer - 5 points.

**Example of problems**

During ultrasonographic examination, a transducer sends a pulse of ultrasound and receives an echo 20 microseconds later. Calculate the depth of object from which the signal was reflected. Assume that the speed of sound through human tissues is 1540 m/s. Write the answer in millimetres.

Correct answer: 15.  
Correct answer - 5 points.

The effect of cobalt on the weight of rabbits was studied in 2 groups of animals. During the study, the animals gave the following weight gain:

Control group, x	550	600	550	450	700	-
Test group, y	500	400	390	550	600	650

Check at the significance level  $p=0.05$  whether the effect of cobalt on mass gain is significant.  
Correct answer:  $t$ -statistic = 0.92; at the 0.05 level, the difference between sample mean values is not significant.  
Correct answer - 5 points.

The toxicity of different doses of the drug X (mg/kg) was studied in white mice. The animals were observed during 10 days. Estimate the correlation between the lethality Y (%) and the dose of the drug:

X	1	4	5	8	9
Y	8	7	10	10	11

Correct answer:  $r = 0.789$ , strong positive correlation  
Correct answer - 5 points.

### EVALUATION OF THE MODULE ANSWER

The question card of the module consists of 20 tasks (12 theoretical MCQ, 4 practical MCQ and 4 numerical answer problems).

Each question is evaluated by 5 points.

## HISTORY OF MEDICINE

**Teachers: PhD Regina Ivanova**

**Building, Department, classroom #** NUK, Department of Biomedical ethics, medical law and history of medicine, 322, 319, 317, 324

### **Contact details:**

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- E-mail address: [R.Ivanova@kazangmu.ru](mailto:R.Ivanova@kazangmu.ru) [MuseumKGMU@yandex.ru](mailto:MuseumKGMU@yandex.ru)
- Office and working hours: 332 (9–17)

### **Class hours:**

#### **Total 72 h:**

Lectures - 10 hours;  
Practical classes – 26 hours;  
Independent work – 36 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical training** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The work involves active participation of students in problem discussion. It requires preliminary preparation by the student and it is aimed to apply theoretical

knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).

**Course objectives: The purpose of mastering the discipline are formation of systematic knowledge and skills of formulating**

- the main stages and patterns of development of the world historical process in medical area;
- names of outstanding figures in medicine and health care, outstanding medical discoveries, the impact of humanistic ideas on medicine;
- the most important milestones in the history of world medicine, the place and role of each crucial achievement in the history of mankind and in the modern world;
- general patterns of the world-historical process of formation and development of healing and medicine in various countries of the world from ancient times to our time;
- socio-cultural traditions of various social groups, ethnic groups, confessions, including world religions, philosophical and ethical teachings necessary for the study of other academic disciplines and the acquisition of professional medical qualities.

**Tasks of the discipline:**

To form knowledge in the field of:

- analyzing the features of social interaction, taking into account historical, national, cultural and religious characteristics;
- to express professional information competently and in an accessible way in the process of intercultural interaction;
- analyze historical events and processes, logically correctly and clearly build oral and written speech;
- take into account in social and professional communication the socio-cultural traditions of various social groups, ethnic groups, confessions, including world religions, philosophical and ethical teachings;
- analyze and evaluate historical information, formulate reasoned judgments regarding the history of medicine, justify one's own civic position, conduct a dialogue

**Course topics:**

**Calendar plan of lectures**

Lecture №1. Introduction to the History of medicine course. History of medicine as a science. Medicine in Ancient World;

Lecture №2. Medicine in the Middle Ages and Renaissance (V – XVII centuries);

Lecture №3. European medicine in New Age (XVIII – XIX centuries)

Lecture №4. World medicine in XX century.

Lecture №5. Kazan medical history

**Calendar plan of practical trainings**

Class 1. Seminar № 1. Introduction to the history of medicine. Historical sources;

Class 2. Seminar № 2. Medicine in primitive society;

Class 3. Module №1 on topics 1–2;

Class 4. Seminar № 3. Medicine in Ancient East (Mesopotamia, Egypt, India, China);

Class 5 Seminar № 4. Medicine in the Byzantine Empire;

Class 6. Seminar № 5. Medieval Islamic medicine

Class 7. Module №2 on topics 3–5;

Class 8. Seminar № 6. Hygiene, public health;

Class 9. Seminar № 7. Military medicine in XX century;

Class 10. Seminar № 8. KSMU' history;  
Class 11. Module №3 on topics 6–8;  
Class 12. Excursion to the Museum of KSMU' history;  
Class 13. Final test.

**Text books and required supplies:**

1. Lisicyn YU. P. Istoriya mediciny: uchebnik Moskva: Izdatel'skaya gruppa "GEOTARMedia", 2015
2. Kashnikova K. V. Istoriya mediciny i farmacii: Uchebnoe posobie Moskva: Eksmo, 2010, Electronic resource
3. Lisicyn Yu. P. Istoriya mediciny: uchebnik Moskva: Izdatel'skaya gruppa \"GEOTAR-Media\", 2015
4. Bachilo E. V. Istoriya mediciny i farmacii: Uchebnoe posobie Moskva: Eksmo, 2010, Electronic resource
5. Jackson M. The Oxford Handbook of the History of Medicine New York: Oxford University Press, 2013
6. Magner L. N., Kim O. J. A History of Medicine Boca Raton [et al.]: CRC Press Yaylor & Francis Group, 2018
7. Tyurina I. A., Kovalenko E. I. Istoriya mediciny v Rossii: uchebno-metodicheskoe posobie Surgut: Izdatel'skij centr SurGU, 2022, Electronic resource
8. Sc.D., Kalinin A. G., Postoev V. A., Cand.Sc., History of Medicine and Public Health: training manual Arhangel'sk: CFMY, 2021, Electronic resource

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/ abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes



- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **Example of module No. 1**

1. Answer the question “History of Medicine as a science”

Answer: The History of Medicine is the important part of Medical humanities consists of the humanities (literature, philosophy, ethics, history and religion), social science (anthropology, cultural studies, psychology, sociology), and the arts (literature, theater, film, and visual arts) and their application to medical education and practice. The History of Medicine shows how societies have changed in their approach to illness and disease from ancient times to the present; studies the patterns of development and the history of treatment, medical knowledge and medical activity of peoples around the world throughout the history, in close connection with the philosophy, science, culture, psychology. The World History of Medicine introduces students to the world of their future profession, increases the level of general and professional culture, and brings a sense of professional medical ethics. The History of Medicine helps to understand global problems and challenges in the field of medicine and public health; helps to recognize our own responsibility for the future of our planet and helps to find ways and methods of solving these problems and challenges.

2. Answer the question “Prehistoric forms of medicine”.

Answer: Prehistoric forms of medicine are now known as traditional medicine and folk medicine, though they do not fall within the modern definition of “medicine” which is based in medical science. Traditional medicine (also known as indigenous or folk medicine) comprises medical aspects of traditional knowledge that developed over generations within various societies before the era of modern medicine. The World Health Organization defines traditional medicine as "the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness". Traditional medicine is contrasted with scientific medicine.

3. Answer the question “Primary historical sources”

Answer: Primary historical sources on the history of primitive era and prehistoric healing study. The development of therapeutic human activities in different periods of history is not the same and, as a rule, is in inverse proportion to the antiquity. The reconstruction of the primitive society history is the most difficult: this era has not left any written records. Interpretation of archaeological and ethnographic data has completely objective difficulties and requires constant revision of our concepts in relation to new scientific discoveries. Primary historical source (also called an original source or evidence) is a first hand-created evidence (artifact) of history made at the event time by someone who was present there.

### **EXAMPLE OF MODULE № 2 QUESTIONS:**

1. Main medical texts and laws in Ancient Mesopotamia.
2. Ashiputu. Asutu.
3. Main medical texts in Ancient Egypt.
4. Mummification in Ancient Egypt.
5. Surgery and dentistry in Ancient Egypt.
6. Famous Egyptian physicians.
7. Sanitary facilities in Ancient India.
8. Charaka Samhita. Sushruta Samhita.
9. Types of traditional medical practice in Ancient China.
10. The Yellow Emperor's Inner Canon

11. Yin and yang doctrine. Zang-fu principles.
12. Treatise on Cold Damage Diseases
13. Acupuncture and moxibustion in Ancient China.
14. Famous physicians in Ancient China.
15. Hospitals in Byzantine Empire
16. Sanitary facilities in Byzantine Empire
17. The medical practices in Byzantine Empire. Byzantine diagnostic techniques
18. Oribasius and his works
19. Al-Razi.
20. Ali ibn-Sina. "The Canon of Medicine"
21. Ophthalmology in Medieval Islamic medicine.
22. Medieval Islamic hospitals. Features of hospitals

### **EVALUATION OF THE MODULE ANSWER**

Less than 70 points	No any question is answered correctly. Module isn't passed, student has to re-pass it again;
70–75 points	1 question is answered correctly and completely; or 2-3 questions are answered correctly but not completely;
80-85 points	2 questions are answered correctly and completely; or 3 questions are answered correctly but not completely;
90-95 points	3 questions are answered correctly and completely;
100 points	perfect answer for all 3 questions, given with all the details

\* The teacher has the right to remove from 5 to 15 points for incorrect or incomplete writing of names, terms, and dates.

Total for three questions: 100 points

## **SOCIOLOGY OF HEALTHCARE**

**Teachers: Guzel Guzelbaeva, PhD**

**Building, Department, classroom #** NUK, Department of History, Philosophy and Sociology, 354

### **Contact details:**

- Telephone number: +7 965 5927997 (Doc. Guzel Guzelbaeva)
- E-mail address: Guzel.Guzelbaeva@gmail.com
- Office and working hours: NUK, 348 (9-17)

### **Total hours – 36:**

- Lectures: 12 hours;
- Practical classes: 4 hours;
- Independent work: 20 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).

### **Course objectives:**

#### **The purpose of mastering the discipline**

The purpose of the discipline Sociology of Health Care is to form in-depth professional knowledge in the field of sociology of medicine and health, scientific understanding of complex processes and phenomena of modern medicine, both biomedicine and alternative medicine.

#### **Tasks of the discipline:**

To form knowledge in the field of:

- a strong relationship between health and sociology;
- the definitions, prevalence, causes, and associated perspectives of diseases and illnesses;
- the treatment-related issues in different societies;
- social factors that affect human health, such as race, gender, sexuality, social class, and region;
  - the structures and processes in healthcare and medical institutes and their impact on health issues and patterns.

### **Course topics:**

#### **Calendar plan of lectures**

1. Sociological perspectives on health, illness, and health care.
2. Illness as “lived experience”. Changing conceptions of health and illness.
3. Social interaction and everyday life. The sociological imagination. Talcott Parsons on society's 'sick role'.
4. The social basis of health. Health and class, gender, ethnicity and social cohesion. Medicine and health in a changing world.
5. Biomedicine. Assumptions and critiques of the biomedical model. Complementary and alternative medicine (CAM).
6. The sociology of disability. The individual model and the social model of disability. Disability, law and public policy.

#### **Calendar plan of practical training**

The study of the course involves two practical sessions. They take place in a face-to-face format with all students present in person. Students make presentations on pre-selected topics on general issues of Sociology of Health and specific cases of modern societies. The other students ask questions and participate in the discussion. See below for examples of presentation topics.

### **Text books and required supplies:**

1. Giddens A., Sutton P.W/ Sociology. 9<sup>th</sup> edition. Willey, 2021.
2. Giddens A., Duneier M., Appelbaum R.P., Carr D. Essentials of Sociology. 8<sup>th</sup> edition. W. W. Norton & Company Ltd, 2021.
3. Weiss G., Copelton D. The Sociology of Health, Healing, and Illness. Routledge, 2023.

### **Kinds of assignments, evaluation and grading:**

Students receive a written assignment in the form of a list of questions after every second lecture (every module). Answers to the questions must be submitted within a week. Some of the assignments require knowledge of the course material, while others ask students to reflect and express their point of view. Examples from different countries about the health care system, treatment, health, illness, attitudes towards biomedicine or different medicines, as well as your own experience are required.

Another student's activity is a presentation on practical classes. Students can do this kind of assignment individually or in a mini-group of two or three students. They choose two topics from the list, work through material on the topic from academic and other sources, and prepare their presentations.

Being active in the practical sessions, asking questions and participating in discussions is compulsory and is assessed separately from the presentation itself.

*Routine performance assessment* (assignment after each module, presentations at practical classes, student's activity during group discussions at practical classes) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test, presentation, participation in discussions at practical classes). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

The student's overall rating is made up of class attendance, results of assignments (answers to questions voiced at every other lecture), and student presentations at practical classes.

### **Example of a written assignment.**

Reflect on the following questions and give a written response.

#### **THINKING CRITICALLY - 1**

List several of the health successes of biomedicine. Do these provide solid evidence for the belief that scientific medicine is superior to all other types of medicine? What types of health problems has biomedicine not been very effective in tackling? Why do you think this is the case?

#### **THINKING CRITICALLY - 2**

Have you ever tried complementary or alternative therapies? What led you to do so? How do the assumptions that underlie the biomedical model of health differ from those found in alternative medicines? Why has there been such a rise in alternative medicines and treatments in recent years?

### **Example of practical exercises (presentations).**

Select two topics from the list, work through material on the topic from academic and other sources, and prepare a presentation. Students can do the assignment individually or in a mini-group of two or three students.

1. Models of doctor-patient relationships.
2. How do people become addicts?
3. Social consequences of COVID-19 pandemic.
4. Society's attitude to vaccines.
5. The world's attitude to the COVID-19 vaccines.
6. Is it ethical to transplant organs?
7. Society's attitude to mental health.
8. Medical negligence.
9. The perception of women doctors.
10. The role of nurses in patient care.
11. The inequalities in healthcare.
12. The role of a social health worker.
13. The clashes of interest or/and agreement between medicine and religion.
14. Common human practices that contribute to poor health.
15. Ways to practice healthy living.
16. Different ways to cope with stress.

17. Alcohol abuse: a concern for public health.
18. Why prisoners should get better healthcare.
19. How accessible is national healthcare?
20. Unethical practices in medicine.
21. Should medical research be conducted on animals?
22. Should marijuana be legalized?
23. Common illnesses and diseases in today's society (in your country/ your region/ any region).
24. How to raise awareness of medical health in rural societies.
25. Conventional and non-conventional medicine in Europe/ another region/ or using an example of any country.
26. Why is it important to know what patients think about the disease and what they say about it.
27. Health problems as social problems.
28. Cultural beliefs and social response to illness.
29. Social epidemiology.
30. Sociology of dying and death.
31. Medical education.
32. Medicalization.
33. The healthcare system in India/ any country or region.
34. Ministry of AYUSH.
35. Health culture in Ayurveda/ any side of Ayurveda: principles, components, history, practice, treatment and prevention, diagnosis, efficacy, panchakarma.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

## **BIOLOGY**

**Specialty:** General medicine.

**Teachers:** Associate Professor, PhD Koshpaeva E.S., PhD Sychev K.V., PhD Nurullin L.F.  
**Building, Department, classroom** # NUK, Department of Medical Biology and Genetics,  
 Butlerova Str. 49

#### **Contact details:**

- Telephone number: +79173965264
- E-mail address: elena.koshpaeva@kazangmu.ru
- Office and working hours: Monday – Friday from 9 a.m. to 17 p.m.

#### **Class hours:**

Total hours — 216:

Lectures 32 hours;

Practical classes 87 hours;

Independent work 61 hours;

Control 36 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1720> and <https://e.kazangmu.ru/course/view.php?id=2495> ).

### **Course objectives: The purpose of mastering the discipline**

The purpose of mastering the discipline is to form a scientific view of genetic processes that ensure the vital activity of organisms, their development and reproduction; study of the mechanisms of heredity and variability of organisms with using classical approaches and the latest advances in the field of molecular genetics, biotechnology and genetic engineering.

### **Tasks of the discipline:**

To form knowledge in the field of:

- formation of systemic knowledge about the basic patterns of life development and mechanisms ensuring its maintenance at different levels of the organization;
- formation of knowledge about the functioning of ecological systems and dependencies human health from environmental quality;
- to form ideas about the cytological bases of heredity and basic patterns of inheritance of traits;
- study the molecular mechanisms of the implementation of the genetic program;

### **Objectives of discipline mastering:**

studying multiple levels of organization of biological systems, the patterns of organic evolution, functioning of biological systems; formation of students' conception of man as a central object of study in medical biology; study of the biosocial nature of human, his subordination to the general biological laws of development, unity of human and the environment; formation of view about modern ecosystem and anthropogenic factors acting within it, human adaptation to the environment; an important objective is to acquire practical skills necessary for subsequent research and practical activities.

### **Course topics:**

#### **Lectures**

1. General introduction to the cell biology. Molecular level of organization. Structure of
2. DNA. DNA Replication.
3. Structure of RNA. Transcription and processing. Translation.
4. Types of genes. Regulation of gene expression in prokaryotes and eukaryotes.
5. Gene mutation.
6. Mechanisms of DNA repair.
7. Anatomy of the human genome. The Human Genome Project.
8. Genetic variations. Structural and numerical abnormality. Chromosomal diseases
9. Fundamental methods in human genetics
10. Concept of heredity. Mendelian inheritance. Extensions of mendelism
11. Techniques of molecular genetics and biotechnology
12. Manipulating genes. Transgenic organisms

13. Medical parasitology
14. Genetic control of the cell division. Cancer genetics
15. Population genetics.
16. Developmental biology

### Practical classes

#### Module 1. Cell Biology

1. 1. Optical apparatus. Light microscope. Forms of life
2. 2. Structure of eukaryotic cell
3. 3. Structure and functions of plasma membrane. Transport across plasma membrane
4. 4. Nucleus. Life cycle. Mitosis.
5. 5. Reproduction. Gametogenesis. Meiosis
6. 6. Embryonic development
7. 7. Unit test1.

#### Module 2. Genetics

8. Principles of Mendelian Inheritance
9. Gene Interaction. Multiple Alleles. Human Blood Groups.
10. Sex Linked Inheritance. Sex Determination.
11. Linked Inheritance. Crossing Over. Group Linkage
12. Unit test 2.

#### Module 3. Molecular biology.

13. Structure of DNA. DNA replication
14. Transcription of RNA. Processing of RNA. Translation of proteins
15. Types of genes. Central dogma of molecular biology. Gene expression
16. Anatomy of the human genome. The Human Genome Project
17. Genetic variations. Gene mutation. Repair of DNA
18. Unit test 3.

#### Module 4. Human genetics.

19. Genealogical method
20. Cytogenetic approaches for studying human diseases.
21. Population genetics.
22. Molecular methods for detecting of polymorphisms
23. Unit test 4.

#### Module 5. Parasitology.

24. Protozoa
25. Platyhelminthes
26. Nematelminthes
27. Arthropods
28. Identifying Parasites in Microscopic Settings
29. Unit test 5.

### Exam

#### **Text books and required supplies:**

1. Alberts B. et all. // Molecular Biology of the cell (6<sup>th</sup> ed.) – 2015.-1342 p.
2. Peter D. Turnpenny, Sian Ellard, Ruth Cleaver // Elements of Medical genetics and genomics. - 2017.-435p.
3. Paniker's textbook of medical parasitology (8<sup>th</sup> ed.) – 2018.-235p.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1. Cell biology.**

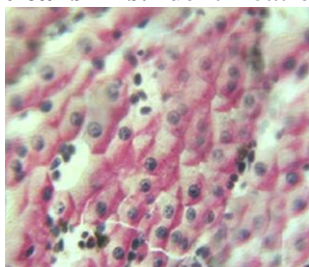
#### **Part 1. MCQ**

Example: Which organoid includes two cylindrical bodies which oriented at a 90-degree angle to one another. This organoid is found near the Golgi apparatus in non-dividing cells.

- A. Smooth ER
- B. Centrosome
- C. Ribosome
- D. Mitochondria
- E. Rough ER

#### **Part 2. Practical skills.** Identification of specimens with light microscope.

Example:



### **EVALUATION OF THE MODULE-1 UNIT TEST ANSWER**

Part 1. MCQ – ticket contains 50 questions, time duration: 50 minutes; weight of 2 question is 1 points



Total:  $50 \times 2 = 100$  points

Part 2. Practical skills. Ticket contains 10 slides. weight of 1 slide is 10 points

Total:  $10 \times 10 = 100$  points

### **Example of module No. 2. Genetics.**

#### **Part 1. MCQ**

Example: **Colour blindness is found more in males than in females because:**

- A. The males containing the single affected X chromosome are colour blind
- B. Heterozygous females are colour blind
- C. Males having affected Y chromosome are colour blind
- D. Affected X chromosome has much high affinity to Y chromosome as compared to unaffected X chromosome

#### **Part 2. Practical skills.** Solving problems on inheritance of traits.

Example: Hemophilia is inherited as recessive, X-linked trait. A hemophilic son with blood I (O) is born to parents having II (A) blood group. None of the parents suffers from hemophilia. Calculate the probability of having a healthy child with II (A) blood group.

### **EVALUATION OF THE MODULE-2 UNIT TEST ANSWER**

Part 1. MCQ – ticket contains 50 questions, time duration: 50 minutes; weight of 1 question is 2 points

Total:  $50 \times 2 = 100$  points

Part 2. Practical skills. Ticket contains 5 tasks. weight of 1 task is 20 points

Total:  $5 \times 20 = 100$  points

### **Example of module No. 3. Molecular biology.**

#### **Part 1. MCQ**

Example: **Which of the following statements about base pairing in DNA is incorrect?**

- A. Purines always base pairs with pyrimidines.
- B. Adenine binds to guanine.
- C. Base pairs are stabilized by hydrogen bonds.
- D. Base pairing occurs at the interior of the double helix.

#### **Part 2. Practical skills.** Solving problems.

Example: Fragment of double stranded DNA (700 bp) consists of 40% of Adenine; 10% of Guanine; 40% of Thymine; 10% of Cytosine. What is the number of A. T. G and C in that fragment?

### **EVALUATION OF THE MODULE-3 UNIT TEST ANSWER**

Part 1. MCQ – ticket contains 50 questions, time duration: 50 minutes; weight of 1 question is 2 points

Total:  $50 \times 2 = 100$  points

Part 2. Practical skills. Ticket contains 5 tasks. weight of 1 task is 20 points

Total:  $5 \times 20 = 100$  points

### **Example of module No. 4. Human Genetics.**

#### **Part 1. MCQ**

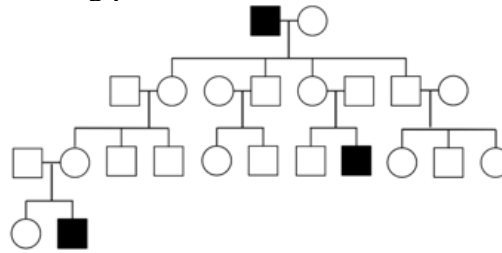
Example: **Which part of chromosome is named as chromosome band?**

- A. Part of chromosome which stain either light-colored or dark-colored, depending on the particular staining technique
- B. Heterochromatic regions

- C. Euchromatic regions
- D. Positions of the structural genes
- E. DNA regions with tandem repeated nucleotides

**Part 2. Practical skills. Solving problems.**

Example:



- A. On the basis of this pedigree, what is the most likely mode of inheritance for the disease? Explain your reasoning.
- B. From your answer to part “a”, give the most likely genotypes for all persons in the pedigree.

**EVALUATION OF THE MODULE-4 UNIT TEST ANSWER**

Part 1. MCQ – ticket contains 50 questions, time duration: 50 minutes; weight of 1 question is 2 points

Total:  $50 \times 2 = 100$  points

Part 2. Practical skills. Ticket contains 4 tasks (1-karyotype; 2-pedigree; 3-population genetics (Hardy-Weinberg law); 4-RFLP analysis) weight of 1 task is 25 points

Total:  $4 \times 25 = 100$  points

**Example of module No. 5. Parasitology.**

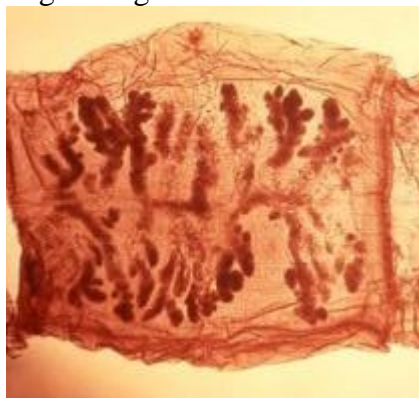
**Part 1. MCQ**

Example: The egg of which parasite is ovoid, about  $150 \times 50 \mu\text{m}$ , roundish with lateral knob and small granules of tissue debris adherent to shell? These eggs may be found only in urine.

- A. Fasciola hepatica
- B. Dicrocoelium lanceatum
- C. Paragonimus westermani
- D. Schistosoma haematobium
- E. Taenia solium

**Part 2. Practical skills.** Identification of specimens with light microscope and describe the parasite according the algorithm.

Example:



- 1) Latin name of parasite
- 2) General morphological features
- 3) Life cycle of parasite
- 4) Methods of diagnosis
- 5) Prophylaxis

**EVALUATION OF THE MODULE-5 UNIT TEST ANSWER**

Part 1. MCQ – ticket contains 50 questions, time duration: 50 minutes; weight of 1 question is 2 points

Total:  $50 \times 2 = 100$  points

Part 2. Practical skills. Ticket contains 5 specimens; weight of 1 specimen is 20 points

Total:  $5 \times 20 = 100$  points

### **Example of Biology Exam.**

#### **Part 1.1. MCQ**

Example: Which of the following is not a typical characteristic of human traits that follow an autosomal recessive inheritance pattern?

- A. All of the above are characteristic of autosomal recessive inheritance.
- B. They often “skip” generations.
- C. They appear equally in males and females.
- D. Parents of affected children are often phenotypically normal themselves.
- E. When affected individuals marry phenotypically normal individuals, their children are often phenotypically normal.

#### **Part 1.2. Oral part of the exam.** Open-end questions.

- Example:
1. The structure and functions of the rough endoplasmic reticulum.
  2. Enumerate and describe the general attributes of living organisms
  3. Fundamental methods in human genetics (briefly describe the methods and name their significance in human’s genetics).
  4. Replication of DNA. Steps and enzymes. Programmed Senescence Theory. Hayflick Limit.
  5. Class Sporozoa. *Toxoplasma gondii*. Habitat. Morphology. Localization. Life cycle. Methods of diagnosis.
  6. Southern Blotting and Probes.

#### **Part 2. Practical skills.** Identification of specimens/solve the situation task

Example: Identify the parasite:

The parasite is endemic in the Far East—Japan, Korea, Taiwan, China, and South East Asia—Sri Lanka and India. Cases have been reported from Assam, Bengal, Tamil Nadu and Kerala. The adult worm is egg-shaped about 10 mm long, 5 mm broad and 4 mm thick. Adult worms live in the lungs.

### **EVALUATION OF THE MODULE-5 UNIT TEST ANSWER**

Part 1.1. MCQ – ticket contains 40 questions, time duration: 40 minutes; weight of 1 question is 1 point

Total:  $40 \times 1 = 40$  points

Part 1.2. Oral part of the exam. Open-end questions. Ticket contains 6 open-end questions; weight of 1 question is 10 points

Total:  $6 \times 10 = 60$  points

Part 2. Practical skills. Ticket contains 5 tasks (one task from each module); weight of 1 task is 20 points

Total:  $5 \times 20 = 100$  points

## **THE LATIN LANGUAGE**

**Teachers: Farkhutdinova Gulnara Sagitovna**

**Building, Department, classroom #** NUK, Department of the Latin Language and Medical Terminology, 523, 525, 527, 530, 531

**Contact details:**

- Telephone number: 89510622558 (Farkhutdinova Gulnara Sagitovna)
- E-mail address: fargus\_1988@mail.ru
- Office and working hours: 534 (8-16)

**Total hours – 144:**

- Practical classes – 72 hours;
- Independent work – 72 hours.

**Course description:**

**Practical class** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Independent work** is work with the specialized literature or educational materials (literary sources, video and audio materials, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1733>).

**Course objectives: The purpose of mastering the discipline**

The purpose of mastering the discipline "Latin language" is to lay the foundation of terminological training of future specialists who are able to consciously and competitively use medical terms in Latin, understand the methods of forming terms and know the specifics of various subsystems of medical terminology. In addition, educational and cultural problems are solved that give an idea of the connection of modern and ancient culture and history.

**Tasks of the discipline:**

- to understand and use medical terms in Latin to solve problems in professional activity;
- to use Latin terminological units from medical, biological, chemical and other scientific terminology in professional activity;
- to develop the student's professional self-awareness, his ability to use the acquired knowledge in the practical and research activity of the future specialist.

**Course topics:**

**Calendar plan of practical classes**

**Unit 1. Latin grammar. Anatomical terminology (Part 1)**

- 1.1 The Latin alphabet. Reading rules.
- 1.2 The rules of reading (continuation). The accent rules.
- 1.3 Noun and its grammatical categories. Uncoordinated definition.
- 1.4 Uncoordinated definition (continuation). Plural forms of 1, 2, 4 and 5 declensions.
- 1.5 Adjective and its grammatical categories. Singular and plural forms of the 1st group adjectives. Coordinated definition.
- 1.6 Coordinated definition (continuation). Preparation for the module No. 1.
- 1.7 Module No. 1.

**Unit 2. Latin grammar. Anatomical terminology (Part 2)**

- 2.1 Three types of the 3rd declension nouns. Singular and plural forms of the 3rd declension nouns.
- 2.2 Adjectives of the 2nd group (three, two and one ending adjectives)
- 2.3 Degrees of comparison of adjectives.
- 2.4 The structure of the anatomical term.
- 2.5 The structure of the anatomical term (continuation). Preparation for the module No. 2.
- 2.6 Module No. 2.
- 2.7 The history of the Latin language (review). Anatomical nomenclature in Latin.
- 2.8 Verb: general information.

### **Unit 3. Clinical terminology**

- 3.1 The structure of the clinical term. Word formation. The most commonly used morphemes.
- 3.2 Greek-Latin term elements on the topics: head, nervous system and psyche, cardiovascular system, science and methods of diagnostic examination.
- 3.3 Greek-Latin term elements on the topics: body and musculoskeletal system, treatment and disease, gender and age.
- 3.4. Greek-Latin term elements on the topics: respiratory system, integumentary system, digestive system, urinary system.
- 3.5 Greek-Latin term elements on the topics: volumetric and spatial characteristics, temperature characteristics, color, other physical characteristics.
- 3.6 Greek-Latin term elements on the topics: surgical treatment, glands, secrets, fluids, tissues.
- 3.7 Greek-Latin term elements on the topics: functional states and processes, pathological states and processes.
- 3.8 Greek-Latin term elements on the following topics: sensory system, life and death, characteristics of relationship and quantity.
- 3.9 Clinical terminology of the specialty. Preparation for the module No. 3.
- 3.10 Module No. 3.
- 3.11 Final testing.

#### **Textbooks and required links:**

1. Kondratiev D. Latin and Fundamentals of Medical Terminology for Medical Students / D.K. Kondratiev et al. Grodno: GrSMU, 2005. 250 c.
2. Znamenskaya S. V. LATIN AND MEDICAL TERMINOLOGY. Textbook for Foreign Medical Students of the English Medium / Znamenskaya S. V., Pigaleva I. R., Znamenskaya I. A. – Stavropol. Publishing house: StSMU. – 2017. – 316 p.
3. FIPAT. Terminologia Anatomica. 2nd ed. FIPAT.library.dal.ca. Federative International Programme for Anatomical Terminology, 2019.
4. Latin Language for Foreign Students (Specialty: General medicine). URL: <https://e.kazangmu.ru/course/view.php?id=1732>

#### **Evaluation and grading:**

*Routine performance assessment* (written assignments, terminological dictation, testing, oral response, etc.) is evaluated on a 10-point scale:

- the student receives 10 points for the detailed correct answer (the score is "excellent");
- the student receives 9 points for an answer that does not contain mistakes or contains 1 mistake, for example, in stress (the score is "very good");
- the student receives 8 points for an answer containing 1–2 mistakes (the score is "good");
- the student receives 7 points for an answer containing 3–4 mistakes (the score is "satisfactory");
- the student receives 6 points for an answer containing 5–6 mistakes (the score is "mediocre").

If a student makes more than 6 mistakes, his answer is not counted and he must retake the topic.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test paper). Test paper (module) is evaluated on a 100-point scale:

- 90–100% – excellent grade (90–100 points)
- 80–89% – good grade (80–89 points)
- 60–79% – satisfactory grade (50–79 points)

Less than 60% of correct answers are rated "unsatisfactory" (less than 60 points).

*Exam* is held in form of test. Grading: 0–60 – “poor”, 60–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

A student's overall rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Attendance of classes in any format is mandatory. If you were not in class for any reason, you must answer to the teacher the material that was assigned for that day.
- Please do not tell us your diagnoses and medical problems. You can contact the dean's office with this. In any case, we will note your absence.
- The task of the teachers of the department is to teach you and control your knowledge. All issues that are not directly related to our discipline must be resolved with your tutor and the dean's office.
- Write all messages to the messenger group. Otherwise, they just get lost in our phones. Each of us has more than 300 students studying at the same time, we are not able to communicate with each individually.
- The teacher responds to messages only during business hours. Have respect for the teacher's free time and days off.
- Don't be late for classes, you have to be on time.

### **Example of module No. 1**

1. Demonstrate knowledge of the following anatomical terms by writing them down in the full dictionary form:

calcaneus, hepatic, gland, colon, patella, valve, masticatory, layer, optic, humerus

2. Demonstrate ability to translate anatomical terms according to the rules of Latin grammar.

Decline the following terms:

gastric artery, pharyngeal tubercle, mastoid process

3. Demonstrate skills of translating anatomical terms:

1) Translate into Latin:

deep petrosal nerve, lymph nodes, wide ligament of uterus

2) Translate into English:

corpus adiposum buccae, bursae musculorum gluteorum, plexus venosus pterygoideus

### **Example of module No. 2**

1. Demonstrate knowledge of the following anatomical terms by writing them down in full dictionary form:

apex (tip), body, shoulder blade, system, holder, intercostal, superior, cochlear, suborbital, superficial

2. Demonstrate ability to translate anatomical terms according to the rules of Latin grammar.

Decline the following terms:

upper articular process, large sciatic notch, internal auditory passage

3. Demonstrate skills of translating anatomical terms:

1) Translate into Latin:

additional nasal cartilages; posterior border of petrosal part; long elevating muscle of ribs

2) Translate into English:

musculus sphincter vesicae urinariae; facies linguae superior; dentes molares superiores

### **Example of module No. 3**

1. Demonstrate knowledge of the following clinical term elements by explaining their meaning:

phren(o)-, peri-, omphal(o)-, galact(o)-, anis(o)-, -eurynter, blast(o)-, -acusia, -stenosis, -plasia

2. Demonstrate ability to understand clinical terms and explain their meaning:

a) odontoclasia, brachycephalia, hypertrichosis, spondylodynia, monophthalmia

b) blepharitis, phytotherapia, dyspepsia, colostomia, asphygmia

3. Demonstrate skills of composing a clinical term in Latin based on its meaning: nose bleeding; lack of red blood cells; presence of sugar in urine; bone tumor; instrumental examination of uterus; non-inflammatory disease of cartilage; softening of brain; inflammation of stomach.

### **EVALUATION OF THE MODULE ANSWER**

The module is considered not passed if, as a result of mistakes, the student scores less than 50 points out of 100 possible.

Evaluation criteria:

- Grammatical mistake:  
incorrect case ending; incorrect agreement; incorrect definition of gender or declension; mistake in the structure of the term -5 points
  - Lexical mistake:  
incorrect translation (including incorrect preposition), as well as the lack of translation of the word -5 points
  - Graphic mistake:  
incorrect use of uppercase and lowercase letters -2 points
- Orthographic mistake:  
incorrect spelling of a word unrelated to grammatical categories -1 point

## **HISTORY**

**Teachers: assistant Timur Khasanov, assistant Aysylu Shakirova**

**Building, Department, classroom #** NUK, Department of history, philosophy and sociology, 331, 329

### **Contact details:**

- Telephone number: 89961243861 (assistant Aysylu Shakirova)
- E-mail address: [nasibullina-aysylu@mail.ru](mailto:nasibullina-aysylu@mail.ru)
- Office and working hours: 348 (9-17)

### **Class hours:**

Total hours — 72:

- Lectures 10 hours;
- Practical classes 26 hours;
- Independent work 36 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgm.kcn.ru:40404/moodle/login/index.php>).

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the **history of Russia** discipline are formation a comprehensive understanding of the cultural and historical uniqueness of Russia and its place in world and European civilization; to form systematized knowledge about the basic patterns and features of the world historical process with an emphasis on studying the history of Russia; introduction to the range of historical problems, development of skills for obtaining analysis and generalization of historical information.

### **Tasks of the discipline:**

To form knowledge in the field of:

- understanding of citizenship and patriotism as devotion to one's Fatherland, the desire to serve its interests through one's actions, incl. protecting the interests of Russia;
- knowledge of the driving forces and patterns of the historical process; the place of man in the historical process, the political organization of society;
- education of morality, ethics, tolerance;
- understanding the diversity of cultures and civilizations in their interaction, the multivariate nature of the historical process;
- understanding the place and role of the graduate's field of activity in social development, the relationship with other social institutions;
- the ability to work with diverse sources, the ability to effectively search for information and criticize sources;
- skills of historical analytics: the ability, based on historical analysis and a problem-based approach, to transform information into knowledge, to comprehend processes, events and phenomena in Russia and the world community in their dynamics and interrelationships, guided by the principles of scientific objectivity and historicism;
- ability to think logically and conduct scientific discussions;
- creative thinking, independent judgment, interest in domestic and world cultural and scientific heritage, its preservation and enhancement.

### **Course topics:**

#### **Calendar plan of lectures**

1. History as a science. From the formation of the ancient Russian state to feudal fragmentation.
2. The rise of Moscow and the formation of the Russian state in the 13th – 16th centuries.
3. From the Grand Duchy to the Muscovite Kingdom. Russia in the late 16th – 17th centuries.
4. Russia in the 18th and 19th centuries.
5. Revolutionary upheavals and the USSR in the 20th century. Russia and the world at the turn of the century.

#### **Calendar plan of practical classes**

1. Eastern Slavs in ancient times. Old Russian state 9th – 13th centuries. Socio-political changes in Russian lands in the 12th – 13th centuries.
2. Formation of the Russian centralized state in the 14th – 15th centuries.
3. Russia and the world in the 16th – 17th centuries.
4. Features of the modernization of Russia in the 18th century.
5. Russia in the 18th century: from the era of palace coups to the Enlightened absolutism of Catherine II.
6. Russian Empire in the first half of the 19th century. Attempts to resolve the peasant question.
7. Russia during the period of reforms and the beginning of industrialization in the second half of the 19th century.
8. Russia in the conditions of a national crisis and the First World War.
9. Formation of the Soviet state in the 1920s – 1930s of the 20th centuries.
10. The Soviet Union during the Second World War and the Great Patriotic War. Post-war development of the USSR.



11. The Thaw or the Search for Alternative Paths of Development in the History of the Soviet State.
12. Soviet Union in 1965 – 1991.
13. Russia at the turn of the century. Russia and the world in the 21st century.

**Text books and required supplies:**

1. History of Russia IX- beginning of the 20th century / Maksimenko E.P. M.: MISiS, 2016.<https://www.studentlibrary.ru/book/ISBN9785906846198.html>
2. Radugin A.A. History of Russia (2. History of Russia: from ancient times to the present day: textbook / Derevyanko A.P., Shabelnikova N.A., Usov A.V. M.: Prospekt, 2016.  
<https://www.studentlibrary.ru/book/ISBN9785392192144.html>
3. Historiography of Russian history: textbook / ed. A. A. Chernobaeva. 2nd ed., revised. and additional M.: Yurayt, 2014.
4. Bushuev S.V. History of the Russian state: historical and bibliographical essays / S.V. Bushuev, G.E. Mironov. M.: Book Chamber, 1991.

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test /abstracts/reports).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Example of module No.1**

### Annotation

- Write an annotation based on the historical material “Formation of the Russian state at the 9<sup>th</sup> century”.
- Total: 10 points

### Example of module No.2

Analysis of a problem situation

Having studied the lecture materials and the recommended educational literature, you should prepare answers to the following questions:

1. What were the causes of historical events?
2. What role and what influence did the participants in these events have?
3. Was it possible to prevent negative events?

### EVALUATION OF THE MODULE ANSWER

The question card of the module consists of 3 tasks.

Questions 1 - 3 on history of Russia are evaluated by 33 points.

\* The teacher has the right to remove from 1 to 3 points for incorrect writing.

Total: 3 x 33 = 100/10 points

## HISTOLOGY, EMBRYOLOGY, AND CYTOLOGY

**Teachers:** PhD Boychuk N.V., PhD Izmailov A.A., PhD Vodunon N.R., PhD Archipova S.S., Garifulin R.R., Vavilov D.N.

**Building, Department, classroom #** Universitetskaya str, 13, Histology, Cytology, and Embryology Department, 306, 307, 308, 319

### Contact details:

- Telephone number: 2927654 (Prof. Islamov R.R.)
- E-mail address: rustem.islamov@gmail.com
- Office and working hours: 304 (9-17)

### Total hours — 216:

- Lectures 36 hours
- Laboratory classes 84 hours
- Independent work 60 hours
- Control 36 hours

### Course description

**Lectures** contain basic theoretic material of main discipline topics. It is usually held for the course of students at the same time. Additionally, lectures are provided on the Distance course on KSMU Education portal.

**The laboratory classes** involve studying of the structure of tissues, systems and organs using images derived from a microscope and histological slides. For laboratory classes student will be provided with a collection of glass slides of specimens prepared by a variety of routine and special histologic methods. Also virtual slide specimens studying in the lab classes are represented on KSMU Educational portal in a Distance course “Histology, Embryology, and Cytology”.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1927>)

## **Discipline aim and objectives**

### **The aim of mastering the discipline**

The aim of mastering of histology, embryology, and cytology is to provide with an understanding of the development, structure, biochemistry, chemistry and function of cells, tissues and organs.

### **Discipline objectives**

- To develop or sharpen the important skills of observation, description and interpretation of data, which in this course primarily involves microscopic images
- To provide students with a solid understanding of the structure and function of normal cells, tissues and organs in which subsequent courses may build
- To correlate the structural organization and functional capabilities of cells, tissues and organs, utilizing information derived from current techniques (scanning electron microscopy, immunocytochemistry, etc)
- To assist the students in the development of approaches to morphologic analysis and identification which is directed toward growth in independent self-education

### **Skills**

1. Skill in using the microscope
2. Be able to identify the cells and structures of all tissues and organs using light microscope
3. Be able to make sketches of histological structures seen under the microscope
4. Be able to make notes on your observations in order to develop ability and confidence in observing, describing and interpreting microscopic images

## **Lectures and laboratory classes assignment**

The discipline consists of a series of lectures and a number of associated laboratory classes in terms 2nd and 3rd with general exam in the end of 3rd term. The course is divided into 4 modules. Each module consists of number of lectures and lab classes. Each module ends with a quiz.

For each module topic student must:

- 1) review the learning objectives
- 2) listen to the lecture in class and read corresponding lecture notes at the Distance course
- 3) complete lab class tasks
- 4) study corresponding texts in recommended textbooks
- 4) complete the online test at the Distance course
- 5) take the scheduled auditory or online module examinations (quizzes).

Attendance of lectures and laboratory classes is obligatory.

### **Lecture curriculum**

1. Histological elements. Cell: plasmolemma and nucleus. Introduction to the subject. Research Methods. Cell. Plasmolemma: structure and functions. Nucleus structure. DNA, concept of a gene. Chromatin and chromosome. Types and functions of RNA
2. Organelles, cytoskeleton, cell cycle. Cytoplasm. Organelles. Elements of cytoskeleton, their structure and functions. Cellular inclusions. Cell cycle and its regulation
3. Embryonic period and beginning of organogenesis. Basic concepts of development. Fertilization, cleavage and gastrulation. Neurulation. Germ layers and derivatives. Organogenesis. Body shaping
4. Epithelial tissue. The concept of tissue. Intercellular interactions in histogenesis. Intercellular junctions. General characteristics of epithelium. Functional and structural classification. Basement membrane
5. Connective tissue. Structural organization of extracellular matrix. Cell types. Connective tissues proper and tissues with special properties
6. Skeletal tissue. Cartilage tissue: cells and cartilage matrix. Regeneration. Hormonal regulation. Bone tissue: cells and bone matrix. Bone reorganization. Hormonal regulation. Chondrogenesis and osteogenesis. Fracture healing

7. Blood and hemopoiesis. Blood functions. Morpho-functional and quantitative characteristics of blood cells. Bone marrow. Embryonic and postnatal hemopoiesis. Hemopoietic growth factors. Hemopoietic stem cell niches
8. Muscle tissues. Morphological and functional characteristics of skeletal, cardiac, smooth muscle tissues. Molecular basis of contraction. Regeneration of muscle tissues
9. Neural tissue. Neuron. Neuroglia: macro- and microglia. Ependymal glia. Schwann cells. Myelin. Structure and regeneration of peripheral nerve. Nerve endings
10. Nervous system and sensory organs. Neurons in cerebral and cerebellar cortex. Retina: retinal neurons and their connections; characteristics of photoreceptor cells. Spiral organ: structure and functioning of hair cells. Molecular mechanisms of taste perception
11. Cardiovascular system. Vascular wall cell types. Endothelium: morphological and functional characteristics. Angiogenesis and vasculogenesis. Smooth myocytes: contractile and secretory phenotypes, humoral regulation of activity. Pericytes of the microvasculature. Types of cardiomyocytes; atriopeptin and its effects.
12. Endocrine system. The concept of hormone and interactions with target cell. Hypothalamic-hypophyseal system. Trophic hormones. Hormones of the brachio-genic group of glands. Steroidogenesis and hormones of the adrenal glands, gonads
13. Immune system. The concept of antigen and antibody. Immunocompetent and antigen-presenting cells. The main histocompatibility complex. The interaction of cells in humoral and cellular immune response. T-lymphocytes development
14. General scheme of digestive tract organization. Enteric nervous system. Enteroendocrine cells. Glands of the digestive system. Immune defense
15. Gastrointestinal tract: a comparative description of mucous membrane structure of different departments. Epithelial cell types
16. Respiratory system. Olfactory epithelium. Cellular composition of the airways epithelium. Organization of the respiratory portion and air-blood barrier. Surfactant
17. Urinary system. Structural and functional organization of nephron. Renal corpuscle and filtration barrier. Reabsorption. Peritubular capillary network. Renin-angiotensin-aldosterone system. Collecting ducts and urinary tract
18. Female reproductive system and fetal membranes. Determination of sex and development of gonads. Ovarian-menstrual cycle. Development, structure and functioning of mammary gland. Development of placenta

### **Laboratory class curriculum**

1. Histological elements. Cell: plasmalemma and nucleus. Histological technique. Histological elements. Cell. Cell shape. Cytoskeleton. Organelles. Inclusions
2. Organelles, cytoskeleton, cell cycle. Plasmalemma. Endocytosis and exocytosis. Microvilli, stereocilia, kinocilia, cilia. Cell cycle. Cell death
3. Basic concepts of embryology. Gametes. Fertilization. Sperm cell. Oocyte. The mechanism of fertilization. Zygote, cleavage, morula, blastocyst
4. Embryonic period and the beginning of organogenesis. Primitive streak. Gastrulation: early gastrula, late gastrula (neurula). Somitogenesis. Derivatives of ecto-, meso-, endoderm
- 5. Module 1 Quiz**
6. Epithelial tissue. Simple and stratified epithelia. Types of stratified epithelium. Classification of exocrine glands. Types of secretion
7. Connective tissues. General characteristics of connective tissue proper. Loose and dense connective tissue. Connective tissue with special properties
8. Bone and cartilage. Hyaline, elastic, fibrous cartilages. Organization of lamellar bone tissue. Blood supply. Intramembranous and endochondral osteogenesis
9. Blood. Morphological, functional, and quantitative characteristics of blood cells
10. Hemopoiesis. Blood cell development: embryonic and postnatal. Growth factors. Bone marrow

11. Muscle tissues. Skeletal muscle fiber as a symplast. Cardiac muscle tissue as functional syncytium. Sarcomere and its proteins. Smooth muscle cells and tissue
12. Neural tissue. Structure of neuron. Morphological classification of neurons. Neurons of central nervous system and ganglia. Glial cells
13. Nerve tissue of peripheral nervous system. Peripheral nerve: connective tissue sheaths, myelinated and nonmyelinated nerve fibers. Motor and sensory nerve endings

#### **14. Module 2 Quiz**

15. Central nervous system. The structure of spinal cord, cerebral and cerebellar cortex
16. Special sense organs. The structure of eyeball layers. The structure of cochlea and spiral organ of Corti. Macula and cristae. Taste bud
17. Skin and its appendages. The structure of epidermis and dermis. Morphology of sebaceous and sweat glands. The structure of hair and hair follicle
18. Cardiovascular system. Layers of blood vessel wall. Arteries and veins. Microcirculatory bed. Heart wall structure
19. Endocrine system-1. Pituitary gland and hypothalamo-hypophyseal system. Thyroid and parathyroid glands
20. Endocrine system-2. Adrenal glands: structure and hormones. Pancreatic islets. Corpus luteum of ovary
21. The immune system. Structural and functional characteristics of thymus, spleen, lymph nodes. Cells of the immune system

#### **22. Module 3 Quiz**

23. Digestive system-1. Morphological organization of digestive tube wall. Layers of tunica mucosa. Organs of the oral cavity (lip, tongue, palate, tooth)
24. Digestive system-2. Functional morphology of esophagus and stomach (cardiac, fundic, pyloric parts)
25. Digestive system-3. Structural features of small and large intestine. Cell types in epithelium of villi and crypts
26. Digestive system-4. Lymphoid tissue: single and multiple follicles (tonsils, appendix, ileum)
27. Digestive system-5. Digestive system glands: salivary glands, liver, pancreas
28. Respiratory system. The structure of airways wall, epithelium, pulmonary acinus and alveoli wall
29. Urinary system. Structural organization of the cortex and medulla of kidney. Blood supply. Renal corpuscle and nephron tubules. Collecting ducts, ureter, urinary bladder wall structure
30. Male reproductive system. Testis structure. Spermatogenic epithelium and spermatogenesis. The structure and function of epididymis, prostate gland
31. Female reproductive system. The morphology of ovary. Follicles at different stages of development. The formation and structure of corpus luteum. The structure of oviduct, uterus
32. Fetal membranes. Structure of the mature mammary gland. Structural organization of fetal and maternal parts of placenta. Amnion. Umbilical cord

#### **33. Module 4 Quiz**

**General test**

**Final exam**

#### **Text books and required supplies**

1. Danilov, R. K. Histology, Embryology, Cytology : Textbook / R. K. Danilov, T. G. Borovaya - Москва : ГЭОТАР-Медиа, . - 480 с. - ISBN 978-5-9704-6385-7. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970463857.html> (дата обращения: 15.10.2024). - Режим доступа : по подписке.

2. Histology, Embryology, Cytology. - Москва : ГЭОТАР-Медиа, 2022. - 768 с. - ISBN 978-5-9704-7055-8. - Электронная версия доступна на сайте ЭБС "Консультант студента" : [сайт]. URL: <https://www.studentlibrary.ru/book/ISBN9785970470558.html> (дата обращения: 15.10.2024). - Режим доступа: по подписке. - Текст: электронный
3. Зиматкин, С. М. Гистология, цитология и эмбриология. Атлас учебных препаратов = Histology, Cytology, Embryology. Atlas of practice preparations : учебное пособие / С. М. Зиматкин. - 2-е изд., испр. - Минск : Вышэйшая школа, 2020. - 87 с. - ISBN 978-985-06-3202-9. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9789850632029.html> (дата обращения: 15.10.2024). - Режим доступа : по подписке.

### **Evaluation and grading**

Student marks will be based on results of current controls (tests, and correct sketches of histological slides) and 4 post-module controls (quizzes), passing during the year course. Each quiz consists of slide test and written test (or interview, or classroom control work). Marks on these controls will contribute to final general exam mark.

#### **Tests**

Tests used for current control are evaluated in a 10-point system. The test score is set in proportion to the proportion of correct answers:

- 90-100% - excellent rating (9.0-10.0 points)
- 80-89% - "good" rating (8.0-8.9 points)
- 70-79% - "satisfactory" rating (7.0-7.9 points)
- Less than 70% of the correct answers are "unsatisfactory" (0-6.9 points).

Tests may be applicable for post-module control and cover the content of all material passed (the module quiz test, final output test, and general exam test). In such cases, the assessment is made on a 100-point scale.

#### **Classroom control work**

Classroom control work is used as form of quiz control and is evaluated in a 100-point system.

- "Excellent" (90-100 points) - the work answers the questions posed in full, the correct interpretation of the terms is given, key issues are considered. A clear and clear presentation of the material, clear and evidence-based argumentation, a built-up logic of answers. Clearly and graphically constructed graphs and charts.
- "Good" (80-89 points) - the work answers the question in full, the correct interpretation of the terms is given, the key questions of the topic are partially considered. Graphs and charts correctly reflect the answer to the question. The presentation is clear. The logic is not completely built and the argument is not always conclusive.
- "Satisfactory" (70-79 points) - the work answers the question posed, but not fully, the correct interpretation of not all terms is given, the key issues of the topic are partially considered, the construction of diagrams and graphs does not fully correspond to the task. The presentation is not entirely clear, the logic of the answers is confused.
- "Unsatisfactory" (0-69 points) - the work does not answer the question posed, the terms are misinterpreted, the key questions of the topic are not touched, the constructed graphs and schemes do not correspond to the question posed, the presentation is unclear, the logic is confused.

#### **Oral survey (interview)**

Interview is used as form of quiz control and as exam control and is evaluated in a 100-point system.

- "Excellent" (90-100 points) - student clearly sets out. He knows the answers to all the questions. Knows all the concepts. Clear and evidence-based reasoning. Built logic of answers. Correct speech. Read the required literature, competently applies.

- “Good” (80-89 points) – student knows the answers to all questions. He knows all the concepts, but not everything can be said correctly. Clearly, clearly stated. Not always clear and evidence-based reasoning. Built logic of answers. Correct speech. Correctly applies the basic concepts. He read the required literature, but can not always remember, apply.
- “Satisfactory” (70-79 points) - student does not know the answers to all questions. Knows not all concepts. Clearly stated. Not always clear and evidence-based reasoning. The logic of the answers is confused. Mistakes in speech. Not always correctly applies the basic concepts. Student did not fully read the basic literature.
- “Unsatisfactory” (0-69 points) - student does not know the answers to all questions. Own position is not defined. The arguments are contradictory. The logic of the answers is confused. Mistakes in speech. Weak vocabulary, can not express their thoughts. Does not know the basic concepts or did not read the basic literature, or read very little.

An oral survey (interview) can be used to monitor the mastery of individual topics. In this case, student knowledge is evaluated on a 10-point system.

### **Skill assessment**

The following types of control are used to evaluate learning outcomes in the form of skills:

- tasks for compiling a description of the microscopic image of slides;
- tasks for the identification of various histological elements using a microscope and the diagnosis of slides.
- 90-100 points - the student confidently works with a microscope and various magnifications, correctly names and describes in detail the structural elements of all slides;
- 80-89 points - the student confidently works with a microscope and various magnifications, correctly names, but finds it difficult to characterize all the structural elements of slides;
- 70-79 points - the student knows how to work with a microscope, identifies the slides, but it is difficult to describe the visible microscopic image;
- Less than 70 points - the student does not handle the microscope correctly, cannot identify and characterize the slide.

### **Examples of Module 1 controls**

#### *Tests*

Correct sequence of the oocyte membranes is:

- A) corona radiata — trophoblast — plasmalemma
- B) plasmalemma — corona radiata — amniotic membrane
- C) corona radiata — zona pellucida — plasmalemma
- D) zona pellucida — corona radiata — chorionic membrane

Answer is B

#### *Questions for control work or interview*

- 1) Structure and function of mitochondria
- 2) Structure of the blastocyst
- 3) Structure of the epithelial basement membrane

### **Examples of Module 2 controls**

#### *Tests*

Collagen precursors are secreted by:

- A) plasma cells
- B) mast cells
- C) fibroblasts
- D) adipose cells

Answer is C

#### *Questions for control work or interview*

- 1) Loose connective tissue: structure, localization, functions
- 2) Endochondral bone formation

- 3) Lymphocytes: number, life span, morphological characteristics, functions

### **Examples of Module 3 controls**

#### *Tests*

The myelin-forming cells within the central nervous system:

- A) oligodendrocytes
- B) astrocytes
- C) microglia
- D) Schwann cells
- E) ependymal cells

Answer is A

#### *Questions for control work or interview*

- 1) Cerebellar cortex: layers and their composition
- 2) Layers of retina
- 3) Structure of arteries

### **Examples of Module 4 controls**

#### *Tests*

In the exocrine pancreas can be found all cell types except:

- A) serous cells
- B) intercalated duct cells
- C) endocrine cells
- D) intralobular duct cells
- E) centroacinar cells

Answer is C

#### *Questions for control work or interview*

- 1) Structure of the stomach mucosa
- 2) Renal corpuscle: structure and function
- 3) Air-blood barrier: structure and function

### **Final exam**

Final exam consists of two parts: 1) assessment of knowledge in the discipline (test, interview) and 2) assessment of skills (diagnostics of histological slides). Assessment is based on a 100-point scale (the evaluation criteria are described above).

### **Example of exam ticket**

#### **№8**

- 1. Ovary: stages of follicular development
- 2. Esophagus: mucosa, submucosa, muscularis externa, adventitia
- 3. Fenestrated capillaries: morphology, localization
- 4. Platelets: morphology number, functions
- 5. Rough endoplasmic reticulum

### **Evaluation of exam answer**

- “Excellent” (90-100 points) - student clearly sets out. He knows the answers to all the questions. Knows all the concepts. Clear and evidence-based reasoning. Built logic of answers. Correct speech. Read the required literature, competently applies.
- “Good” (80-89 points) – student knows the answers to all questions. He knows all the concepts, but not everything can be said correctly. Clearly, clearly stated. Not always clear and evidence-based reasoning. Built logic of answers. Correct speech. Correctly applies the basic concepts. He read the required literature, but cannot always remember, apply.
- “Satisfactory” (70-79 points) - student does not know the answers to all questions. Knows not all concepts. Clearly stated. Not always clear and evidence-based reasoning. The logic of the answers is confused. Mistakes in speech. Not always correctly applies the basic concepts. Student did not fully read the basic literature.



- “Unsatisfactory” (0-69 points) - student does not know the answers to all questions. Own position is not defined. The arguments are contradictory. The logic of the answers is confused. Mistakes in speech. Weak vocabulary, cannot express their thoughts. Does not know the basic concepts or did not read the basic literature, or read very little.

### **Summary rating by discipline**

Results of final exam and results of current and module controls are taken into account and a point-rating system of KSMU is applied to calculate summary rating of discipline. Rating is recorded in the student's credit-book.

## **PHILOSOPHY**

**Teachers: Dr.Sc. Alexei Gurianov, Dr.Sc Svetlana Nagumanova, PhD Sarbinaz Gayazova**  
**Building, Department, classroom #** NUK, Department of History, Philosophy, Sociology, 350, 348

### **Contact details:**

- Telephone number: 89046724398 (Dr.Sc. Alexei Gurianov)
- E-mail address: alexeigurianov@rambler.ru
- Office and working hours: 348 (9-17)

### **Total hours** — 108:

- Lectures 14 hours;
- Practical classes 38 hours;
- Independent work 20 hours;
- Control 36 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1175>).

### **Course objectives:**

#### **The purpose of mastering the discipline**

The purpose of mastering the Philosophy discipline is formation of humanistic and scientific worldview, systematic and critical thinking, active and responsible behavior by means of a range of philosophical ideas and approaches developed throughout the history of philosophy.

#### **Tasks of the discipline:**

- Contribute to formation of comprehensive systematic view at the world and the man as its integral part;
- Familiarize with the diversity of outlooks, philosophical schools and doctrines;
- Develop the ability of critical analysis of approaches to worldview problems;
- Develop the ability to formulate precisely, argue and present one's own views in a logical and consistent manner.

### **Course topics:**

### **Calendar plan of lectures**

1. Philosophy - concept, genesis, subject matter, structure
2. Philosophy - features, functions, stages of development, benefits
3. Early Greek Philosophers (pre-socratics)
4. Hellenistic and Christian philosophy
5. Modern Metaphysics
6. 18-19th Century Philosophy
7. Ancient and Modern Ethics

### **Calendar plan of practical classes**

1. Historical interpretations of philosophy, main subject-areas are given together with a consideration of the dialogue that raises main points about philosophy, reasons of philosophizing and modern problems discussed with the help of philosophy.
2. Basic branches of philosophy, subdivision of philosophy, the place philosophy occupies among other types of historical worldviews. Origin of philosophy and the relationship between philosophy and science. Basic philosophical questions.
3. Metaphysics as the study of the nature of being; historical interpretations and main points about metaphysics, the derivation of the word. Comparison and contrast of the metaphysics of the three Milesians.
4. Comparison and contrast of the metaphysics of Heraclitus and Parmenides. Parmenides's way of thinking. Comparison and contrast of the metaphysics of the atomists, Anaxagoras, Empedocles.
5. Plato's metaphysics incorporates ideas from some of the other, earlier philosophers mentioned before. Identification of as many of those philosophers and ideas as possible. Explanation of two statements "The behavior of atoms is governed entirely by physical law." "Humans have free will." Examples of a Platonic Form other than mentioned in the lecture. Discussion on whether or not the forms really exists, and why. Some reasons for believing that a world of Forms exists separately from the world of concrete, individual things. Are appearances real for Plato? Are they real in fact?
6. Aristotle's first philosophy. What are the four Aristotelian causes of a baseball? Aristotle believed that if individual horses didn't exist, then there would be no such things as the Form horse. Is this correct? Discussion with the help of an excerpt from Aristotle's Metaphysics.
7. Explanation of Augustine's solution to the problem of evil, and determination of whether or not it is sound. Explanation and evaluation of Aquinas's reasons for believing that ultimate human happiness does not consist in wealth, worldly power, or anything in this life. Compare and contrast the views of the Academics and the Pyrrhonists. Module 1 test.
8. "Nothing can be known." What is a powerful objection to this claim? "I do not know whether or not knowledge is possible." Critical evaluation of this claim. Suggestion of an argument to defend some version of total skepticism. Creation ex nihilo. Some reasons for thinking that creation ex nihilo is impossible. Compare and contrast Plato's The Good, Plotinus's One, and Augustine's God. Explanation of the difference between realism and conceptualism.
9. "Modern science undermines metaphysical dualism." Explanation of this remark. Explain how all mental activity reduces to matter in motion, according to Hobbes. "The things that really are in the world outside us are those motions by which these seemings are caused," Explain and critically evaluate this assertion by Hobbes.
10. The relationship of the mind to the body, according to Spinoza. Berkeley's reasons for saying that sensible objects exist only in the mind. Are the qualities of sensible objects (e.g., size, color, taste) all equally "relative" to the observer?
11. Definition and explanation of dualism, materialism, idealism, and neutralism. Explain and critically evaluate either Descartes' "dream conjecture" or his "evil demon conjecture." Difference between primary and secondary qualities.

12. Do you ever observe anything other than your own perceptions? Explain. Explain what this means and what Hume's reasons were for holding it. Will the future resemble the past? Can you know that it will, or must you merely assume that it will?
13. Kant about the possibility of knowledge. The ordering principles of the mind. Things-in-themselves. If knowledge begins with experience, must it also rise from experience? Explain. Is it possible that we may someday experience an event that is in neither space nor time? If not, why not? Is it possible for extraterrestrial aliens to experience things that are not in space or time? Do infants have experience? Do cats? Fish? Explain. Can we have knowledge of things in themselves? Clarification of what you mean by "things-in-themselves."
14. Absolute Idealism: Hegel and Dialectical methodology. The notion of spirit and dialectic. The history of mankind as self-cognition of the Absolute. Triads and the human being as the vehicle of the absolute spirit.
15. The challenge of ethical relativism. Sophists and Socrates. Virtue ethics. Plato's ethical and political theories. Aristotle's ethical and political theories. Naturalism. Hedonism. Epicureanism. Stoicism. Morally good actions have in common? Defense of the view. "What is right is what you yourself believe is right." Critical evaluation of this statement.
16. The connection between virtue and happiness, in the philosophy of Plato. Explanation of how Plato's theory may be regarded as "complete." Happiness according to Aristotle. When can we be said to be virtuous, according to him? The connection between habit and moral character, for Aristotle. Compare and contrast of the ethical philosophies of Epicureanism and Stoicism. Evaluation of Aristippus's philosophy. (Excerpts from "Gorgias" by Plato)
17. Hobbes. Contractarianism. Egoism and altruism. Hume on moral judgements. Deontological ethics. Kant on reason and morals. Categorical imperative. Utilitarianism. Bentham and Mill. Nietzsche on two moralities. Beyond "good" and "evil". Do the consequences of an act determine whether it is good, or the intent with which the act has been taken? Or something else altogether? Kant held that there is no moral worth in helping others out of sympathy for them. What reasons are there for holding this view?
18. What does it mean to say that rational beings should be treated as ends and not as means? Was Bentham correct in saying that ought, right, good, and the like have meaning only when defined in terms of pleasure? Explain the difference between psychological hedonism and ethical hedonism. Was Mill correct in saying that some pleasures are inherently better than others? Explain the paradox of hedonism. What does Nietzsche mean when he says life is the will to power? Are moral value judgments merely expressions of taste? Explain. "There cannot be moral values if there is no God." Critical evaluation of this assertion.
19. Evolution of analytic philosophy: logical atomism, phenomenalism, and post-phenomenalist epistemology and metaphysics. Bertrand Russell, Ludwig Wittgenstein, John Dewey, Richard Rorty. Some reasons for believing that a human being is not a purely physical thing. If humans are purely physical things, could they have free will? Explanation. Assuming that it is possible to doubt the existence of physical things but not your own mental states, does that show that your mental states are not physical things? Module 2 test.

**Text books and required supplies:**

1. **Philosophy: The Power Of Ideas, 11th Edition / Brooke Noel Moore and Kenneth Bruder.** McGrawHill, 2023.
2. Humanly Possible: Seven Hundred Years of Humanist Freethinking, Inquiry, and Hope / [Sarah Bakewell](#). Penguin Press. 2023
3. Stanford encyclopedia of philosophy <http://plato.stanford.edu/>

**Evaluation and grading:**

Monitoring progress is carried by the end of each of 2 modules (MCQ test on the portal).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **Example of module No. 1. Ancient, Hellenistic and Medieval Ohilosophy**

1. Which of the following is the "fundamental metaphysical question"?

How should I live?

What can I know?

What is the nature of being?

What is the perfect form of government?

2. The question: “What is prior Mind or Matter?” refers to:

Epistemology

Ontology

Philosophy of science

Physics

3. ... was the first to come up with the idea of perfect, eternal reality

Plato

Heraclitus

Pythagoras

Empedocles

4. Who worked out a four element doctrine of origin of the world?

Leucippus

Empedocles

Anaxagoras

Thales

5. Which does *not* apply to Plato's metaphysics?

Two realms

Theory of Ideas

Indivisible Forms

No independent existence apart from particular objects

6. Which doctrine of St. Augustine was at odds with Neoplatonism?

The unchanging God

The Incarnation of Jesus Christ

The nature of evil

The timelessness of God

7. What wasn't among reasons Sextus said he had for thinking that one must suspend judgment on every issue?

We are never aware of any object as it exists independently of our perception

The thoughts and perceptions of one person differ from those of another

To every argument an equal argument is opposed

Nothing can be known for certain

### **Example of module No. 2 on the section of Modern Metaphysics and Contemporary Philosophy**

1. According to Hobbes, the source of knowledge is

Motion in internal objects

Motion in external objects

Motion in mental processes

All of the above

2. Hobbes said that voluntary actions are caused by

Mental activity

Desire

Perception of outer objects

Decisions

3. Locke said that secondary qualities of things are

Size and shape

Color and weight

Extension, number and sound

Color, smell and taste

4. The doctrine that "there's nothing in the intellect that wasn't first in the senses" was accepted by

The rationalists

Spinoza

The empiricists

Descartes

5. David Hume said that

All our knowledge is limited to what we experience and what we discover by reason

All our knowledge is limited to what we discover by reason

All our knowledge is limited to what we experience

Infinite knowledge is possible (in principle)

6. Which of the following claims would be *rejected* by Kant?

All knowledge arises from experience

Relative to the experienceable world, Kant was not a skeptic

Relative to *das Ding-an-sich*, Kant was a skeptic

Perceptions, to qualify as experience, must be connected or unified in one consciousness

7. The distinction between phenomena and noumena is most closely associated with

G. W. F. Hegel

Immanuel Kant

John Stuart Mill

David Hume

### EVALUATION OF THE MODULE ANSWER

The MCQ test comprises 30 questions and is designed be completed for 30 minutes as the time limit. The number of correct answers determines the final grade for the module:

27-30 correct answers are evaluated by excellent grade (91-100 with the step of 2,5 points per each correct answer);

23-26 correct answers are evaluated by excellent grade (81-90 with the step of 2,5 points per each correct answer);

19-22 correct answers are evaluated by excellent grade (70-80 with the step of 2,5 points per each correct answer).

The students that fails to be graded for the module may have a second chance at the end of the course before final examination

### SAMPLES OF EXAM TICKETS

#### Question card #1

Topic: **Definition of philosophy.**

- 1) What is the ancient Greek and Roman definition of philosophy?
- 2) What is the definition of philosophy in Middle ages?
- 3) What is the definition of philosophy by I.Kant?
- 4) Why philosophical problems cannot be solved? (Give examples)
- 5) Why philosophical questions have consequences for everyone? (Give examples)

#### Question card #2

Topic: **Main subject-areas of philosophy.**

- 1) List all the philosophical disciplines with definitions.
- 2) Illustrate each discipline with 2-3 questions appropriate to that discipline.
- 3) How did early Greek philosophers understand being?
- 4) What was the main theme of Kantian epistemology?
- 5) What is the essence of ethics of Epicurus.

### EVALUATION OF THE EXAM ANSWER

1. The evaluation criteria are as follows:

The correct and complete answer is "excellent";

The correct but incomplete answer is "good";

Incomplete answer with errors is "satisfactory";

The incorrect answer is "unsatisfactory";

Even if one module has not been passed, the student gets an "unsatisfactory" grade for the exam.

If all modules are successfully passed, the student starts the exam and takes an examination card.

2. The ticket consists of the theoretical task represented by three questions in accordance with the academic program of the discipline. The content of the discipline is structured in themes (sections). On the exam, the student is given the opportunity to view the academic program. Students are given 40 minutes to prepare a response to the questions in the card.

3. The interview with the teacher is conducted according to the following scheme: the teacher reads the student's written answer to the questions and then asks three additional questions (two of them are to test an understanding of the themes considered, the third one – beyond the card but within the program, to test knowledge of the discipline on the whole).

4. The Criteria for evaluating the response to questions:

<b>90-100 (excellent)</b>	clearly formulated personal position, combination of philosophical argumentation with textual information, correct use of scientific terminology, clear logical structure of the answer.
<b>80-89 (good)</b>	clearly formulated personal position, predominance of personal reflection over philosophical argumentation and textual information, the correct use of scientific terminology, clear logical structure of the work with insignificant faults
<b>70-79 (satisfactory)</b>	implicitly formulated personal position, predominance of personal reflection over philosophical argumentation and textual information, correct use of scientific terminology, implicit logic of work
<b>69 and less (unsatisfactory)</b>	implicitly formulated personal position, or lack of it, or a high share of borrowings, a lack of philosophical reasoning and terminology, implicit logic of work

*Note:* if the written answer is correct and complete, but the student's oral answers to the teacher's test questions are incorrect or incomplete, the final rating score is reduced.

5. If a student uses a cheat sheet, a mobile phone, headphones, a watch-cheat on the exam, then an act of violation of the procedure is drawn up. The student receives an "unsatisfactory" grade.

6. The final rating score of the student is calculated on the computer. It is transferred to the record books on the next day after the exam.

7. Retaking the exam in order to raise the grade is allowed with the permission of the Pro-rector for educational activities.

8. Pre-schedule passing of the exam in the discipline of Philosophy is allowed in special cases with the permission of the Dean's office and the head of the Department if appropriate documents are provided.

9. In the process of answering exam questions the teacher has the right to record the student's answers on a voice recorder. This procedure is carried out to avoid disagreement about the objectivity of assessing students' responses by the teacher.

## HUMAN ANATOMY

**Teachers: PhD Ilnaz Gazizov, PhD Zufar Safiullin, Alina Fayzrahmanova, Aleksandr Petrov, Radik Habibullin, Mariya Petrova**

**Building, Department, classroom #** Anatomy theatre, Department of Normal Anatomy

### **Contact details:**

- Telephone number: 89046612001 (PhD Ilnaz Gazizov)
- E-mail address: ilnazaziz@mail.ru
- Office and working hours: 6 (8-17)

**Discipline hours:** total - 360 h

Lectures – 60

Practical lessons – 144

Self-study – 120

Exam – 36

### **Course description:**

**Lecture** is a type of studying directed primarily for theoretical education of listeners. The aim of the lecture is to form basis for future study of the subject, systematization of knowledge, depicting interdisciplinary role and importance of topic, accentuation on most difficult and key problems. Lecture is directed for stimulation of students for active conscious self-study, search for knowledge, formation of creative thinking and preparation for work with advanced textbooks.

**Self-study** is needed for increasing, deepening, detailing and solidification of theoretical knowledge.

**Practical lessons** develop scientific thinking and speech, teach usage of anatomical terminology, and form basic practical skills.

### **Course objectives:**

The purpose of mastering the Human Anatomy is to develop students' knowledge of human anatomy and topographic anatomy, both of the body as a whole and of individual organs and systems of adults and children at different age periods based on modern achievements of macro- and microscopy.

### **Tasks of the discipline:**

To form knowledge in the field of:

- understanding topography, structure of organs and their anatomical and functional relations, taking into account age, gender and individual characteristics;
- development of the student's professional self-awareness, his\her ability to use the acquired knowledge in the analysis of medical problems and in the research activity as future specialist.

### **Course topics:**

#### **Calendar plan of lectures**

1<sup>st</sup> term:

1. Introduction into Human Anatomy.
2. Introduction into Osteology.
3. The structure of bone as an organ, development.
4. Synarthroses.
5. Diarthroses 1.
6. Diarthroses 2.
7. Introduction to myology.



8. Development of skeletal muscles. Accessory apparatus of muscles.
9. Clinical anatomy of neck, abdomen, thorax, back.
10. Clinical anatomy of upper and lower limbs.

2<sup>nd</sup> term:

1. General morphofunctional characteristics of the digestive system.
2. Development of the digestive system organs.
3. Anatomy of the respiratory system.
4. Anatomy of the organs of the urinary system.
- 5, 6 Anatomy of the reproductive organs.
7. Morphofunctional characteristics of the cardiovascular system.
8. Arterial system.
9. Venous system. Lymphatic system.
10. Blood circulation in the fetus.

3<sup>rd</sup> term:

1. Anatomy of the central nervous system.
2. Development of the nervous system in phylo- and embryogenesis.
3. Afferent pathways.
4. Efferent pathways.
5. Introduction to the peripheral nervous system.
6. General plan of the structure of the autonomic nervous system
7. I, II, III, IV, VI pairs of cranial nerves. Organ of vision.
8. X pair of cranial nerves. Parasympathetic part of the autonomic nervous system
9. The sympathetic part of the autonomic nervous system.
10. Pathways of the organ of vision, hearing and equilibrium.

### **Calendar plan of practical classes**

1<sup>st</sup> term:

1. Introduction to anatomy. Characteristics of the human skeleton.
2. Bones of the body. Bones of the upper limb.
3. Bones of the lower limb. Skeleton of the head. Bones of viscerocranium.
4. Bones of neurocranium.
5. Skull as a whole. Newborn skull.
6. Module 1 – Osteology.
7. General arthrosyndesmology.
8. Connection of the bones of the axial skeleton.
9. Connection of the bones of the upper limb.
10. Connection of the bones of the lower limb.
11. Muscles, fascia, topography of the head.
12. Muscles, fascia, topography of the neck.
13. Muscles, fascia, topography of the thorax, abdomen, back.
14. Muscles, fascia, topography of the upper limb.
15. Muscles, fascia, topography of the lower limb.
16. Module 2 – Locomotion apparatus.

2<sup>nd</sup> term:

1. Oral cavity, organs of oral cavity. Salivary glands.
2. Pharynx. Esophagus. Stomach.
3. Small and large intestine. Liver. Pancreas.
4. Peritoneum. Endocrine glands.
5. Upper and lower respiratory tract.

6. Lungs. Pleura.
7. Urinary organs.
8. Male reproductive organs.
9. Female reproductive organs.
10. Module 3 - Splanchnology.
11. Anatomy of the heart. Aortic arch, branches of the aortic arch.
12. Arteries of the upper limb.
13. Thoracic and abdominal parts of the aorta.
14. Arteries of the lower limb.
15. System of the superior and inferior vena cava.
16. Module 4 - Cardiovascular system.

### 3<sup>rd</sup> term:

1. Anatomy of the central nervous system. Development of the nervous system in phylo- and embryogenesis.
2. Spinal cord. Meninges of the spinal cord.
3. Rhombencephalon.
4. Midbrain. Diencephalon.
5. Telencephalon. Meninges of the brain.
6. Module 5 - Central nervous system.
7. Formation of the spinal nerves. Cervical plexus. Intercostal nerves.
8. Nerves of the upper limb.
9. Nerves of the lower limb.
10. I, II, III, IV, VI pairs of cranial nerves. Organ of vision.
11. Trigeminal nerve.
12. VII, IX, XI and XII pairs of cranial nerves.
13. Organ of hearing and equilibrium. Vestibulocochlear nerve.
14. X pair of cranial nerves. Parasympathetic part of the autonomic nervous system.
15. The sympathetic part of the autonomic nervous system.
16. Module 6 - Peripheral nervous system. Sensory organs.

### **Text books and required supplies:**

#### Main literature

1. Анатомия человека [Текст] : [учебник] / М. Г. Привес, Н. К. Лысенков, В. И. Бушкович. - Изд. 12-е, перераб. и доп. - Санкт-Петербург : СПбМАПО, 2011. - 720 с. 380 экз.
2. Human Anatomy [Text] : [Textbook] / M. G. Prives, N. K. Lysenkov, V. I. Bushkovich. - 12th edition - Saint-Peterburg : SpbMAPO, 2010. - 720 p. 179 copies.

#### Additional literature

1. Атлас анатомии человека [Текст] : учеб. пособие для студентов мед. вузов : в 4 т. / Р. Д. Синельников, Я. Р. Синельников, А. Я. Синельников. - Изд. 7-е, перераб. - Москва : Новая Волна : Издатель Умеренков, 2016 - Т. 1 : Учение о костях, соединении костей и мышцах. - 2016. - 348 с.
2. Атлас анатомии человека [Текст] : учеб. пособие для студентов мед. вузов : в 4 т. / Р. Д. Синельников, Я. Р. Синельников, А. Я. Синельников. - Изд. 7-е, перераб. - Москва : Новая Волна : Издатель Умеренков, 2016 - Т. 2 : Учение о внутренностях и эндокринных железах. - 2016. - 247, [1] с.
3. Атлас анатомии человека [Текст] : учеб. пособие для студентов мед. ин-тов : В 4 т / Р. Д. Синельников, Я. Р. Синельников. - М. : Медицина, 1989 - Т. 3 : Учение о сосудах. - 1992. - 231 с.

4. Атлас анатомии человека [Текст] : учеб. пособие : В 4 т. / Р. Д. Синельников, Я. Р. Синельников. - М. : Медицина, 1994 - Т. 4 : Учение о нервной системе и органах чувств. - 1994. - 319 с. 969 экз.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (written check-list with possible assessment of practical skills).

*Routine performance assessment* (oral discussion, tests, written answers for questions during classes) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Exams* are held in forms of test and practical assessment of acquired skills. Grading: 0-69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, assessment of his\her auditory class achievements, modules and results of exam.

### **Classroom rules:**

- Be respectful.
- Be careful with equipment and preparations.
- Be disciplined.
- Be prepared for the classes.
- Be involved, do not hesitate to ask questions.
- Look professional: you have to wear clean white coat and change shoes.
- Eating is not allowed in Anatomy theatre.
- Using phone is allowed only during brakes.

### **Example of check list for one of the modules (CNS №1)**

Maximum score is 70. Each term gives up to 4 points.

Note: all anatomical terms have to be in latin, absence or incorrect term cancels 2 points for each term.

Midbrain in latin -	2
Identify anatomical structures of hypothalamus, which are visible on inferior surface of brain:	
1	
2	4
3	4
4	4
5	4
	4
Identify cortical analyzers present in lobus frontalis facies superolateralis:	
1.	
2.	4
3	4
4	4
	4

Walls of III ventricle:	
1.	4
2.	4
3.	4
4.	4
5.	4
Recesses of III ventricle:	
1.	4
2.	4
3	4

### **Practical part №1**

Write all terms in latin if it is asked. Correct answer will give 3 points (latin term – 1,5 points; identification and showing – 1,5 or 3 points). Maximum score for practical part is 30 points.

№	Identify and show	show	latin
1.	Lower border of medulla oblongata -		
2.	Commissural fibers of diencephalon -		
3.	Border between parietal and frontal lobe -		
4.	Trigonum lemniscus lateralis		XXX
5.	End of columna fornicis ventrally -		
6.	Inferior projection of lateral ventricles -		
7.	Exit of V cranial nerve -		
8.	Cavity of midbrain -		
9.	Primary visual cortical center -		
10.	Sinus along posterior edge of ala minor os sphenoidale –		
Number of correct answers:			
Result:			

### **Standard of answers to check list for CNS №1**

Midbrain in latin - mesencephalon	2
Identify anatomical structures of hypothalamus, which are visible on inferior surface of brain:	
1 tuber cinereum	4
2 corpora mamillaria	4
3 chiasma opticum	4
4 tractus opticus	4
5 hypophysis	4
Identify cortical analyzers present in lobus frontalis facies superolateralis:	
1 general center for movements	4
2 writing	4
3 speaking	4

4 coordination of movements of eyes, eyes and neck	4
Walls of III ventricle:	
1. lamina terminalis	4
2. tela choroidea on fornix	4
3. hypothalamus	4
4. thalamus	4
5. commissura habenularum et commissura posterior	4
Recesses of III ventricle:	
1. recessus pinealis	4
2. recessus infundibuli	4
3 recessus supraopticus	4

### ***Practical part №1***

№	Identify and show	show	latin
1.	Lower border of medulla oblongata – decussatio pyramidum, exit of radices n. spinalis I, foramen magnum		
2.	Commissural fibers of diencephalon – adhesio interthalamica		
3.	Border between parietal and frontal lobe – sulcus centralis		
4.	Trigonum lemniscus lateralis		XXX
5.	End of columna fornicis ventrally – corpora mamillaria		
6.	Inferior projection of lateral ventricles – cornu inferius		
7.	Exit of V cranial nerve – between pons et pedunculi cerebellaris media; linea trigeminofacialis		
8.	Cavity of midbrain – aqueductus mesencephalici		
9.	Primary visual cortical center – sulcus calcarinus		
10.	Sinus along posterior edge of ala minor os sphenoidale – sinus sphenoparietalis		
Number of correct answers:			
Result:			

### **EVALUATION OF THE MODULE ANSWER**

The check-list for module has theoretical and practical parts. Theoretical part has open questions, where student has to write correct answer for anatomical structures in Latin. Theoretical part has a maximum 70 points to gather. In practical part student has to be able to identify and show to the teacher anatomical structures, which are asked. It has 30 points to gather. Total – 100 points for the check-list.

If student gathers 70 points and above, the module is considered to be passed. If student gathers less than 70 points, he\she has second and third attempt on next classes with decreasing coefficient of minus 10 points. Modules, which are not passed can be written again during exam sessions with no decreasing coefficient.

### **TESTS OF EXAM**

Examples of tests can be found on educational portal:  
<https://e.kazangmu.ru/course/view.php?id=1523>.

Questions for practical part of exam are available on:  
[https://kazangmu.ru/files/anatom/practice\\_LFF\\_2022.pdf](https://kazangmu.ru/files/anatom/practice_LFF_2022.pdf).

### **EVALUATION OF EXAM RESULTS**

Tests (theoretical part of exam) is considered to be passed if student scores 70 and above. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Practical part of exam is considered to be passed if student scores 70 and above. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Final result for the discipline is calculated on special program for each student and takes into account all achievements: practical class and lecture attendance, average mark for class work, modules, exam. Discipline is considered to be passed if student scores 70 and above. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

## **MEDICAL INFORMATICS**

**Teachers: Ildar Iskandarov, Azalya Amirova, Dinara Nigmatullina**

**Building, Department, classroom #** NUK, Department of Public Health and health organization, 311, 313

### **Contact details:**

- Telephone number: 236-08-81
- E-mail address: oz-kgmu@mail.ru
- Office and working hours: 306, 308 (9-17)

**Course: 2**

**Semester: 3**

**Discipline hours:** total - 72 h

Lectures – 10 h

Practical lessons – 30 h

Self-study – 32 h

Exam – 36 h

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University.

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the discipline: to provide the knowledge and skills necessary for a future doctor to work in the field of public health. To form students' knowledge about the essence of information, informatics and information processes; to provide information about modern information technologies in medicine and healthcare; to study the principles of storage, search, processing and analysis of biomedical information, including using computer technology; to master the methods of mathematical statistics necessary for the study of other academic disciplines and acquisition of professional medical qualities

### **Tasks of the discipline:**

To teach students:

- study of methods, software and hardware of medical statistics used at various stages of obtaining and analyzing biomedical information
- provide students with information about modern computer technologies used in medicine and healthcare
- provide knowledge about informatization methods used in the therapeutic and diagnostic process
- be able to use Internet for the search of medical and biological information

### **Course topics:**

#### **Calendar plan of lectures**

1. Medical statistics, its importance in assessing the health of the population and the activities of health authorities and institutions.
2. Graphic representations in medicine and healthcare.
3. Calculation, analysis and evaluation of indicators of the variation series, dynamic series, standardization
4. Organization and stages of statistical research.
5. WHO. Demography

#### **Calendar plan of practical classes**

1. Medical statistics, its importance in assessing the health of the population and the activities of health authorities and institutions. Relative values in the practice of a doctor.
2. Graphic images in medicine and healthcare. Visual representation of the results of a statistical study.
3. Calculation, analysis and evaluation of the indicators of the variation series. Average values: arithmetic mean, mode, median. The standard deviation. Coefficient of variation. The normal Gaussian distribution.
4. Application of standardization methods in medicine. The methodology of the direct standardization method
5. Analysis of dynamic series indicators.
6. Parametric methods for assessing the significance of statistical research results
7. Correlation analysis. Organization and stages of statistical research. Determination of the sample size for the implementation of medical and statistical research.
8. Organization and stages of statistical research. Determination of the sample size for the implementation of a medical statistical study
9. Introduction to medical informatics. Definitions, terminology. The concept of information
10. Informatization of healthcare.
11. A unified information space for healthcare and the social sphere. The movement of information in healthcare and medicine (general characteristics of the processes of collecting, transmitting, processing and accumulating information in the healthcare system).
12. Regulatory and legal support for healthcare informatization. Basic concepts and definitions in the field of information security and information protection.
13. Medical information systems. Medical and technological systems for monitoring and controlling body functions.
14. Information systems of medical institutions. Information systems in health management at the territorial and federal levels.
15. Telecommunication technologies and Internet resources in medicine. Telemedicine.

#### **Text books and required supplies:**

1. Intelligent Systems for Healthcare Management and Delivery / Nardjes Bouchemal. – IGI Global, 2019. – 377. – ISBN // 9781522570714
2. Mobile Health Applications for Quality Healthcare Delivery / Moumtzoglou, Anastasius. - IGI Global, 2018. – 327. – ISBN // 9781522580218
3. Improving Usability, Safety and Patient Outcomes with Health Information Technology :From Research to Practice / Bliss, Gerry-Bartle-Clar, John A.-Lau, Francis. – IOS Press, 2019. – 548. – ISBN // 978-1-61499-950-8

4. Health Informatics Meets EHealth : Biomedical Meets EHealth – From Sensors to Decisions  
Proceedings of the 12th EHealth Conference / Schreier, Günter-Hayn, Dieter. - IOS Press, 2018. – 248. – ISBN // 978-1-61499-857-0
5. Data, Informatics and Technology: An Inspiration for Improved Healthcare / A. Hasman-P. Gallos-J. Liaskos-M.S.Househ-J.Mantas. - IOS Press,2018. – 251. – ISBN // 978-1-61499-879-2
6. Informatics Empowers Healthcare Transformation / J. Mantas-A. Hasman-G. Gallos. - IOS Press, 2017 – 238. – ISBN // 978-1-61499-780-1
7. Informatics for Health: Connected Citizen-Led Wellness and Population Health / R. Randell-R. Cornet-C. McCowan. - IOS Press, 2017. – 235. – ISBN // 978-1-61499-752-8
8. Medical Statistics at a Glance / A.Petrie-C.Sabin. – Blackwell Publishing, 2005. – 157. – ISBN // 978-1-4051-2780-6 URL:  
[https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.cmu.edu/cmua/Wetenschap\\_files/Medical%2520Statistics%2520at%2520a%2520Glance%2520nd%2520Ed.pdf&ved=2ahUKEwiQ5viJ0KeJAXXgVKQEHaN5BysQFnoECBcQAQ&usg=AOvVaw3m-6V0jZsQdzh13jRU0ujs](https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.cmu.edu/cmua/Wetenschap_files/Medical%2520Statistics%2520at%2520a%2520Glance%2520nd%2520Ed.pdf&ved=2ahUKEwiQ5viJ0KeJAXXgVKQEHaN5BysQFnoECBcQAQ&usg=AOvVaw3m-6V0jZsQdzh13jRU0ujs)

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Test (final)* are held in forms of problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes



### **Level 1 – assessment of knowledge**

The following types of control are used to evaluate learning outcomes in the form of knowledge:  
— test;

Examples of tasks:

Medical informatics is:

-the science that studies the quantitative side of mass phenomena;

- mathematics;

-prevention;

- Hygiene.

*Evaluation criteria:*

"Excellent" (90-100 points) "Good" (80-89 points) "Satisfactory" (70-79 points) "Unsatisfactory" (0-69 points).

### **Level 2 – assessment of skills**

The following types of control are used to evaluate learning outcomes in the form of skills:

— case tasks;

Examples of tasks:

- Calculate the required number of round-the-clock inpatient beds for children. The total population is 61,800, children - 12,200. The standard of provision of pediatric beds is 113.74 per 1000 residents.

A simple bed, due to the turnover of the bed, is planned for 1 day. The average length of a patient's stay in a bed is 9 days. 2500 deliveries were delivered at the maternity hospital, including 401 with surgical interventions. Among the surgical interventions there were 66 cesarean sections. 2 cases of maternal mortality have been registered.

Calculate:

1. The proportion of surgical interventions.
2. The proportion of cesarean sections.
3. Maternal mortality rate.
4. Give a conclusion.

*Evaluation criteria:*

"Excellent" (90-100 points) – the task is clearly completed, your own position is formulated, the scientific terminology is used correctly. "Good" (80-89 points) – the task is clearly completed, but one's own position is not formulated, scientific terminology is correctly used.

"Satisfactory" (70-79 points) – the task is not fully completed, one's own position is not formulated, scientific terminology is not correctly used. "Unsatisfactory" (0-69 points) – the task has not been completed, one's own position has not been formulated, scientific terminology has not been used correctly.

### **Level 3 – assessment of skills**

The following types of control are used to evaluate learning outcomes in the form of skills:

— tasks for decision-making in a non-standard situation (situations of choice, multiple alternatives to solutions;

Examples of tasks:

Clinical trials of a new drug that can be used in the applied treatment regimen instead of an old drug available on the market, but less effective, were conducted in a medical organization. Suggest a method of economic justification for the need to use a new drug.

*Evaluation criteria:*

"Excellent" (90-100 points) – the answer is correct, scientifically reasoned, with links to the topics covered. "Good" (80-89 points) – the answer is correct, scientifically reasoned, but without references to the topics covered. "Satisfactory" (70-79 points) – the answer is correct, but not scientifically reasoned, or the answer is incorrect, but an attempt is presented to substantiate it

from alternative scientific positions covered in the course. "Unsatisfactory" (0-69 points) – the answer is incorrect and not scientifically reasoned.

## NORMAL PHYSIOLOGY

**Teachers: Prof. Mukhamedyarov Marat Aleksandrovich, Prof. Petrov Aleksey Michailovich, PhD Telina Evelina Nicolaevna, PhD Martinov Alexandr Vladimirovich, PhD Nabatov Alexey Anatolievich, Khabibrakhmanov Aidar Nazimovich, Nagiev Kerim Kazbekovich, Talan Matvei Sergeevich, Ponomareva Daria Nicolaevna, Bilalova Diana Faritovna, Vavilov Dmitrii Nicolaevich**

**Building, Department, classroom #** Universitetskaya, 13, Department of Normal Physiology, 310 - 315

### **Contact details:**

- Teacher - telephone number: 89600365142 (PhD Telina Evelina Nicolaevna)  
E-mail address: evelinatelina@mail.ru
- Lecturer - telephone number: 89063201140 (Prof. Petrov A.M.)  
E-mail address: fysio@rambler.ru
- Office and working hours: Universitetskaya, 13, 325, 327 (9-17)

### **Total hours – 252 h:**

Lectures: 38 h;

Practical classes: 105 h;

Independent work – 73 h;

Control – 36 h

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University <https://e.kazangmu.ru/course/view.php?id=1917> .

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the **Normal Physiology** discipline are formation of systematic knowledge about the vital functions of the whole organism and it's individual parts and the mechanisms of their regulation in interaction with each other and with environmental factors, on the physiological bases of research methods used in the functional diagnosis and the study of body functions; formation the skills of interpretation of basic physiological principles and basic methods of physiological functions examination, which submitted to the activities of the all organism systems.

### **Tasks of the discipline:**

To form knowledge in the field of:

- the basic physiological principles, which submitted to the activities of the all organism, it's systems, tissues and cells;
- the common biological mechanisms of regulation of the vital activity of the human, that providing the adaptation, homeostasis and health care;
- formation of the skills with the educational and scientific literature by themselves, acquaint with a basic methods of physiological functions examination.

### **Course topics:**

Section 1. Membrane Physiology, Nerve and Muscles.

Section 2. The Central Nervous System.

Section 3. The Sensory System.

Section 4. The Heart and Circulation.

Section 5. The Blood.

Section 6. The Respiratory System.

Section 7. The Digestive System.

Section 8. The Urinary System.

Section 9. The Endocrine System.

Section 10. Metabolism and Thermoregulation.

### **Calendar plan of lectures**

#### **III semester**

1. The biological membrane. Transport through the cell membrane.
2. Membrane potential and action potentials.
3. Mechanisms of transmission in synapses.
4. Physiological properties of skeletal and smooth muscles.
5. The structure and functions of nerve fibers.
6. General principles of coordination of body functions by central nervous system.
7. Motor functions of the central nervous system.
8. Consciousness, thinking. Memory. Sleep. Emotions.
9. Morphological and functional features of the organization of the heart.
10. Cardiac cycle. ECG.

#### **IV semester**

11. Physiology of blood vessels. Arterial pulse. Venous pulse. Microcirculation.
12. Vascular tone.
13. Arterial pressure regulation.
14. The role of the blood in maintaining homeostasis. Red blood cells. Hemoglobin.
15. White blood cells. Immune system.
16. Hemostasis.
17. The respiratory physiology.
18. Gases exchange.
19. The gastrointestinal system.

### **Calendar plan of practical classes**

16. Physiology of the excitable cells. The cell membrane structure. Basic mechanisms of passive and active transport (the concentration difference, diffusion, ionic pump, secondary active transport).
17. Membrane potential. Equilibrium K<sup>+</sup> potential. Microelectrode and patch-clamp methods. Action potential. The phases of action potential. The threshold. The refractory period. The «all-or-none» law. The phenomenon of accommodation. The strength-duration curve.
18. Physiology of the skeletal and smooth muscles. Structure, morphological (sarcomere) and physiological (motor units) units of skeletal muscles. Excitation-contraction coupling. Cross-

- bridges formation. Role of the calcium ions and ATP in the mechanism of muscle contraction. Rigor mortis.
19. The neuromuscular junction. Releasing of acetylcholine from axon terminals. The “end-plate potential” and excitation of the skeletal muscle fiber. Role of cholinesterase Pre- and postsynaptic mechanisms of the effects of the biological active drugs. Ionotropic and metabotropic receptors.
  20. Morphological and physiological features of the nerve fibers. Propagation of the action potential along myelinated and unmyelinated nerve fibers. The laws of propagation of AP.
  21. Module on topics 1-5.
  22. The main functions of central nervous system CNS. Neuronal theory of CNS structure. Interneuronal synapses. Neurotransmitters in CNS. Excitation and Inhibition in CNS. The neural centers (occlusion, spatial facilitation, convergence, divergence, reverberation). Reflex arch. Reflexes of spinal cord.
  23. The vital centers of the medulla oblongata: vasomotor center, cardiac control center, respiratory center. Reflexes of medulla oblongata. Static and statokinetic reflexes. Midbrain. The role of Cerebellum and Basal nuclei in motor control. Clinical abnormalities of the Cerebellum.
  24. Functions of the Reticular Formation. The significance of the Thalamus in processing and transmission of sensory signals. The significance of the Hypothalamus in regulation of autonomic, endocrine, somatic and emotional functions. Hypothalamohypophyseal system and its functional significance. Structure and functions of the Cerebral cortex. Motor, sensory and associative areas. Cerebral lateralization. Electroencephalogram. Clinical use of the electroencephalogram.
  25. Structures and functions of the limbic system. The role of limbic system in formation of emotions, behavior and memory. Memory, and its types. classification of memories. Physiological mechanisms underlying memory formation. Sleep. Slow wave sleep and paradoxical (REM) sleep. Basic theories of sleep: role of the reticular activating system, neuronal centers, transmitters, etc.
  26. Conditioned reflexes, their biological role and classification. The mechanism of formation of conditioned reflexes. The inhibition of the conditioned reflexes. The types of higher nervous activity (by I.P.Pavlov and Hippocrates).
  27. Visual perception. Optic system of eye. Pupil and iris contraction reflex. Visual accommodation. Structure and function of retina. Photoreceptors. Blind spot. Color-blindness. Space perception.
  28. Somatosensory perception. Receptive field of sensory neuron. Touch and temperature sensitivity. Smell and taste perception. Thresholds of sensitivity. Functional interrelation between smell and taste perception.
  29. Module on topics 7-11.
  30. Physiology of the Heart. Electrical activity of the heart. The cardiac cycle. Pressure changes during the cardiac cycle. Atrioventricular and semilunar valves. Conducting tissues of the heart. Excitation - contraction coupling in cardiac muscle.
  31. The electrocardiogram (ECG). ECG leads. ECG waves, segments, periods. Basic interpretation of the ECG. Heart sounds and Heart murmurs.
  32. Intrinsic and extrinsic control of the cardiac functions. Intrinsic autoregulation of the heart (Frank-Starling law). Intracardial and extracardial reflexes. Sympathetic and parasympathetic effects.
  33. Module on topics 15-17.
  34. The classification of the blood vessels. Parameters of hemodynamics. The Poiseuille's equation. Blood flow in different parts of vascular bed. Laminar and turbulent blood flow. Arterial blood pressure. Blood pressure measurement. Systolic, diastolic, pulse, mean arterial pressures.
  35. Arterial blood-pressure curve. Endothelial exchange processes (Starling's relationship). Exchange of fluids via capillaries and venules. Causes of edema.

36. Regulation of the circulation. Vasoconstriction and vasodilatation. Local regulation of blood flow. Neuronal and hormonal control of circulation.
37. Module on topics 19-21.
38. Composition and function of blood. plasma. Flow properties of blood. Red blood cells. The formation of blood cells.
39. White blood cells. Immune system. Nonspecific and specific immunity.
40. Blood groups: AB0 system, Rh system. Blood transfusion.
41. Hemostasis. Platelet-mediated hemostasis. Blood clotting. Fibrinolysis. Anticoagulants.
42. Module on topics 23-26.
43. Lung function, respiration. External respiration. Mechanics of breathing. Respiratory muscles. Pleural pressure. Surface tension, surfactant. Lung volumes and their measurement.
44. Pulmonary gas exchange. O<sub>2</sub> and CO<sub>2</sub> transport in blood. O<sub>2</sub> dissociation curve: Respiratory control.
45. Saliva (functions, production, secretion). Mechanism and control of saliva secretion. Deglutition. Stomach structure and motility. Gastric juice. HCl secretion by parietal cells.
46. Small Intestinal Function. Pancreas. Pancreatic secretions. Pancreatic enzymes. Control of pancreatic juice secretion. Liver. Bile components and hepatic secretion of bile. Enterohepatic circulation of bile salts. Digestion and absorption. Large intestine, defecation. Endocrine and paracrine hormones and neurotransmitters control GI functions.
47. Module on topics 30-32.
48. Kidney Structure and Function. Renal Circulation. Glomerular filtration and clearance. Transport processes at the nephron. Reabsorption, excretion and urine concentration. The kidney and acid–base balance. Renin–angiotensin system.
49. Endocrine system. Humoral signals: control and effects. Hypothalamic–pituitary system. Hormonal control of blood glucose concentration. Thyroid hormones. Calcium and phosphate metabolism. Adrenal gland. Hormonal control of the menstrual cycle.
50. Thermal balance. Energy metabolism and calorimetry. Physiological constants (test)

#### **Text books and required supplies:**

1. Ganong's Review of Medical Physiology. 26th Edition. MC Graw Hill. 2019. 1792p. ISBN-10: 978-1-26-012241-1.
2. Hall J. Guyton and Hall Textbook of Medical Physiology. 13rd Edition. Elsevier. 2016. 1046p. ISBN 13:9781455770052.
3. W., Boulpaep E. Medical Physiology. 3rd Edition. Elsevier. 2016. 1312p. eBook ISBN: 9780323391597
4. Educational portal course: Normal Physiology for faculty of General Medicine <https://e.kazangmu.ru/course/view.php?id=1917>

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, practical work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given

not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of MCQ test (one correct answer). Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of the question card of the module**

#### ***Example of the question card of the module No.1. Membrane Physiology, Nerve and Muscles***

1. The structure and the functions of the cell membrane. Ion channels, types, functions and mechanisms of activation.
2. Mechanism of skeletal muscle contraction.

#### ***Example of the question card of the module No.2. The Central Nervous System***

1. Inhibition in CNS. Inhibitory neurons, inhibitory synapses, inhibitory postsynaptic potentials (IPSPs). Interaction of EPSPs and IPSPs at the neurons. The role of inhibition in CNS.
2. Electroencephalography. The different types of EEG waves. Clinical use of the electroencephalography.

#### ***Example of the question card of the module No.3. The Heart***

1. The role of the heart in blood circulation. Systemic and pulmonary circulation. Physiological parameters of cardio-vascular system.
2. The influence of parasympathetic nervous system on heart functions. Effects of right and left vagus nerves on the heart activity.

#### ***Example of the question card of the module No.4. The Vessels***

1. Blood pressure, values in different parts of vascular bed. Invasive and non-invasive methods of blood pressure measurement.
2. Local mechanisms of blood flow regulation. Myogenic autoregulation. The role of vascular endothelium in the regulation of local blood flow.

#### ***Example of the question card of the module No.5. The Blood***

1. Composition of blood. Volume of blood. Hematocrit. The physical and chemical characteristics of blood. Buffer systems of blood.
2. Hemoglobin: structure, functions, types. Compounds of hemoglobin. Metabolism of hemoglobin.

#### ***Example of the question card of the module No.6. The Digestive System***

1. Functions of digestive system: motility, secretion, digestion, absorption, storage, elimination.
2. Secretion of bile by the liver. Enterohepatic circulation.

### **Evaluation of the module answer**

The question card of the module consists of 2 questions: problem cases, practical exercises, oral and written questions or their combination.

1 correct answer - 50 points

**Total for module: 100 points**

### **Evaluation of knowledge, abilities and skills**

#### **- MCQ Test**

##### Example:

1. Activation of a sensory nerve from the muscle spindle caused contraction of the extensor muscle and relaxation of the flexor muscle. The relaxation of the flexor muscle is an example of: A. negative feedback inhibition; B. postsynaptic inhibition; C. presynaptic inhibition; D. indirect inhibition.

*Correct answer: B.*

Evaluation criteria: The score on the test is set in proportion of correct answers: 90-100% - score "excellent" 80-89% - score "good" 70-79% - score "satisfactory" Less than 70% of correct answers – score "unsatisfactory".

#### **- Oral examination**

##### Example:

"Gas exchange in the lungs and tissues"

Evaluation criteria: "Excellent" (90-100 points) – The student is fully proficient in the basic material, possesses additional information, is able to analyze physiological processes and mechanisms, reveal their significance and interrelation with other organs and systems. "Good" (80-89 points) – The student knows the basic material, but does not fully possess additional information. The answer contains minor errors in the logical sequences. "Satisfactory" (70-79 points) – The student partially owns the material, makes mistakes in terminology, logical sequences, physiological mechanisms, the significance of physiological processes and their relationship with other organs and systems. "Unsatisfactory" (0-69 points) – The student has scattered knowledge with significant errors in physiological processes and mechanisms, makes mistakes in terminology, cannot analyze the significance of physiological processes.

#### **- Reports**

##### Example:

"Regulation of blood pressure"

Evaluation criteria: "Excellent" (90-100 points) – the report fully reveals the topic, the student tells, practically without looking at the text and answers all additional questions. "Good" (80-89 points) – the report reveals the topic, but requires additions, the student tells based on the text, but without reading it out and answers all additional questions: "Satisfactory" (70-79 points) – the report reveals the topic, but requires additions, the student cannot answer most of the additional questions, partially reads the text during the story. "Unsatisfactory" (0-69 points) – the report does not disclose the topic, the student cannot answer most of the additional questions, reads out the text.

#### **- Case-study**

##### Example:

A patient suffering from anemia comes to his physician complaining of frequent bouts of gastroenteritis. A blood test reveals antibodies directed against gastric parietal cells. The anemia in this patient is attributable to hyposecretion of which gastric product? Explain the mechanism.

*Correct answer: Intrinsic factor.*

Evaluation criteria: "Excellent" (90-100 points) – the correct answer is given, the essence and mechanisms of physiological processes are explained, their significance for the normal functioning of organs and systems is revealed, if necessary, an analysis of physiological constants and laboratory results is given, the student uses additional information. "Good" (80-89 points) – a short correct answer is given, the essence and mechanisms of physiological processes are explained, their significance for the normal functioning of organs and systems is revealed, if necessary, an analysis of physiological constants and laboratory results is given, the student does not use additional information. "Satisfactory" (70-79 points) – a short answer to the question is given, mistakes are made, the essence of physiological processes is not explained, an incomplete analysis of physiological constants and laboratory results is given. "Unsatisfactory" (0-69 points) – an incorrect answer is given, the problem is not solved.

### **Example of exam ticket**

#### **Card N1**

1. Which part of the ECG corresponds to ventricular repolarization? a. The P wave; b. The QRS duration; c. The T wave
2. The second heart sound is caused by: a. closure of the aortic and pulmonary valves; b. vibrations in the ventricular wall during systole; c. ventricular filling; d. closure of the mitral and tricuspid valves.
3. The main important excitatory neurotransmitter in CNS is: a. glycine; b. GABA; c. glutamate; d. acetylcholine
4. Which of these statements about hypothalamic-releasing hormones is **false**? a. They are synthesized in the hypothalamus; b. They are transported by portal veins to the anterior pituitary; c. They stimulate the secretion of some specific hormones from the posterior pituitary.
5. What type of nerve fiber has the highest conduction velocity? a) Autonomic fibers; b) Sensory fibers; c) Somatic motor fibers

#### **Evaluation of exam answer**

The question card of the exam (MCQ) consists of 50 questions (only one correct answer).

1 correct answer - 2 points.

Total for exam: 100 points.

## **BIOCHEMISTRY**

**Teachers: Prof. Rustem Baikeev, associate professor Alexey Nabatov, associate professor Rose Nabiullina, assistant professor Zarina Mukhametzyanova**  
**Building, Department, classroom Tolstogo st. 6/30; Biochemistry department: 319, 330, 331**

#### **Contact details:**

- Telephone number: 89053141176 (Prof. Rustem Baikeev)
- E-mail address: baykeev@mail.ru
- Office and working hours: 320 (9-17)

#### **Total hours — 252:**

- Lectures 38 hours;
- Practical classes 105 hours;
- Independent work 73 hours;
- Control 36 hours.



### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=136>).

### **Course objectives: The purpose of mastering the discipline**

The main purpose is to teach students to use in their further study of alternative disciplines and professional activity their knowledge concerning chemical composition and metabolic processes which occur in the human's body cells and tissues as the indices that allow to differ the normal patient's state and a disease; to teach the students to realize the actual basis molecular mechanisms that determine normal physiological functions, and a number of pathological conditions in the cases of their disturbances as well.

### **Tasks of the discipline:**

The whole Biochemical course is divided onto the theoretical and practical parts. The principal tasks of theoretical part is to give the knowledge concerning structure, physical and chemical properties, metabolism and functions of the abundant organic compounds, forming the tissues and organs of human body.

The principal task of practical classes is to teach students to use obtained theoretical biochemical knowledge in their practical work as physicians; to make them to be acquainted with the most frequently used clinical and biochemical techniques and to make them to be able to resolve certain medical problems by means of biochemical reveal of a number of protein, carbohydrate and lipids compounds in blood and urine; to form a true notion of generally accepted biological phenomena and world-wide shared philosophy of life.

### **Course topics:**

#### **Calendar plan of lectures**

1. Introductory lecture. History of Biochemistry as a Science. Essentials of modern Biochemistry. Chemistry of amino acids and peptides. Structure and properties of compound proteins.
2. Physical and chemical properties of proteins. Methods of protein fractioning and purification.
3. Functions of proteins. Protein – ligand interactions. Proteins as receptors. Transport proteins, antibodies, hormones. Contractile proteins. Chemistry of nucleic acids.
4. Enzymes: History of the issue development. The conception of enzymatic catalysis. The concept of an enzyme active center. Properties of enzymes. Velocity of enzymatic reactions. Inhibitors. Classification of enzymes. Isozymes. The role of enzymes in Medicine. Biological oxidation.
5. Mitochondrial electron transfer (Keilin's respiratory) chain. Metabolic pathways in human organism. Usage of unstable isotopes ( $^{14}\text{C}$  and  $^{131}\text{I}$ ) in biochemical studies. Digestion, absorption, metabolism, functions, and biological role of carbohydrates. Transport to cells. GLUT – GLUT5 glucose transporters to cells. Functions of insulin.
6. Aerobic catabolism of glucose. Specificities of glucose transformation to pyruvate. Oxidative decarboxylation of pyruvate. Citric acid cycle. Energetic yield of glucose aerobic catabolism. Pentosephosphate pathway. Formation of NADPH and biosynthesis of pentoses.
7. Anaerobic glycolysis. Lactic fermentation. Glycogenolysis. Spirituous fermentation.
8. Gluconeogenesis. Glycogenesis. Cori cycle. Particularities of glucose metabolism in different tissues and cells: erythrocytes, brain, muscles, adipose tissue, liver.

9. Hormonal regulation of carbohydrate metabolism: the roles of insulin, glucagon, epinephrine, adenylyl cyclase system, protein kinases. Protein glycosylation.
10. Classification of lipids: protolipids, phospholipids, prostaglandins. Lipid functions, digestion and metabolism. The role of bile acids in lipid digestion. Chylomicrons. Lipoprotein lipase. Fatty acids catabolism. Biosynthesis and catabolism of ketone bodies.
11. Biosynthesis of fatty acids, triacylglycerols, phospholipids. Steroids. Cholesterol spread in human tissues. Cholesterol biosynthesis. Metabolism of cholesterol and its excretion ways. Classification of blood lipoproteins. Atherosclerosis. Xanthomas. Metabolic blocks (Niemann–Pick disease, Gaucher’s disease).
12. Introduction to metabolism of proteins. Protein digestion. Nutritious value of proteins. Essential and non-essential amino acids. Metabolic flow of amino acid nitrogen. Deamination. Transamination. Decarboxylation.
13. Biosynthesis of proteins. Translation. Post-translational modification of proteins. Biosynthesis of DNA and RNA.
14. Biochemistry of blood. Main properties of blood protein fractions. Blood coagulation system. Outer and inner pathways of blood coagulation. Main anticoagulants of blood and mechanisms of fibrinolysis. Heme biosynthesis and its regulation. Catabolism of heme. Direct and indirect reacting bilirubin. Metabolic disorders of bilirubin: hemolytic, hepatocellular, and obturational icterus. Bilirubin detoxication.
15. Collagen: Particularities in amino-acidic composition of its primary and dimensional structure. The role of ascorbic acid in proline and lysine hydroxylation. Specificities in structure and functions of elastin. Glycosaminoglycans and proteoglycans.
16. Origin of antibody peculiarity. Transposition of V, D, J – gene cists in complete gene formation of L – and H – chains. Formation of hypervariable cists of H – and L – gene V–segments due to somatic mutations. DNA reconstruction in switching of Ig–class.
17. Nerve tissue chemical composition. Disorders of biogenic amines metabolism in psychiatric abnormalities. Precursors of monoaminooxidase inhibitor and catecholamines in depressive management. Physiologically active brain peptides. Positron emission imaging in brain study.
18. Tumors. Cancerogenesis. Oncogenes. Recombinant DNA. Cloning. Genomic library. Major Analytical techniques- southern blot analysis, northern blot analysis. Polymerase chain reaction.
19. Metabolic regulation in human organism. Magnetic resonance imaging of high resolution in vivo in the metabolism study.

### **Calendar plan of laboratory classes**

1. Introduction to Biochemistry. Occupational specificity of biochemical labs. Qualitative reactions for revelation of protein and amino acid functional groups.
2. Computer design of amino acids and peptides.
3. Physical and chemical properties of proteins. Sedimentation of proteins by heating and at the “room” temperature.
4. Protein fractioning and purification. Molecular mass of proteins. Compound proteins.
5. Compound proteins. Nucleoprotein and phosphoprotein constituents revelation.
6. A Test on the “Structure and Functions of Proteins”.
7. General properties of enzymes.
8. Revelation and evaluation of enzymatic activity.
9. A Seminar on "Enzymes"
10. A Test on the “Enzymes: Properties and Medical Use”.
11. Revelation of vitamins A, D, B<sub>2</sub>, B<sub>6</sub>, B<sub>12</sub>, PP, C. Vitamin C evaluation in urine.
12. A Seminar on "Vitamins"
13. A Test on the “Vitamins”.
14. Hormones revelation. Tutorial.
15. A Test on the “Hormones”.
16. Glucose evaluation in blood according to the Glucose oxidase method. Glucose tolerance test.

17. Sugar and ketone bodies revelation in urine. Semi-quantitative evaluation of sugar in urine by means of "Glucotest" kit. Evaluation of sugar in urine with use of polarimeter. Summary. Attestation.
18. Evaluation of pyruvate in urine.
19. A Seminar on the "Carbohydrate Metabolism".
20. A Test on the "Carbohydrate Metabolism".
21. Physical and chemical properties of lipids. Lipid digestion.
22. A Seminar on the "Lipids Metabolism".
23. A Test on the "Lipid Metabolism".
24. Titration of acids in gastric content. Protein digestion by pepsin.
25. Titration of acids in gastric content. Protein digestion by pepsin.
26. Disorders in amino-acidic metabolism. Revelation of homogentisate and phenylpyruvate. Revelation and evaluation of proteins in urine.
27. A Seminar on the "Metabolism of Proteins and Nucleic Acids".
28. A Test on the "Metabolism of Proteins and Nucleic Acids".
29. Hemoglobin derivatives spectroscopy. The "total protein" of blood. Blood buffer systems.
30. Evaluation of bilirubin and hemoglobin in blood. Revelation of blood and bile pigments in urine.
31. Evaluation of Calcium and Phosphorus in blood serum.
32. A Seminar on "Blood and Metabolism of Minerals".
33. A Test on the "Blood and Metabolism of Minerals".
34. Physical and chemical properties of non-organic constituents of urine.
35. Formulas test.

### **Text books and required supplies:**

Main:

1. Berezov T.T., Korovkin B.F. Biological chemistry. – M.: "Medicine", 1998.
2. Nikolaev A.Ya. Biological chemistry. – M.: "Medical informational agency", 2001.
3. Zubairov D.M., Timerbaev V.N., Davydov V.S. Medical Biochemistry. – Kazan, 2001.

Supplementary:

1. Wight A., Handler F. et al. The essentials of biochemistry: V. I, II, III. – M.: "Mir", 1982.
2. Cruik G. Biochemistry. – M.: "Medicine", 1979.
3. Marry R., Grinner D. et al. Human biochemistry: V. I, II. – M.: "Mir", 1993.
5. Elliot V., Elliot D. Biochemistry and molecular biology. – 2000.
6. Biochemistry: A brief interpretation with exercises / Edit. by E.S. Severin & A.Ya. Nikolaev. – M.: "GEOTAR", 2001.
7. Molecular principles of biological processes: from "Contemporary Natural Sciences" V.8 of Russian Encyclopedia / Edit. by Yu. A. Vladimirov. – M.: "Magistr-press", 2000.
8. David E. Metzler Biochemistry. The Chemical Reactions of Living Cells.- V. I,II.- Academic Press,2003.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – "poor", 7 – "satisfactory", 8 – "good", 9 – "excellent" and 10 – "splendid". Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 3. Vitamins**

1. What vitamin is found in large quantities in citrus fruits?  
A. vitamin C  
B. vitamin B3  
C. vitamin PP  
D. vitamin K  
E. vitamin B1
2. Which vitamin is formed in the epidermis when exposed to ultraviolet radiation?  
A. vitamin E  
B. vitamin D  
C. vitamin A  
D. vitamin K  
E. vitamin C

### **Example of module No. 5 “Carbohydrates metabolism”**

1. In which part of the cell glycolysis occurs?  
A. cytoplasm  
B. the nucleus  
C. of the mitochondria  
D. of the blood  
E. no correct answer
2. Which glucose transporter is insulin-dependent?  
A. GLUT4  
B. GLUT2  
C. GLUT3  
D. GLUT1  
E. All answers are correct

### **EVALUATION OF THE MODULE ANSWER**

The module consists of 30 MSQ tasks. First 20 questions refer to the general knowledge of the topic – 3 points each; 60 points total. Next 10 questions refer to solving complicated problems, requires understanding both fundamental biochemical processes and the process of their application in clinical practice – 4 points each; 40 points in total.

**Example of exam ticket:**

1. pH of urine usually is:
  - A. 4.5-8.0
  - B. >7.0
  - C. 5.0
  - D. 7.5-8.5
  - E. no correct answer
2. In reactions of neutralization xenobiotics combined with:
  - A. glycine and glucuronic acids, glutamine
  - B. galacturonic acid
  - C. heparin and histamine
  - D. glycine and glutathione
  - E. methionine and hippuric acid

**Example of exam sheet:**

Kazan State Medical University, Biochemistry department

Test book № \_\_\_\_\_

Full name of student \_\_\_\_\_ Group № \_\_\_\_\_ Date \_\_\_\_\_ Tests **1-100**

1 ABCDE	21 ABCDE	41 ABCDE	61 ABCDE	81 ABCDE
2 ABCDE	22 ABCDE	42 ABCDE	62 ABCDE	82 ABCDE
3 ABCDE	23 ABCDE	43 ABCDE	63 ABCDE	83 ABCDE
4 ABCDE	24 ABCDE	44 ABCDE	64 ABCDE	84 ABCDE
5 ABCDE	25 ABCDE	45 ABCDE	65 ABCDE	85 ABCDE
6 ABCDE	26 ABCDE	46 ABCDE	66 ABCDE	86 ABCDE
7 ABCDE	27 ABCDE	47 ABCDE	67 ABCDE	87 ABCDE
8 ABCDE	28 ABCDE	48 ABCDE	68 ABCDE	88 ABCDE
9 ABCDE	29 ABCDE	49 ABCDE	69 ABCDE	89 ABCDE
10 ABCDE	30 ABCDE	50 ABCDE	70 ABCDE	90 ABCDE
11 ABCDE	31 ABCDE	51 ABCDE	71 ABCDE	91 ABCDE
12 ABCDE	32 ABCDE	52 ABCDE	72 ABCDE	92 ABCDE
13 ABCDE	33 ABCDE	53 ABCDE	73 ABCDE	93 ABCDE
14 ABCDE	34 ABCDE	54 ABCDE	74 ABCDE	94 ABCDE
15 ABCDE	35 ABCDE	55 ABCDE	75 ABCDE	95 ABCDE
16 ABCDE	36 ABCDE	56 ABCDE	76 ABCDE	96 ABCDE
17 ABCDE	37 ABCDE	57 ABCDE	77 ABCDE	97 ABCDE
18 ABCDE	38 ABCDE	58 ABCDE	78 ABCDE	98 ABCDE
19 ABCDE	39 ABCDE	59 ABCDE	79 ABCDE	99 ABCDE
20 ABCDE	40 ABCDE	60 ABCDE	80 ABCDE	100 ABCDE
1001 ABCDE	Right – the letter of selected answer was stroked through by sidelong cross			Score _____
1002 <del>A</del> <del>B</del> <del>C</del> <del>D</del> <del>E</del>	Wrong – 2 letters were stroked through. Your selection is not comprehensive			
1003 <u>A</u> <u>B</u> <u>C</u> <u>D</u> <u>E</u>	Wrong – the letter of selected answer is underlined or ringed			Signature of the examiner _____

After choosing the correct option student has to cross out letter which fit to correct answer.

**Example:**

In which part of the cell glycolysis occurs?

- A. cytoplasm
- B. the nucleus
- C. of the mitochondria
- D. of the blood
- E. no correct answer

~~X~~ B C D E

### **EVALUATION OF THE EXAM ANSWER**

Exam consist of 100 questions for 2 variants. It is a MCQ test which comprises all topics that were studied during two semesters.

## **ELECTIVE DISCIPLINES IN PHYSICAL EDUCATION AND SPORTS**

**Teacher:** PhD, Arthur Rustemovich Zalyaev

**Building, Department, classroom** #: NUK, 1floor, Sport gum, Department of physical education and health

**Contact details:**

- Phone: +7 9172343230 (Arthur Zalyaev)
- E-mail: artur.zalyaev@kazangmu.ru
- Office and working hours: NUK. 1floor, Sport gum, Department of physical education and health (15:00–20:00)

**Class hours:**

**Total: 328 hours**

Practical classes –328 hours

**Course description:**

The Physical Training course aims to promote the physical health and development of dentistry students. It emphasizes aerobic endurance, strength, flexibility, and agility necessary for professional effectiveness and mental resilience in the dentistry profession. Practical sessions incorporate cardio, resistance training, stretching, and coordination activities aligned with physical activity guidelines.

Physical training is a practical discipline promoting general physical development and health maintenance, crucial for the physical and mental endurance required in dentistry practice. It includes aerobic and strength-based activities, functional fitness routines, and knowledge of safe training principles to prevent musculoskeletal disorders.

**Course objectives:**

- Enhance physical fitness to meet occupational demands
- Reduce risk of postural-related disorders
- Develop healthy lifestyle habits
- Improve mental well-being and stress resilience

**Tasks of the discipline:**

- Develop endurance, strength, flexibility, and coordination
- Promote awareness of one's physical capabilities
- Instill regular exercise practices
- Assess and improve individual fitness levels

**Course topics:**

**Calendar plan of practical classes:**

<b>Week</b>	<b>Topic</b>
1	Introduction, fitness screening, safety in physical training
2	Development of aerobic endurance; Cooper and Ruffier tests

- 3 Running/walking endurance training and methods (continuous, interval)
- 4 Strength training fundamentals: basic techniques, muscle groups
- 5 Strength testing (core, back, shoulder, upper/lower body)
- 6 Flexibility and coordination development
- 7 Posture, ergonomics, and injury prevention for dentists
- 8 Strength circuit with resistance bands/bodyweight
- 9 Functional fitness and balance training
- 10 Development of individualized training plan
- 11 Aerobic load planning and 'safety zone' heart rate monitoring
- 12 Breathing and recovery techniques for stress relief
- 13 Power-focused exercises and plyometrics
- 14 Final endurance and strength re-testing
- 15 Presentation of fitness diary, reflection, and discussion

### **Self-training assignments:**

#### **Task 1**

- Create and perform a weekly endurance-focused workout plan
- Evaluate endurance using Ruffier or Cooper Test
- Complete self-control questionnaire on endurance

#### **Task 2**

- Create and perform a strength-focused workout plan
- Assess strength using core/back/shoulder muscle endurance tests
- Complete self-control questionnaire on strength training

### **Textbooks and required materials:**

1. Grishina, Yu.I. General Physical Preparation. Rostov-on-Don: Phoenix, 2010
2. Delavier, F. Anatomy of Strength Exercises
3. Materials on the university Moodle portal:  
<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>

### **Evaluation and grading:**

Attendance and participation – 30%

Practical test results (Cooper/Ruffier, strength tests) – 30%

Task reports and fitness diary – 20%

Final fitness evaluation and self-reflection – 20%

### **Grading scale (100 points):**

90–100: Excellent

80–89: Good

70–79: Satisfactory

Below 70: Unsatisfactory

### **Classroom rules:**

- Attend classes in proper sports attire
- Respect equipment and peers
- Follow instructions and safety regulations
- Be active, punctual, and motivated
- Use phones only during breaks
- Maintain personal hygiene and clean training spaces

#### **Task 1**

The purpose of the topic is to master the methods of development and assessment of physical qualities.

As a result of completing this task, students should:

- know the methodological features of the development of physical qualities;
- be able to independently compose a set of physical exercises for the development of physical qualities;
- have the ability to assess general physical fitness.

To achieve the goal and solve problems, it is necessary, relying on the following theoretical and methodological materials and recommended literature:

1. Make up a set (list) of exercises for the development of physical quality of endurance (perform this set for practically no less than the number of lessons on schedule, observing safety rules!).
2. Evaluate the level of endurance development according to the Ruffier test or Cooper's test.
3. Answer questions for self-control

## TOPIC: STUDENT'S PHYSICAL READINESS

General physical training is a process of improving physical qualities, aimed at the all-round physical development of a person. General physical fitness also helps to expand the functional capabilities of the body, which leads to better adaptation of the body to changing environmental conditions.

The tasks of general physical training include:

- ensuring a comprehensive and harmonious physical development of the human body through the education of basic physical qualities (endurance, strength, speed, flexibility, agility);
- health promotion due to the development of the basic body systems (cardio-respiratory, neuromuscular);
- creation of a base for special physical training in professional or sports activities.

Physical education "methods" are ways of applying physical exercise. It is customary to understand the "methodology" as a system of means and methods aimed at achieving a certain result (table).

General physical training is a process of improving physical qualities, aimed at the all-round physical development of a person. General physical fitness also helps to expand the functional capabilities of the body, which leads to better adaptation of the body to changing environmental conditions.

The tasks of general physical training include:

- ensuring a comprehensive and harmonious physical development of the human body through the education of basic physical qualities (endurance, strength, speed, flexibility, agility);
- health promotion due to the development of the basic body systems (cardio-respiratory, neuromuscular);
- creation of a base for special physical training in professional or sports activities.

Physical education "methods" are ways of applying physical exercise. It is customary to understand the "methodology" as a system of means and methods aimed at achieving a certain result (table).

Training method name	Conditions of load and rest	Facilities
Continuous uniform	* Uniform intensity (power) work	Long exercise



Continuous variable	* Stepwise increasing load. * Fartlek - includes periodic accelerations	
Interval (long, medium and short interval)	* The ratio of load and rest is strictly prescribed, the rest interval is indicated	Interval exercise
Repeated	* The duration of the load is predetermined, the rest interval is not strictly indicated (until complete or almost complete recovery). * Gradually increasing load with rest intervals.	
Game	* According to the scenario of the game	Game exercise

## I. Topic section: Endurance. Development and control methods

**Endurance** is the ability of a person to perform work for a considerable time without reducing the power of the load, its intensity, or as the body's ability to resist fatigue.

*General endurance (aerobic performance)* is the totality of the body's functional capabilities that determine its ability to perform any muscle work for a long time with high efficiency. Aerobic performance affects not only overall physical performance, but also mental, psychological, and performance of those body systems that provide resistance to disease-causing effects. It is believed that the system of "aerobics" is available for almost all contingents of the population and that it is the aerobic nature of physical exercises that gives them a special health-improving value.

*Form* - cyclic and acyclic loads. Cyclic exercises of a locomotive (locomotive) nature are repeated repetitions of stereotyped types of movements, relatively constant speed of movement and power (running, walking, swimming, skiing and cycling, etc.). For acyclic exercises, changes in power are characteristic in the course of their implementation, as well as a sharp change in the nature of motor activity (gymnastic and acrobatic exercises, sports games and martial arts, etc.).

*Content:* aerobic orientation of physical activity, i.e. any physical activity involving large muscle groups (1/2 - 2/3 of the total muscle mass), which can be performed rhythmically and continuously.

*Duration:* The recommended duration of a training session is 20-60 minutes of continuous aerobic work.

*Methods:*

- uniform continuous method;
- variable continuous method;
- interval method.

A *common methodological feature* during aerobic training (AN) is the elimination of possible pathological changes - regional or focal hypertonicity in segmental and associative muscles associated with the heart. The impact on them can be called special exercises:

a) segmental muscles (left) - trapezius, scalene, sternocleidomastoid, intercostal, diaphragm lifting the scapula, large and small rhomboid, supra- and infraspinatus, large round, broadest, spine straightener (upper third), small and large pectoral, upper posterior dentate, rectus abdominis, external oblique, iliac, deltoid, triceps shoulder, extensors of the hand, extensors of the fingers, flexors of the fingers, small muscles of the hand and fingers;

b) associative muscles - lumbar major (right), pear-shaped (right), dentate anterior, gluteus maximus, gluteus medius (right), transverse abdomen, four-headed thigh.

Muscles associated with the airways and lungs by general segmental innervation (physical effects on them can also be called special exercises):

a) belt, occipital, scalene, sternocleidomastoid, intercostal, external and internal, diaphragm, large and small thoracic, dentate anterior and posterior, lifting the scapula, supra- and infraspinatus, trapezoidal, large and small rhomboid, lats, spinal erector, abdominal muscles;

b) associative muscles - iliopsoas, pear-shaped, gluteus maximus, quadriceps thighs, tendon of the broad fascia of the thigh, short, long, large adductor thighs.

**Safety!** During exercise, the heart rate should be in the so-called "safety zone", which is 50 to 75% of the maximum heart rate. To determine the individual "safety zone", you first need to calculate the maximum number of heartbeats per minute by subtracting the age from 220. Then multiply the resulting number by 50% and 75% to determine the upper and lower boundaries of the "safety zone":

$(220 - \text{age}) \times 0.50$  upper bound

$(220 - \text{age}) \times 0.75$  lower bound

These indicators will constitute the "safety zone".

When training with signs of competition, it is easy to overcome the safe threshold for exercise. Feeling signs of inadequacy of physical activity, a person tries to abruptly stop movement, endangering his heart. The results of scientific research on the changes that occur in the body during this kind of training have revealed that the levels of two natural cardiac stimulants - adrenaline and norepinephrine (catecholamines) increase during the most intense part of the exercise, as well as blood pressure. When exercise intensity drops sharply, blood pressure immediately begins to drop and catecholamine levels continue to rise. The body's continued production of natural stimulants may explain cardiac abnormalities (arrhythmias), which in some cases are the cause of death. It is also possible to develop ischemia of the heart due to the lack of blood in the coronary vessels, since blood flow slows down faster than heart contractions.

It takes time to get the body back to its pre-working state - this is the safest way to complete endurance training. You should continue to move, gradually slowing down the pace, for 3-5 minutes. If you feel nausea or a state of unusual strange lightness arises, you need to walk at a slow pace, raising your arms above your head, this contributes to an increase in blood pressure and better blood circulation. You can also lie on your back with your legs raised above head level. Thus, it will be possible to avoid a sharp drop in blood pressure or any other anomalies that could lead to loss of consciousness and even death.

Assessment form: *Testing*.

## 2. Assessment of the level of endurance development

- Ruffier's test - a one-stage exercise test. It is based on a quantitative assessment of the pulse response to a short-term dynamic load, reflecting the state of the cardiovascular system.

The purpose of the assignment: to learn how to determine your level of development of aerobic performance.

Hardware: stopwatch.

Work progress: After 5 minutes of sitting in a sitting position, the subject calculates heart rate<sub>1</sub> in a 15 second period of time. Then he does 24 squats in 30 seconds, after which, within 15 seconds of recovery (in a sitting position), HR<sub>2</sub> is again recorded. The third measurement of heart rate<sub>3</sub> is made in the same way in a sitting position at the end of the first minute of recovery.

The evaluation of the results of the test is carried out by summing up all three indicators of the pulse: HR<sub>1</sub> + HR<sub>2</sub> + HR<sub>3</sub> (see table).

Pulse sum	Score	Pulse sum	Score	Assessment of results
50	0,0	77	10,8	
51	0,4	78	11,2	
52	0,8	79	11,6	
53	1.2	80	12,0	
54	1,6	81	12,4	

55	2,4	82	12,8	before 5 Score – fine  from 5,1-10 – well  from 10,1-15,0 – satisfactorily  Over 15,0 - unsatisfactory.
56	2,4	83	13,2	
57	2,8	84	13,6	
58	3,2	85	14,0	
59	3,6	86	14,4	
60	4,0	87	14,8	
61	4,4	88	15,2	
62	4,8	89	15,6	
63	5,2	90	16,0	
64	5,6	91	16,4	
65	6,0	92	16,8	
66	6,4	93	17,2	
67	6,8	94	17,6	
68	7,2	95	18,0	
69	7,6	96	18,4	
70	8,0	97	18,8	
71	8,4	98	19,2	
72	8,8	99	19,6	
73	9,2	100	20,0	
74	9,6	101	20,4	
75	10,0	102	20,8	
76	10,4			

### **3. running / walking during the week – min -10 km**

#### **3. Questions for self-control:**

1) Endurance is the ability to:

- a) a person to perform the exercise with maximum effort;
- b) the organism to resist external environmental influences; c) the body quickly recover after exercise; d) the body to resist fatigue;
- e) a person quickly adapt to various types of activities.

2) Types of endurance (enter 2 correct answers):

- a) purposeful;
- b) general;
- c) volumetric;
- d) special;
- e) conditional.

3) Methods for determining endurance (enter 2 correct answers):

- a) straight;
- b) linear;
- c) phased;
- d) relative;
- e) indirect.

4) Indicate 2 methods for developing endurance:

- a) continuous;
- b) intensive;
- c) uniform;
- d) interval.

5) Varieties of special endurance (enter 4 correct answers):

- a) high-speed;
- b) power;
- d) static;
- e) basic;
- f) speed-power.

Recommended reading:

Grishina, Yu.I. General physical preparation. Know and be able / Yu. I. Grishina. - Rostov-on-Don: Phoenix, 2010. -- 249 p.

## MICROBIOLOGY, VIROLOGY.

**Teachers: Senior teacher Gulyaev Pavel**

**Building, Department, classroom #** Study building #2, Department of Microbiology named after academician V.M. Aristovsky, 223

**Contact details:**

- Telephone number: +7 906 325 55 48 (Senior teacher Pavel Gulyaev)
- E-mail address: gulyaev.pavel@kazanmu.ru
- Office and working hours: 223, 225; (9-17)

**Total hours — 252:**

Lectures - 40 hours;

Practical classes - 102 hours;

Independent work - 74 hours;

Exam - 36 hours.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazanmu.ru/course/view.php?id=1721>)

**Course objectives: The purpose of mastering the discipline**

The purpose of mastering the discipline: students mastering the theoretical foundations and patterns of interaction between micro- and macroorganisms, practical skills in prevention methods, microbiological, molecular biological diagnostics, the main directions of treatment of infectious and opportunistic human diseases.

**Tasks of the discipline:**

To form knowledge in the field of:

1. developing students' general understanding of the structure and functioning of microbes as living systems and their role in ecology;
2. developing students' understanding of the patterns of interaction between the human body and the microbial world, including modern understanding of the immune response to infectious and non-infectious agents (antigens);
3. studying the principles and techniques of interpreting the results obtained during microbiological, molecular biological and immunological studies of biological fluids, virus-containing materials and pure cultures of microbes;
4. teaching students methods of carrying out preventive measures to prevent bacterial, fungal, parasitic and viral diseases;
5. studying the main directions of treatment of infectious and opportunistic human diseases (bacterial, fungal, parasitic, viral);
6. developing students' skills in working with scientific literature;

### **Course topics:**

#### **Calendar plan of lectures**

1. Subject and tasks of microbiology. Classification of bacteria.
2. Classification and morphology of viruses. Bacteriophages. Practical application.
3. Physiology of bacteria.
4. Ecology of microorganisms. Normal microbial flora of the human body.
5. Antibiotics.
6. Infection.
7. Staphylococci. Streptococci
8. Meningococci. Gonococci.
9. Corynebacterium. Causative agent of diphtheria.
10. Mycobacterium. Causative agents of tuberculosis and leprosy.
11. Enterobacteriaceae.
12. Treponema. Borrelia. Leptospira.
13. Rickettsia. Chlamydia.
14. Causative agents of mycoses.
15. Causative agents of acute respiratory viral infections. Influenza virus.
16. Picornaviruses.
17. Causative agents of viral hepatitis.
18. Herpesviruses.
19. Retroviruses. HIV.
20. The subject and task of preventive microbiology. A microbial flora of water and its microbiological examination.

#### **Calendar plan of laboratory classes**

1. Microscopes. Morphology of bacteria
2. Bacterial cell ultrastructure. Methods of simple and complex staining. Gram stain
3. Capsule, flagella, pili, spores, volutin granules of bacteria. Functions, staining and detection methods.
4. Classification and morphology of viruses, fungi, protozoa
5. Test 1 (1-4). Methods of sterilization
6. Classification of media. Cultural characteristics of bacteria. Methods of culture and isolation of aerobic and facultative anaerobic bacteria.
7. Methods of culture and isolation of strict anaerobic bacteria. Biochemical properties of bacteria. Identification of bacteria.
8. Bacteriophages. The structure of the genome of bacteria. Plasmids. Mutations. Transfer of genetic information. Molecular genetic diagnostic method. Polymerase chain reaction.
9. Normal microbial flora of the human body. Test 2 (5-9)

10. The main groups of antimicrobial chemotherapeutic drugs, the mechanisms and spectra of their antimicrobial action. Antibiotics. Determination of the sensitivity of bacteria to antibiotics
11. Characteristics of the infectious process. The concepts of pathogenicity and virulence. Factors of pathogenicity of microbes. Basic epidemiological concepts.
12. Medical immunology. Serological method for the diagnosis of infectious diseases. Immunoprophylaxis and immunotherapy of infectious diseases.
13. Test 3 (10-12). Methods of microbiological diagnosis of bacterial infections
14. Pathogenic gram-positive and gram-negative cocci (Staphylococci, Streptococci, Neisseria)
15. Bacillus. The causative agent of anthrax. Clostridia. The causative agents of tetanus, botulism, gas gangrene.
16. Corynebacterium. Causative agent of diphtheria
17. Test 4 (13-16)
18. Brucella. Francisella
19. Bordetella. Legionella. Pseudomonas aeruginosa.
20. Escherichia. Salmonella. Shigella.
21. Yersinia. Klebsiella. Vibrio cholerae.
22. Causative agents of bacterial food poisonings. Test 5 (1-5)
23. Treponema. Borrelia. Leptospira. Campylobacter. Helicobacter.
24. Rickettsia. Chlamydia. Mycoplasma. Ureaplasma.
25. Fungi. Causative agents of mycoses.
26. Protozoa.
27. Test 6 (themes 6-9)
28. Morphology of viruses. Classification. Methods of cultivation, indication and identification of viruses. Orthomyxoviruses (Influenza Virus). Paramyxoviruses (Mumps Virus, Measles Virus). Togaviruses (Rubella Virus). Adenoviruses.
29. Picornaviruses (Poliovirus, Cocksackie Viruses, ECHO virus). Hepatitis A virus, Hepatitis B virus, Hepatitis C virus, Hepatitis D virus, Hepatitis E virus, Hepatitis G virus.
30. Flaviviruses (TBEV), Bunyaviruses (Hemorrhagic fever with renal syndrome virus). Rhabdoviruses (rabies virus).
31. Retroviruses (HIV). Herpesviruses. Oncogenic viruses. Causative agents of slow viral infections. Prions.
32. Test 7 (11-14).
33. Community microbiology.
34. Nosocomial infections. An estimation of practical skills.

#### **Text books and required supplies:**

1. Zverev, V. V. Medical Microbiology, Virology, Immunology : textbook. Vol. 1 / Zverev V. V. , Boichenko M. N. - in 2 volumes. - Москва : ГЭОТАР-Медиа, 2020. - 384 с. - ISBN 978-5-9704-5607-1..
2. Zverev, V. V. Medical Microbiology, Virology, Immunology : textbook : Vol. 2. / eds. V. V. Zverev, M. N. Boichenko. - Москва : ГЭОТАР-Медиа, 2020. - 392 с. - ISBN 978-5-9704-5719-1..
3. Artamonova, M. N. Medical Microbiology, Virology and Immunology. Lecture Notes : textbook / Artamonova M. N. , Potaturkina-Nesterova N. I. , Ilyina N. A. , Nemova I. S. - Москва : ГЭОТАР-Медиа, 2021. - 352 с. - ISBN 978-5-9704-6043-6.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10-point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and

10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt, the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is built up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1.**

1. Light microscope (bright field), immersion system
2. Cell wall. Functions.
3. Morphology of viruses.

### **Example of module No. 2**

1. Culture media, their classification
2. Biochemical properties of bacteria. Enzymes. Pigments
3. Genetic recombination in bacteria: transduction

### **Example of module No. 3**

1. Classification of antibiotics by the mechanism of action
2. Bacterial toxins. Classification.
3. Live vaccines. Practical application. Production.

### **Example of module No. 4**

1. The causative agent of anthrax. Taxonomy. Biological properties. The pathogenesis of the disease.
2. Microbiological diagnostics of diseases caused by *Staphylococcus* spp.
3. Treatment and prophylaxis of tuberculosis.

### **Example of module No. 5**

1. The causative agent of plague. Taxonomy. Biological properties. The pathogenesis of the disease.
2. Microbiological diagnostics of diseases caused by *Escherichia coli*.
3. Treatment and prophylaxis of tularemia.

### **Example of module No. 6**

1. The causative agent of trachoma. Taxonomy. Biological properties. The pathogenesis of the disease. Microbiological diagnostics. Treatment and prophylaxis.
2. The causative agent of toxoplasmosis. Taxonomy. Biological properties. The pathogenesis of the disease. Microbiological diagnostics. Treatment and prophylaxis.
3. The causative agents of systemic mycoses. Taxonomy. Biological properties. The pathogenesis of the disease. Microbiological diagnostics. Treatment and prophylaxis.

**Example of module No. 7**

1. The causative agent of mumps. Taxonomy. Biological properties. The pathogenesis of the disease.
2. Microbiological diagnostics of HIV.
3. Treatment and prophylaxis of TBEV.

**EVALUATION OF THE MODULE ANSWER**

The question card of the module consists of 3 tasks

Questions 1 - 3 are evaluated by 33,3 points

\* The teacher has the right to remove from 1 to 3 points for incorrect writing of taxonomy, reactions

Total:  $3 \times 33,3 = 100$  points

For example, for the 2nd question from the question card on second module:

- correct answer - 33 points

**Total for one question: 33,3 points**

**Example of exam card**

**Card 1.**

**Microbiology, virology**

**Variant 1**

**Choose one correct answer**

**1. Which colonies form salmonella on MacConkey's medium:**

- A. Purple
- B. Blue
- C. Dark red with a metallic sheen
- D. Colorless

**2. Properties of Chlamydia:**

- A. Do not have a cell wall
- B. Optional intracellular parasites
- C. Obligatory anaerobes
- D. Obligatory intracellular parasites

**3. "Canned food" is responsible for food poisoning with:**

- A. Clostridium botulinum
- B. Staphylococcus aureus
- C. Salmonella enteritidis
- D. Yersinia enterocolitica

**4. Specific prevention of mumps is carried out by:**

- A. Live vaccine
- B. Inactivated vaccine
- C. Molecular vaccine
- D. Do not conduct

**5. The route of transmission of the virus in congenital rubella:**



- A. Contact
- B. Throw placenta
- C. Air-dust
- D. Alimentary

**6. For the prevention of Hepatitis B is used:**

- A. Anatoxin
- B. Attenuated vaccine
- C. Recombinant vaccine
- D. Killed vaccine

**7. The main route of transmission of hepatitis E virus:**

- A. Water - borne
- B. Parenteral
- C. Sexual
- D. Air-dust

**8. For the prevention of Hepatitis D is used:**

- A. Anatoxin
- B. Inactivated vaccine
- C. Vaccine containing HBs antigen
- D. Live vaccine

**9. For the prevention of Poliomyelitis, everything is used except:**

- A. Inactivated vaccine
- B. Toxoid
- C. Live vaccine
- D. Water quality control

**10. Rabies treatment:**

- A. Rabies immune serum
- B. vaccine
- C. human rabies immune globulin
- D. absent

**11. What is used for antibiotic sensitivity test:**

- A. Hiss medium
- B. Agglutination test
- C. PCR
- D. Disk-diffusion method

**12. Is used in treatment of systemic mycoses:**

- A. Penicillin
- B. Fluconazole
- C. Tetracycline
- D. Bacteriophage

**13. Causative agent of toxoplasmosis is not transmitted:**

- A. By eating of undercooked meat
- B. By sexual contact
- C. Congenitally
- D. By contact with cats

**14. For prophylaxis of Trichomoniasis is used:**

- A. Live vaccine
- B. Toxoid
- C. Inactivated vaccine
- D. Safe sex

**15. The source and factors of transmission of pathogens of Dermatophytosis are the following, except:**

- A. sick people
- B. syringes and needles
- C. animals
- D. the soil

**16. The main mode of transmission of hepatitis A virus is:**

- A. Predominantly parenteral
- B. Predominantly fecal-oral
- C. By an insect vector
- D. Contact with infected animal
- E. All of above

**17. Cystic stage is found in following except:**

- A. Giardia lamblia
- B. Balantidium coli
- C. Trichomonas vaginalis
- D. Entamoeba histolytica
- E. Toxoplasma gondii

**18. All of the following are flagellate protozoa except:**

- A. Leishmania
- B. Balantidium
- C. Trichomonas
- D. Giardia
- E. Trypanosoma

**19. Obligate-anaerobic bacteria are:**

- A. Bacilli
- B. Clostridia
- C. Mycobacteria
- D. Vibrio

**20. Sterilization is:**

- A. Destruction measures of microbes in the pathological lesions, wound, etc.
- B. Destruction and removal of infectious agents from environmental objects
- C. Prevention of contamination of objects or wounds by germs
- D. Complete destruction of microbes and spores from the object

**21. An antibiotic that interferes with the function of the cell wall:**

- A. nystatin
- B. rifampicin
- C. penicillin
- D. tetracycline

**22.  $\beta$ -lactam antibiotic is:**

- A. erythromycin
- B. rifampicin
- C. penicillin
- D. streptomycin

**23. Reinfection is called:**

- A. Disease that occurs after a previous infection with a second infection with the same pathogen
- B. Disease caused by human infection with the same pathogen before recovery
- C. Return of the disease due to remaining pathogens in the body
- D. Disease caused by infection with a new pathogen in the background of an unfinished initial infectious disease

**24. The resistance of bacteria to antibiotics is due to the presence of:**

- A. R-plasmids
- B. Tox-plasmids
- C. Col-plasmids
- D. Ent-plasmas

**25. Antitoxic serum is used for:**

- A. treatment of viral infections
- B. treatment of bacterial infections
- C. prevention of viral infections
- D. prevention of mycoses.

**26. For the treatment of tetanus use:**

- A. bacteriophage
- B. antitoxic serum
- C. interferon
- D. toxoid

**27. Vaccine is used to prevent tuberculosis**

- A. DTP
- B. MMR
- C. Toxoid
- D. BCG

**28. The condition, when bacteria multiply in the blood, is called:**

- A. Bacteremia
- B. Septicopyaemia
- C. Sepsis
- D. Viremia

**29. Relapse is called:**

- A. Disease that occurs after a previous infection with a second infection with the same pathogen
- B. Disease caused by human infection with the same pathogen before recovery
- C. Return of the disease due to remaining pathogens in the body
- D. Disease caused by infection with a new pathogen in the background of an unfinished initial infectious disease

**30. For the treatment of tuberculosis is not used:**

- A. isoniazid

- B. acyclovir
- C. tubazid
- D. rifampicin.

**31. Vaccines made from live microbes or viruses that have lost virulence factors but retained immunogenic properties:**

- A. Anatoxins
- B. Attenuated vaccines
- C. Molecular vaccines
- D. Killed vaccines

**32. What is true?**

- A. Prions consist of glycoproteins
- B. Prions have RNA or DNA
- C. Prions have cell wall
- D. Prions grow on artificial media
- E. Prions have envelope

**33. Which of the following is not a live vaccine?**

- A. BCG
- B. Anthrax vaccine
- C. MMR
- D. Salk polio
- E. Tularemia vaccine

**34. Vaccines are used:**

- A. For the prevention of infectious diseases
- B. For the treatment of foodborne diseases
- C. For the diagnosis of infectious diseases
- D. For the prevention of dermatomycosis

**35. Antitoxins are used for:**

- A. the prevention of fungal infections
- B. the treatment of viral infections
- C. the treatment of infectious diseases
- D. the prevention of dermatomycosis

**36. What classes of immunoglobulins are formed in the acute stage of infectious disease?**

- A. Ig A
- B. Ig E
- C. Ig D
- D. Ig M

**37. What statement about the properties of exotoxins is incorrect:**

- A. By chemical nature - proteins
- B. Low in toxicity
- C. Are used for toxoid production
- D. Highly toxic

**38. For diphtheria specific prevention is used:**

- A. Recombinant vaccine
- B. Attenuated vaccine
- C. Anatoxin

D. Killed vaccine

**39. Methods of cultivation of obligate anaerobic bacteria:**

- A. In the presence of CO<sub>2</sub>
- B. In the presence of a small amount of oxygen
- C. In the presence of oxygen
- D. In the absence of oxygen

**40. Growth of bacteria on liquid nutrient media is manifested as follows, except:**

- A. Uniform turbidity
- B. Formation of S- and R-type colonies
- C. Film on the Surface of the Medium
- D. Sediment on the bottom and wall of the test tube

**41. In a healthy person, the following organ do not contain bacteria:**

- A. Stomach
- B. Mouth
- C. Eyes
- D. Bladder

**42. What statement about the properties of endotoxins is not correct:**

- A. By chemical nature - proteins
- B. Low in toxicity
- C. By chemical nature - LPS
- D. Are able to cause fever

**43. For the treatment of intestinal dysbiosis, the following microbes are used, except:**

- A. Bifidobacterium
- B. Corynebacterium
- C. Lactobacillus
- D. Saccharomyces
- E. Enterococcus

**44. For specific prevention of botulism is used:**

- A. Antibiotics
- B. Bacteriophages
- C. Antitoxic serum
- D. Toxoid

**45. With respect to oxygen, the tetanus pathogen is referred to as:**

- A. Aerobic
- B. Obligate anaerobes
- C. Facultative anaerobes
- D. Aerotolerant

**46. Causative agent of botulism forms:**

- A. Neurotoxin
- B. Dermatoxin
- C. Enterotoxin
- D. Erythrogenin

**47. For specific prevention of whooping cough vaccine is used:**

- A. SABIN
- B. DPT
- C. MMR
- D. BCG

**48. Transmission of anthrax causative agent is NOT carried out by:**

- A. Contact
- B. Sexual Way
- C. Alimentary way
- D. Airborne dust

**49. Toxoid is prepared from:**

- A. Exotoxin
- B. Live bacteria
- C. Endotoxin
- D. Killed bacteria

**50. The carriers of the plague pathogen are:**

- A. Lice
- B. Fleas
- C. Ticks
- D. Mosquitoes

### **Preparation card**

**Preparation name:** Vaccine    **Compounds**  
measles cultural live dry

**Practical application**

### **EVALUATION OF THE EXAM ANSWER**

Evaluation of complete, comprehensive answers to the examination tasks offered to students of the specialty "General medicine" in the exam in the discipline " Microbiology, virology" in %:

1. The MCQ - 80%
2. The preparation – 20%

Note: incorrect answers are evaluated depending on the completeness of presentation (below the announced percentage).

The final assessment of intermediate certification in the subject "Microbiology, virology" is calculated by a computer program in accordance with the score-rating system for assessing students' knowledge in force at the Kazan State Medical University, taking into account the attendance of lectures and laboratory classes, grades obtained from the current academic performance monitoring, grades for modules and examination grades.

### **The standard of answer to a preparation card:**

Preparation name	Composition	Practical use
Vaccine measles	Vaccine strain of measles virus with weakened virulence, grown	The vaccine is intended for routine vaccination against measles

cultural live on cell culture, dried by freeze according to the National Calendar of  
dry drying Preventive Vaccinations for Children

## HYGIENE

**Teachers:** Professor Liliya Fatkhutdinova, Assistant Professor Gulnaz Khusnutdinova, Assistant Professor Adelya Mukhutdinova, Assistant Professor Mariya Volkova

**Building, Department, classroom:** NUK, Department of Hygiene and Occupational Medicine, 403 room

**Contact details:**

- E-mail address: liliya.fatkhutdinova@gmail.com (Prof. Liliya Fatkhutdinova)
- Office and working hours: 401 (10-16)

**Total hours — 252:**

- Lectures **40 hours;**
- Practical classes **102 hours;**
- Independent work **74 hours;**
- Control **36 hours.**

**Course description:**

**Lecture** is an oral presentation of branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical class** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=449>  
<https://e.kazangmu.ru/course/view.php?id=1107>).

**Course objectives**

Hygiene is a field that studies the impact of living and working conditions on a person and develops the prevention of various diseases; provides optimal conditions for existence; preserves health and prolongs life.

**Tasks of the discipline:**

To form knowledge in the field of:

- definition of aims and scope of hygiene and public health,
- description of different groups of health determinants (environmental pollutants, indoor environment factors, factors related to children and adolescents' growth, development and health, nutrition, occupational hazards),
- carrying out preventive and anti-epidemic measures aimed at preventing the occurrence of diseases.
- conducting sanitary and educational work to form a healthy lifestyle.

**Course topics:****Calendar plan of lectures****4th semester**

Lecture 1. Introduction to Hygiene (2 h.)

Lecture 2. Global Environmental Hazards (2 h.)

Lecture 3. Atmosphere. Climate, Weather and Health (2 h.)

Lecture 4. Outdoor Air Pollution (2 h.)

Lecture 5. Water as a Key Public Health Problem (2 h.)

Lecture 6. Indoor Air Quality (2 h.)

Lecture 7. Sunlight. UV radiation. Lighting (2 h.)

Lecture 8. Hospital Hygiene (2 h.)

Lecture 9. Children and Adolescents' Health (2 h.)

Lecture 10. Hygienic Requirements for Educational Premises and Teaching Equipment (2 h.)

**5th semester**

Lecture 1. Introduction to Nutrition. Energy Balance (2 h.)

Lecture 2. Macronutrients in Food (1) (2 h.)

Lecture 3. Macronutrients in Food (2) (2 h.)

Lecture 4. Vitamins and Minerals in Food (2 h.)

Lecture 5. Nutritional Status. Nutrition and Health (2 h.)

Lecture 6. Food Poisoning and Food Safety (2 h.)

Lecture 7. Introduction to Occupational Health (2 h.)

Lecture 8. Stress at Work (2 h.)

Lecture 9. Noise and Vibration at Workplaces (2 h.)

Lecture 10. Chemicals at Workplaces (2 h.)

**Calendar plan of practical classes****4th semester**

Module 1, Environmental Health (EH)

Module 1, EH. Practical Class 1. Introduction to the course (3 hr)

Module 1, EH. Practical Class 2. Global Environmental Hazards (3 hr)

Module 1, EH. Practical Class 3. Atmosphere. Climate and Weather. Climate and Health. Climate Change (3 hr)

Module 1, EH. Practical Class 4. Outdoor air pollution as a public health problem (3 hr)

Module 1, EH. Practical Class 5. Policies to Prevent Outdoor Air Pollution (3 hr)

Module 1, EH. Practical Class 6. Water as a Key Public Health Problem (3 hr)

Module 1, EH. Practical Class 7. Waterwaste (3 hr)

Module 1, EH. Practical Class 8. Solid Waste Management (3 hr)

Module 1, EH. Practical Class 9. Written Assessment (3 hr)

Module 2, Buildings and Hospitals B&H

Module 2, B&H. Practical Class 10. Indoor Air Quality (3 hr)

Module 2, B&H. Practical Class 11. HVAC and Lighting in Buildings (3 hr)

Module 2, B&H. Practical Class 12. Hospital Hygiene (3 hr)

Module 2, B&H. Buildings and Hospitals. 13 - Written Assignment (3 hr)

Module 3, Children and adolescents' health (C&AH)

Module 3, C&AH. Practical Class 14. Children and adolescents' growth and development (3 hr)

Module 3, C&AH. Practical Class 15. Children and adolescents' health (3 hr)

Module 3, C&AH. Practical Class 16. Kindergardens and schools (3 hr)

Module 3, C&AH. Children and adolescent's health. 17 - Written Assessment (3 hr)



### **5th semester**

Module 4. Nutrition

Module 4. Nutrition. Practical Classes 1-2. Introduction to nutritional sciences. Energy balance (3 hr)

Module 4. Nutrition. Practical Class 3. Macronutrients in food (3 hr)

Module 4. Nutrition. Practical Classes 4-5. Micronutrients in food (3 hr)

Module 4. Nutrition. Practical Class 6. Methods for nutritional status assessment. My Diet project (3 hr)

Module 4. Nutrition. Practical Class 7. Alimentary related diseases (3 hr)

Module 4. Nutrition. Practical Class 8. Food safety (3 hr)

Module 4. Nutrition. Practical Class 9. Final MCQ (3 hr)

Module 5. Occupational Health

Module 5. Occupational Health. Practical class 10. Introduction to occupational health (3 hr)

Module 5. Occupational Health. Practical class 11. Stress at work (3 hr)

Module 5. Occupational Health. Practical class 12. Ergonomics (3 hr)

Module 5. Occupational Health. Practical class 13. Physical factors at work. Noise and vibration. Extreme temperatures. Lighting. Radiation (3 hr)

Module 5. Occupational Health. Practical class 14. Chemical hazards (3 hr)

Module 5. Occupational Health. Practical class 15. Biological hazards at work

Module 5. Occupational Health. Practical class 16. Health and safety hazards at medical staff workplaces

Module 5. Occupational Health. Practical class 17. Final MCQ (3 hr)

### **The list of basic and additional educational literature required for the development of the discipline:**

1. Introduction To Public Health (Paperback) by Mary-Jane Schneider, 5th edition, 2016 (KSMU library).
2. Levy, Barry S.; Occupational and Environmental Health : Recognizing and Preventing Disease and Injury. 2011 (EBSCO data base, KSMU library).
3. Nutrition: concepts and controversies [Text]/ F. S.Sizer, E. N. Whitney. – 14th ed. - Boston : Cengage Learning, 2016. - xxi, [1], 622, [116] p. : il. ; 27 cm. - ENG. - ISBN 978-1-305-62799-4 (KSMU library).

### **The links of basic educational courses prepared for studying the discipline:**

1. Hygiene. Part I. Environmental Health, Hospital Hygiene, Children&Adolescent Health // URL: <https://e.kazangmu.ru/course/view.php?id=449>
2. Hygiene. Part II - Nutrition&OccupationalHealth // URL: <https://e.kazangmu.ru/course/view.php?id=1107>

### **Evaluation and grading:**

The procedure for evaluating the results of training is based on the Regulations of the Kazan State University on the forms, frequency and procedure of the current monitoring of academic performance and interim certification of students.

**Lectures:** estimated attendance, activity, ability to highlight the main idea. The range of points is 0-1: 0 b. - absent from the lecture, 1 b. - present at the lecture.

**Practical tasks** (interview, laboratory work, practical tasks, practical skills, abstract reports, testing): it assesses self-sufficiency in performing tasks, activity in the audience, correctness of tasks, and the level of preparation for classes. The range of points is 6-10 points.

The following types of control are used to evaluate the results of training in the discipline "Hygiene":

- performing a practical task,
- interview for control questions,
- preparation and hearing of abstracts,
- demonstration of practical skills,
- computer tests (MCQ),
- final oral interview.

Evaluation criteria for tasks completed in a workbook, interviews on control questions, and abstract messages:

The range of points is 6-10 points:

- 6 points – - in the audience is not active, the level of preparation for classes is unsatisfactory.
- 7 points – - not active in the classroom, the work is performed with hints and help, the level of preparation for classes is satisfactory.
- 8 points - the work is performed with small hints, shows moderate activity in the audience, and the level of preparation for classes is good.
- 9 points – - the work is performed without prompting, in the audience shows high activity, the level of preparation for classes is very good.
- 10 points - the work is performed without prompting, the audience is very active, the level of preparation for classes is very good.

Criteria for evaluating practical skills:

- 6 points – - less than 70% of the checklist items are completed.
- 7 points – - completed 70-79% of the items on the checklist.
- 8 points – - 80-89% of the checklist items were completed.
- 9 points – - completed 90-95% of the checklist items.
- 10 points – - completed 96-100% of the checklist items.

Criteria of estimation of test control:

Assessment test will be billed in proportion to the percentage of correct answers in the range of 0-100 points:

- 90-100% - "excellent",
- 80-89% - "good" rating,
- 70-79% - evaluation of "satisfactory"
- at least 70% of correct answers – "unsatisfactorily".

Criteria of assessment final interview:

Grade is proportional in the range of 0-100 points:

- 90-100% - "excellent": calls true basic provisions, is well-versed in the issue,
- 80-89% - rating "good": calls the main provisions on this issue, but there are inaccuracies that require additions,
- 70-79% - rating "satisfactory": confused in the title of the main provisions on this issue,
- less than 70% of correct answers are rated "unsatisfactory": they do not know the main provisions on this issue.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **Example of module No. 1. Environmental Health**

**You will be provided with 2 questions. Write 2 essays of no more than 40 lines. There is a time limit - no more than 60 minutes. The answers will be assessed by your teacher.**

1. Aim and scope of Public Health and Hygiene.
2. Solid waste management and climate.
3. Outdoor air quality in your country.
4. Urban waste fractions and country income levels.
5. Ocean acidification and its health effects

### **Example of module No. 2 B&H. Buildings and Hospitals.**

**You will be provided 2 questions. Write 2 essays of no more than 40 lines. There is a time limit - no more than 60 minutes. The answers will be assessed by your teacher.**

1. Indoor particulate matter as a hygienic problem: sources, health effects, preventive measures.
2. Infections in the hospital workplaces: how to protect workers.
3. Nosocomial infections.
4. Hospital zoning.
5. Pesticides in buildings: sources, health effects, preventive measures.

### **Example of module No. 3 Children and adolescent's health**

**You will be provided 2 questions. Write 2 essays of no more than 40 lines. There is a time limit - no more than 60 minutes. The answers will be assessed by your teacher.**

1. Age groups classifications.
2. Hygienic requirements to technical devices in schools
3. The leading causes of death for young people aged 10–14 years
4. The basic sanitary-and-hygienic requirements to construction and maintenance of schools
5. School rediness: definition. School readiness tests.

### **Example of module No. 4 Nutrition – Part 1**

*My Diet* project is to be uploaded online and presented on practical class.

### **Example of module No. 4 Nutrition – Part 2**

#### **1. What disease refers to food toxemia?**

- a. Botulism
- b. Salmonellosis
- c. Poisoning poisonous mushrooms
- d. Disease caused by bacteria of the genus *Proteus*

#### **2. What food is a dietary source of folic acid?**

- a. Meat
- b. Salad

#### **3. What disease causes chronic load with aflatoxin?**

- a. Decrease of body weight in adults and developmental delay in children
- b. Liver cancer
- c. Damage to the nervous system
- d. Secondary immunodeficiency

#### **4. Ratio of calcium to phosphorus in a balanced diet for absorption and assimilation:**

- a. 1:2
- b. 1:5
- c. 1:1
- d. 1:20
- e. 1:10

**5. Deficiency of a trace element can lead to the slowing of intellectual development in children?**

- a. Potassium
- b. Magnesium
- c. Zinc
- d. Iron
- e. Sodium
- f. Selenium

**Example of module No. 5 Occupational Health.**

**1. What do labour inspections do?**

- a. Labour inspections visit work sites and evaluate the work situations
- b. Labour inspection ensures the standards regarding work and health are not unreasonably high
- c. Labour inspections are needed to verify that laws regarding working life are followed
- d. Labour inspections do not exist

**2. What are the most typical stress related diseases?**

- a. Cardiovascular diseases, gastrointestinal diseases, mental problems and musculoskeletal diseases
- b. Infections, reduced immune system and cancer
- c. Mental diseases and infectious diseases
- d. Cardiovascular diseases and rheumatism

**3. What is optimal performance at work?**

- a. A balance between demands and performance
- b. A balance between boredom and exhaustion
- c. A balance between demands and boredom
- d. A balance between boredom and high demands

**Final exam on Hygiene.**

**The final rate for the "Hygiene" in semester V is calculated taking into account the following scores:**

- lectures and practical class attendance in the range of 0-10 points,
- averaged score for all practical classes in the range of 0-10 points,
- averaged score for Modules 1-5 in the range of 0-100 points, multiplied by a factor of 0.35,
- examination score in the range of 0-100 points, multiplied by a factor of 0.45.

The written exam includes 5 questions. You will be given 60 minutes and 10 minutes for oral conversation.

You can get up to 100 points (20 points for each question).

**Hygiene – Written Exam Questions**

From Module 1

- 1. Aim and scope of Public Health and Hygiene.
- 2. Health definitions in the frame of different concepts (biological, ecological, psychosocial, holistic). WHO's health definition.
- 3. 4 groups of health determinants.
- 4. Primary, secondary and tertiary prevention: definition, examples.
- 5. Health indicators. DALYs calculation. Global Burden of Disease project.
- 6. The concept of planetary boundaries.
- 7. Climate change and its health effects.

8. Atmosphere: composition, importance for human life. Climate and weather. Climate and its public health impact.
9. Sources of [air pollution](#): classification and characterization. Primary and secondary air pollutants.
10. Particulate matters (PM) in the outdoor air: sources, size fractions, exposure limits, health effects, preventive measures.
11. Industrial [smog](#), [acid rains](#), [photochemical smog](#). Role of man-made and natural factors.
12. Non-carcinogenic and carcinogenic health effects of outdoor [air pollution](#).
13. Policies to control outdoor [air pollution](#) at governmental, society and individual levels.
14. The role of water in human life. Daily average fluid intake for adults and children. Household water use in different countries. Water and human rights.
15. Water cycle. Distribution of the Earth's water. Safe and unsafe water sources. Water contaminants classification.
16. Microbiological water quality and human health. Bradley classification of water-related diseases.
17. Inorganic water contaminants of natural origin.
18. Chemical water contaminants of man-made origin.
19. Aesthetic/organoleptic characteristics of water.
20. Improved and non-improved water supply.
21. Conventional water treatment processes. Household water treatment processes.
22. Hygienic characteristic of bottled water.
23. Nutrients in drinking water.
24. Solid [waste](#): definition and categorization. [Waste](#) generation. The role of population growth and urbanization trends in [waste](#) generation.
25. 3R in solid [waste](#) treatment.
26. [Waste](#) treatment: [Incineration](#). Environmental impacts of [incineration](#).
27. [Landfill waste](#) disposal.
28. Treatment of organic [waste](#): [Composting](#) and anaerobic digestion.
29. E-[waste](#).
30. [Hazardous waste](#).

#### From Module 2

1. Indoor particulate matter as a hygienic problem: sources, health effects, preventive measures.
2. Solid fuels and indoor air pollution. the scale of the problem in different countries. Health effects. Preventive measures.
3. Environmental tobacco smoke as a hygienic problem. Antismoking policy in your country.
4. Asbestos and indoor air quality: sources, health effects, preventive measures.
5. Bacteria and viruses and indoor air quality: sources, health effects, preventive measures. Mold in buildings: sources, health effects, preventive measures.
6. Radon in buildings: sources, health effects, preventive measures.
7. CO, VOCs, formaldehyde and pesticides in buildings: sources, health effects, preventive measures.
8. Sick building syndrome. Factors related to increased prevalence of sick building syndrome.
9. Indoor climate. Air humidity in buildings.
10. Ventilation and air-conditioning in buildings.
11. Light physics. Luminous intensity, luminance, illuminance: definitions, units.
12. Sunlight and health. UVR in sunlight and its health effects.
13. Lighting in buildings: daylight.
14. Lighting in buildings: artificial lighting.
15. Lighting pollution as a hygienic problem.
16. Requirements to place for hospital location.
17. Requirements to hospital building equipment.

18. General requirement to hospital housekeeping. Cleaning in hospitals. Disinfection and sterilization in hospitals.
19. Hospital zoning.
20. Nosocomial infections: definition, examples of sources. Routes of transmission of nosocomial infections. Nosocomial infection precautions.
21. Hand hygiene in hospitals.
22. Measures for improving infection control in hospitals.
23. Health care waste management.

#### From Module 3

1. Age groups classifications in children and adolescents.
2. Fetal growth. Risk factors of growth retardation. Growth retardation in developing countries.
3. Child growth indicators and their interpretation. Health and social consequences of impaired growth.
4. Systems by which a child or a group of children can be compared to the reference population: Z-scores (standard deviation [SD] scores). Measurements, interpretation, strengths and weaknesses, clinical applications.
5. Indices of reproductive development.
6. School readiness: definition. School readiness tests.
7. Children and adolescent's obesity as a public health problem.
8. Interventions aimed at promoting healthy growth and development.
9. Health problems in different age groups of children and adolescents.
10. Adolescents and reproductive health.
11. Adolescents and mental health.
12. Groups of health in children and adolescents.
13. Health services for adolescents.
14. Children health services.
15. The basic sanitary-and-hygienic requirements to construction and maintenance of schools.
16. Hygienic requirements to school location.
17. Hygienic requirements to school schedule.
18. School ergonomics and its influence on health.
19. Hygienic principles of correct organization of sport education in schools.
20. Hygienic requirements to technical devices in schools.

#### From Module 4

1. The Human Right to Food. World hunger. Food and human health impacts. Food and environmental impacts.
2. Food nutrients. Classification. Functions.
3. Balance of energy as a key principle of healthy diet. Energy intake, energy expenditure, energy storage. Energy balance in different conditions.
4. Components of energy requirements. Basal metabolic rate. Direct and indirect methods of measurements of energy expenditure.
5. Proteins: chemical structure, the basic biological functions. Protein nutritional quality. Major sources of food proteins. Differences in amino acid composition of animal and vegetable proteins.
6. Protein requirements for various age and physiological groups. National nutritional recommendations.
7. The manifestations of malnutrition in children: disorders of physical development, marasmus, kwashiorkor. Protein-energy malnutrition in adults.
8. Fats as food ingredients: Classification. Major sources of fats in the diet.
9. Fatty acids and their classification. Health effects of different fatty acids.
10. The essential and partly essential PUFAs. Omega-3 and Omega-6 fatty acids. Foods high in PUFAs, Health effects.

11. Trans isomers of unsaturated fatty acids. Health effects.
12. National nutritional recommendations for fats.
13. Dietary carbohydrates. Classification. Chemical structure. Functions. Dietary sources of carbohydrates.
14. Simple sugars. Health effects. Food substitutes of simple sugars. The problem of lactose intolerance.
15. Dietary fibers. Sources of dietary fiber. The biological role of dietary fiber
16. National nutritional recommendations for carbohydrates.
17. Vitamin C: chemical structure, functions in the body, food sources (animal, vegetable, bacteria, fortified foods), what happens to the vitamin during cooking and storage, vitamin deficiency. Daily requirements.
18. Vitamin A: functions in the body, food sources (animal, vegetable, bacteria, fortified foods), what happens to the vitamin during cooking and storage, vitamin deficiency. The possibility of toxic effects (hypervitaminosis). Daily requirements.
19. Vitamin D: functions in the body, food sources (animal, vegetable, bacteria, fortified foods), what happens to the vitamin during cooking and storage, vitamin deficiency. The possibility of toxic effects (hypervitaminosis). Daily requirements.
20. Vitamins B1, B2, B6: functions in the body, food sources (animal, vegetable, bacteria, fortified foods), what happens to the vitamin during cooking and storage, vitamin deficiency. Daily requirements.
21. Calcium: the physiological functions, regulation of metabolism in the body, daily requirements, calcium deficiency, biological markers of calcium deficiency, excess calcium in the diet and its consequences. Dietary sources of calcium.
22. Sodium: physiological functions, daily requirements. Excess sodium in food and its effects. Dietary sources of sodium.
23. Iodine: physiological functions, daily requirements, causes of iodine deficiency, biological markers of iodine deficiency. Dietary sources of iodine. Prevention of iodine deficiency at population level.
24. Iron: physiological functions, daily requirements, iron deficiency, biological markers of iron deficiency. Dietary sources of iron.
25. Anthropometry as a method for nutritional status assessment.
26. Methods to study body composition. Biomarkers of metabolism (energy, proteins, carbohydrates, lipids, minerals, vitamins) as a method to study nutritional status.
27. Nutrition and diseases of the cardiovascular system.
28. Nutrition and cancer.
29. Food allergies. Food intolerance. Hereditary diseases associated with food factors.
30. Global burden of alimentary related non-communicable diseases. Alimentary-related diseases in developing countries. Alimentary-related diseases in developed countries.
31. Foodborne infections. Preventive measures.
32. Foodborne toxicoinfections. Preventive measures.
33. Foodborne intoxications of microbial origin. Preventive measures.
34. Chemicals in food. Health effects. Preventive measures.
35. Food hygiene: a general approach.
36. Milk Hygiene.
37. Meat Hygiene.
38. Fish Hygiene.
39. Egg Hygiene.
40. Food additives

#### From Module 5

1. Classification of occupational health hazards.
2. Classification of occupational safety hazards.
3. Occupational illnesses. Definition. Examples.

4. Work-related illnesses. Definition. Examples.
5. Problems with detection of occupational illnesses.
6. Occupational health services in your country.
7. Occupational health problems in developing countries.
8. Job stress related disorders.
9. Job stressors.
10. Bulling (mobbing) at workplaces. Prevention.
11. Burnout at workplaces. Prevention.
12. Robert Karazek's demand-control model of job stress.
13. J. Siegrist's effort-reward stress model.
14. Job stress: Preventive approaches at workplaces.
15. Health problems that can be prevented using ergonomic approaches.
16. Physical work physiology. Dynamic and static work.
17. Ergonomic approaches to workstation design: sitting posture.
18. Ergonomic approaches to workstation design of computer workers.
19. Ergonomic approaches to workstation design: standing posture.
20. Ergonomic approaches to workstation design: material handling.
21. Ergonomic approaches to workstation design: hand tools.
22. Noise sources at workplaces. Noise reference levels.
23. Noise and health.
24. Risk factors for noise induced hearing lost.
25. Noise prevention programs at work places.
26. Hand-arm vibration at work places. Sources and health effects.
27. Hand-arm vibration syndrome (HAVS) prevention.
28. Whole-body vibration at work places. Sources and health effects.
29. Whole-body vibration syndrome (WBVS) prevention.
30. Biological hazards at work places.
31. Biological hazards at work places: Preventive approaches.
32. Chemicals at work places. Sources. Routes of exposure.
33. Chemical hazards at work places: Preventive approaches.
34. Health hazards at dentist's work place. Preventive approaches.
35. Health hazards at radiologist's work place. Preventive approaches.
36. Health hazards at surgeon's work place. Preventive approaches.
37. Health hazards at hospital lab staff work places. Preventive approaches.
38. Health hazards at nurse's work place. Preventive approaches.
39. Health hazards at pathologist's work place. Preventive approaches.
40. Health hazards at general practitioner's work place. Preventive approaches.

Examination questions with answers (examples)

***1. Sources of air pollution: classification and characterization. Primary and secondary air pollutants.***

Air pollution in rural areas: burning agricultural land, forest fires, dust storms, deforestation through slash and burn method.

Air pollution in urban settings: mobile sources (vehicles), stationary sources (industrial emissions), natural sources (soil erosion).

Primary air pollutants: harmful substances that are emitted directly from various sources: sulfur oxides (SO<sub>x</sub>), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs) such as benzene, toluene, xylene and benzo(a)pyrene, lead is a noteworthy air contaminant in countries where it is added to gasoline, particulate matters (PM).



Industrial smog: a mixture of suspended particulates, sulfur dioxide, and droplets of sulfuric acid; biggest source of industrial smog is burning coal; more of a problem in developing countries than developed because the wealthier countries can afford the equipment to clean the smoke stacks.

Emission of sulfur oxide and nitrogen oxides causes acid rains: The main emitter of sulfur oxides: utilities burning coal. The main emitter of nitrogen oxides: transport car exhaust and utilities burning coal.

These pollutants are further transformed by processes in the atmosphere. For example, ground level ozone is a secondary pollutant produced by the interaction of sunlight with nitrogen dioxide and volatile organic compounds. Temperature and humidity are also important. Secondary air pollutants: harmful substances that form when primary pollutants react with each other or with water vapor.

Photochemical smog produces ozone: VOCs + Nox (NO, NO<sub>2</sub>) in the presence of sunlight, heat = ozone and other secondary pollutants.

## ***2. Nosocomial infections: definition, examples of sources. Routes of transmission of nosocomial infections. Nosocomial infection precautions.***

Nosocomial Infections: Also called hospital-acquired infections (HAI) or hospital-associated infections. Infections not present in the patient at the time of admission but developed during the course of the patient's stay in the hospital. Infections are caused by microorganisms that may come from the patient's own body, the environment, contaminated hospital equipment, health workers, or other patients. The risk of HAI is heightened for patients with altered or weakened immunity.

Routes of Transmission of Nosocomial Infections: Contact transmission. Direct contact (e.g., surgeon with infected wound in the finger performing a wound dressing). Indirect contact (e.g., secretion from one patient transferred to another through hands in contact with contaminated waste). Fecal-oral transmission via food. Bloodborne transmission - e.g., needle-stick injury – hepatitis B and C, HIV/AIDS. Vector transmission - e.g., insects or other pests in contact with excreta or secretions from infected patients and transmitted to other patients. Droplet transmission (droplets from sneezing, coughing or vomiting are expelled to surfaces or to the air and fall typically within 2 meters of the source) - Direct droplet transmission (droplets reach mucous membranes or are inhaled by others), Indirect droplet-to-contact transmission (droplets contaminate surfaces/hands and are transmitted to mucous membranes or other sites) – cold virus, respiratory syncytial virus. Airborne transmission (small contaminated particles as aerosols carried by air currents >2 meters from source) - e.g., Varicella zoster suspended in air and spread by inhalation, Staphylococcus aureus depositing in wounds.

Standard Precautions: Basic level of infection control to be used in the care of all patients. Key components – Hand hygiene – Use of PPE (gloves, face protection, gown) – Safe injection practices – Respiratory hygiene and cough etiquette – Safe handling of contaminated equipment and surfaces in the patient environment – Environmental cleaning – Handling and processing of used linens – Proper waste management.

Transmission-Based Precautions: Additional precautions used when routes of transmission are not completely interrupted by Standard Precautions. Three categories of transmission-based precautions 1. Contact Precautions – e.g. for E. coli O157:H7, Shigella spp. Hepatitis A virus, C. difficile, abscess draining, head lice 2. Droplet Precautions – e.g., for Neisseria meningitidis, seasonal flu, pertussis, mumps, Yersinia pestis pneumonic plague, rubella 3. Airborne Precautions – e.g., for M. tuberculosis, rubeola virus. Combined precautions, e.g. – Airborne and contact precautions for varicella zoster, methicillin-resistant S. aureus (MRSA), severe acute respiratory syndrome virus (SARS-CoV), avian influenza – Contact and droplet precautions for respiratory syncytial virus.

## ***3. Hygienic principles of correct organization of sport education.***

Hygienic principles of correct organization of sport education: providing of the optimal motive mode; complex differentiated application of different forms of physical education and hardening in accordance with age, sex, state of health and functional preparedness of children; creation of favorable terms of environment during engaging in a physical culture and sport.

Groups of sport education: main group - children and teenagers without some deviations in a state of health; preparatory group - children and teenagers with a weak health; special group - children and teenagers with considerable deviations in a state of health

#### ***4. Dietary carbohydrates. Classification. Chemical structure. Functions. Dietary sources of carbohydrates.***

What Are Carbohydrates: Macronutrient. Primary energy source. Carbon, hydrogen, oxygen. Sources: fruits, vegetables, and grains.

2 classes: Simple carbs. Complex carbs.

Simple Carbohydrates: Monosaccharides (1 sugar molecule) - Glucose, fructose, galactose. Disaccharides (2 sugar molecules) - Lactose, maltose, sucrose.

Complex carbohydrates: Starch. Fibers. Glycogene.

Why Do We Need Carbohydrates? Energy - 4 kcal/g. Brain & red blood cells. Exercise - Alternative fuel: fat & protein.

How much carbs: 60-65% of food energy.

#### ***5. Classification of occupational health hazards.***

CHEMICAL HAZARDS: There are approximately 80,000 chemicals in commercial use, 15,000 of which are frequently produced or used. It is estimated that approximately 1,000 new chemicals are added to commercial each year.

PHYSICAL HAZARDS: excessive noise, vibration, extremes of temperature, extremes of pressure, light, non-ionizing radiation, ionizing radiation.

BIOLOGICAL HAZARD: HIV, hepatitis C and B viruses, the tubercle bacillus, and many other bacteria, viruses, and other microorganisms that may be transmitted through air, water, food, or direct contact

BIOMECHANICAL HAZARDS: heavy lifting, repetitive, awkward, or forceful movements, work posture that result in musculoskeletal disorders, such as carpal tunnel syndrome and many cases of low back pain.

PSYCHOSOCIAL STRESS: high stress work environment resulting from excessive work demands on workers and low control by worker, physical or psychological violence at work called bullying or mobbing

Assessment criteria / assessment scale for each question:

*"Excellent" (14-15 points)* – The student gave full clear answers.

*"Good" (11-13 points)* – The student gave fairly complete answers, but there may be shortcomings in the systematization or generalization of the material, inaccuracies in the conclusions.

*"Satisfactory" (6-10 points)* – The student has difficulties in the presentation and systematization of the material, the conclusions are poorly reasoned, the content of theoretical errors.

*"Unsatisfactory" (5 points and less)* – The student cannot answer the question.

#### **HYGIENE EXAM QUESTIONS**

Ticket № (an example)

1. Aim and scope of Public Health and Hygiene.
2. Lighting in buildings: artificial lighting.
3. Adolescents and mental health.
4. Milk Hygiene.
5. Job stress: Preventive approaches at workplaces.

## PUBLIC HEALTH

**Teachers:** I.R. Iskandarova, D.Kh. Nigmatullina, A.R. Amirova, V.A. Shcherbakov

**Building, Department, classroom:** NUK, Department of Public Health and Health Care Organization; №313, №315

**Contact details:**

- Telephone number: (843) 236-08-81
- E-mail address: [oz-kgmu@mail.ru](mailto:oz-kgmu@mail.ru)
- Office and working hours: 308 (9-17)

**Faculty of General Medicine**

**Course: 2**

**Semester: 4**

**Total hours: 72 h**

Lectures: 14 h

Class hours: 34 h

Self-study: 24 h

**Total hours: 180 h**

**Course: 3**

**Semester: 5**

Total hours: 108 h

Lectures: 20 h

Class hours: 55 h

Self-study: 33 h

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical classes** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University.

**Course objectives: The purpose of mastering the discipline**

The objectives of mastering the academic discipline **public health** are: providing knowledge and skills necessary for a future doctor to work in the field of public health and public health care on issues of public health and the factors that determine it; systems that ensure the preservation, strengthening and restoration of public health; organizational and medical technologies; management processes, including economic, legal, administrative, organizational and other intra-industry and inter-sectoral relations; trends in the development of healthcare in foreign countries.

**Tasks of the discipline:**

To teach students:

- researching the health status of the population with the aim of preserving, strengthening and restoring it;
- organizing of medical and medical-preventive care for the population;
- using and analysing of information on the health of the population and the activities of medical organizations to propose measures to improve the quality and effectiveness of medical care;
- the basics of economics, marketing, planning and financing of management, innovative processes in healthcare, legal and ethical aspects of medical activity.

**Course topics:**

**Calendar plan of lectures**

1. Public health and healthcare as a science and subject of teaching. Basic concepts and criteria of public health
2. Population health and methods for studying it. Modern aspects of medical and demographic processes. Population morbidity and its main trends. ICD-10.
2. The state of health and healthcare in modern conditions.
3. Population health as a socio-economic value.
4. Basic principles of public health organization.
5. Organization of primary health care. Organization of emergency, including specialized medical care. Organization of palliative medical care.
6. Organization of specialized, including high-tech care. Organization of spa and resort care and rehabilitation.
7. State system of maternal and child health. Organization of obstetric and gynecological care.
8. Prevention of infectious and non-infectious diseases. The role of medical organizations in organizing preventive work. Health centers. Medical examination. Centers for medical prevention and public health.
9. Organization of the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing, its structure and tasks. Interaction of the Office of Rospotrebnadzor and the Centers for Hygiene and Epidemiology with medical organizations
10. Healthcare planning and financing.
11. Healthcare economics and management.
12. Digitalization in healthcare. Federal project "Creation of a single digital circuit in healthcare based on the unified state information system in healthcare (EGISZ)".
13. Social and medical insurance of the population. The program of state guarantees for free provision of medical care to citizens.
14. Quality and safety of medical activities. Standards of medical care, procedures for providing medical care, clinical guidelines.
15. Organization and provision of drug care in the Russian Federation
16. International cooperation

### **Calendar plan of practical classes**

1. Medical and demographic indicators. Morbidity of the population (methods of study, types of morbidity, sources of study of morbidity). Solving situational tasks.
2. National project "Healthcare". National project "Demography".
3. The use of medical statistics methods in analyzing population health. Solving situational tasks.
4. Primary health care to the population. Outpatient and polyclinic medical organizations. Organization of the polyclinic
5. Organization of specialized, high-tech medical care to the population. Organization of the inpatient department
6. Organization of emergency, including specialized emergency medical care.
7. Spa and resort care and rehabilitation. Organization of palliative medical care to the population.
8. Organization. obstetric and gynecological care to the population.
9. Assessment of the main indicators of population health and the activities of medical organizations. Business game
10. Organization of preventive work in medical organizations. Medical examination and medical examinations (periodic and preventive) of the population.
11. Hygienic education and upbringing of the population. Development of a program for the formation of a healthy lifestyle of the population.
12. Organization of work ability examination. Temporary disability. Medical commission. Permanent disability. Bureau of medical and social examination.
13. Organization of prevention of infections associated with the provision of medical care.
14. Healthcare planning. Types of plans. Planning methods. Methodology for planning medical care to the population in outpatient and inpatient settings. Solving situational tasks

15. Healthcare financing. Drawing up a financial plan for a medical organization. Cost of medical services. Pricing. Profitability. Types of prices. Tariffs. Solving situational tasks.
2. Healthcare economics. Basic concepts. Types of efficiency in healthcare. Analysis of hospital activities. Solving situational tasks.
3. Basic concepts of marketing. Marketing in healthcare. Properties of medical services. Market segmentation. Marketing in medicine and its types. Marketing environment. Marketing concepts
4. Management in healthcare. Functions, methods, management. Management levels in a medical organization. Management cycle. Management styles.
5. Implementation of artificial intelligence technologies in medicine and healthcare. Abstract conference.
6. Application of SWOT analysis in medical organizations. Business game.
7. Compulsory medical insurance. Federal Law on compulsory medical insurance of citizens in the Russian Federation. Voluntary medical insurance
8. The program of state guarantees for free provision of medical care to citizens. Solving situational problems.
9. Quality and safety of medical activities. Ensuring the quality of medical care. Standards of medical care, procedures for providing medical care, clinical guidelines.
10. Control of quality and safety of medical activities. Management of quality and safety of medical activities in a medical organization. Business game.

#### **Text books and required supplies:**

1. Handbook of Research on Essential Information Approaches to Aiding Global Health in the One Health Context Administration / Jorge Lima de MagalhãesZulmira Hartz-George Leal Jamil-Henrique SilveiraLiliane C. Jamil. – IGI Global, 2022. – 390. – ISBN // 9781799880110
2. Handbook of Research on Healthcare Standards, Policies, and Reform / Ubaldo Comite. - IGI Global, 2022. – 408. – ISBN // 9781799888697
3. Handbook of Research on Optimizing Healthcare Management Techniques / Nilmini Wickramasinghe. - IGI Global, 2020. – 431. – ISBN // 9781799813712
4. Effective Methods for Modern Healthcare Service Quality and Evaluation // Panagiotis Manolitzas-Evangelos Grigoroudis-Nikolaos Matsatsinis-Denis Yannacopoulos. - IGI Global, 2016. – 338. – ISBN // 978-1466699618
5. Healthcare Facilities in Developing Countries: A Case Study of Mau, India // Amrita Dwivedi, AuthorArvind Kumar Singh, AuthorKaram veer Yadav. – Cambridge Scholars Publishing, 2019. – 16. – ISBN // 978-1-5275-3905-1
6. Handbook of Research on Solving Modern Healthcare Challenges With Gamification // Ricardo Alexandre Peixoto de Queirós-António José Marques. – IGI Global, 2021. – 382. – ISBN // 9781799874720
7. Sustainable Health and Long-Term Care Solutions for an Aging Population // Ben Fong-Artie Ng-Peter Yuen. – IGI Global. – 441. – ISBN // 978-1522526339
8. Health Economics and Healthcare Reform : Breakthroughs in Research and Practice // Information Resources Management Association . – IGI Global, 2018. – 478. – ISBN // 9781522531685
9. Next-Generation Mobile and Pervasive Healthcare Solutions // Jose Machado-António Abelha-Manuel Filipe SantosFilipe Portela. – IGI Global, 2018. – 286. – ISBN // 9781522528517

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Level 1 – assessment of knowledge**

The following types of control are used to evaluate learning outcomes in the form of knowledge:  
— test;

Examples of tasks:

Medical care is:

-diagnosis;

-treatment;

-prevention;

-a set of measures aimed at maintaining and (or) restoring health and including the provision of medical services.

The Federal Law "On the Basics of Public Health Protection in the Russian Federation regulates relations:

-in the field of sanitary and epidemiological supervision;

-in the field of public health protection;

-in the field of social assistance to the population;

-in the field of medical and social insurance of the population;

*Evaluation criteria:*

"Excellent" (90-100 points) "Good" (80-89 points) "Satisfactory" (70-79 points) "Unsatisfactory" (0-69 points).

## **Level 2 – assessment of skills**

The following types of control are used to evaluate learning outcomes in the form of skills:  
— case tasks;

Examples of tasks:

- Calculate the required number of round-the-clock inpatient beds for children. The total population is 61,800, children - 12,200. The standard of provision of pediatric beds is 113.74 per 1000 residents.

A simple bed, due to the turnover of the bed, is planned for 1 day. The average length of a patient's stay in a bed is 9 days. 2500 deliveries were delivered at the maternity hospital, including 401 with surgical interventions. Among the surgical interventions there were 66 cesarean sections. 2 cases of maternal mortality have been registered.

Calculate:

1. The proportion of surgical interventions.
2. The proportion of cesarean sections.
3. Maternal mortality rate.
4. Give a conclusion.

*Evaluation criteria:*

"Excellent" (90-100 points) – the task is clearly completed, your own position is formulated, the scientific terminology is used correctly. "Good" (80-89 points) – the task is clearly completed, but one's own position is not formulated, scientific terminology is correctly used.

"Satisfactory" (70-79 points) – the task is not fully completed, one's own position is not formulated, scientific terminology is not correctly used. "Unsatisfactory" (0-69 points) – the task has not been completed, one's own position has not been formulated, scientific terminology has not been used correctly.

## **Level 3 – assessment of skills**

The following types of control are used to evaluate learning outcomes in the form of skills:  
— tasks for decision-making in a non-standard situation (situations of choice, multiple alternatives to solutions;

Examples of tasks:

Clinical trials of a new drug that can be used in the applied treatment regimen instead of an old drug available on the market, but less effective, were conducted in a medical organization. Suggest a method of economic justification for the need to use a new drug.

*Evaluation criteria:*

"Excellent" (90-100 points) – the answer is correct, scientifically reasoned, with links to the topics covered. "Good" (80-89 points) – the answer is correct, scientifically reasoned, but without references to the topics covered. "Satisfactory" (70-79 points) – the answer is correct, but not scientifically reasoned, or the answer is incorrect, but an attempt is presented to substantiate it from alternative scientific positions covered in the course. "Unsatisfactory" (0-69 points) – the answer is incorrect and not scientifically reasoned.

## **PATHOPHYSIOLOGY**

**Teachers: Prof. Sergey Boichuk, Prof. Laily Zubairova, PhD Aigul Galebikova, PhD Firusa Bikinieva**

**Building, Department, classroom**, Department of General Pathology, Tolstoy street, 6/30, 1<sup>st</sup> floor, 119, 126, 131, 132 rooms.

**Contact details:**

- Telephone number: 8 (843)236-75-31
- E-mail address: [general-pathology@kazangmu.ru](mailto:general-pathology@kazangmu.ru)
- Office and working hours: 633 (9-17)

**Class hours:**

**Total hours — 252:**

Lectures 50 hours;

Practical classes 105 hours;

Independent work 61 hours;

Control 36 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University <https://e.kazangmu.ru/course/view.php?id=1891>

**Course objectives: The purpose of mastering the discipline**

Pathophysiology belongs to propedeutical disciplines supplying a bridge between the basic sciences and the clinic. The goals of mastering the pathophysiology are to provide the basic knowledge of etiology and the mechanisms of the typical pathological processes and common types of the diseases, thus establishing the effective fundamental principles for preventive and therapeutic health care measures and practices.

**Tasks of the discipline:**

To form knowledge in the following field:

- Demonstrate a basic understanding of the concepts and elements of disease.
- Apply principles of molecular biology, anatomy, physiology, biochemistry, and histology of human body systems to the pathologic processes and most common syndromes and diseases.
- Demonstrate an understanding of the fundamental principles of mechanisms of diseases, the diagnosis of diseases, and the treatment of diseases.
- Discuss common laboratory and diagnostic tests.
- Understand the pharmacological pathogenesis-based treatment strategies of diseases and pathologic conditions.

**Course topics:**

**Calendar plan of lectures**

- |   |   |
|---|---|
| 1. General concepts of pathophysiology        | 12. Red blood cells disorders                 |
| 2. Acid-base disorders                        | 13. Pathophysiology of Leukemias              |
| 3. Disorders of water and electrolyte balance | 14. Disorders of haemostasis                  |
| 4. Inflammation 1                             | 15. Atherosclerosis. Coronary artery disease  |
| 5. Inflammation 2                             | 16. Arterial hypertension                     |
| 6. Allergy 1                                  | 17. Pathophysiology of shock                  |
| 7. Allergy 2                                  | 18. Obstructive and restrictive lung diseases |
| 8. Immunodeficiency 1                         | 19. Pulmonary edema                           |
| 9. Immunodeficiency 2                         | 20. Pathophysiology of Acid-peptic disease    |
| 10. Mechanisms of tumorigenesis 1             | 21. Pathophysiology of Pancreatitis           |
| 11. Mechanisms of tumorigenesis 2             | 22. Acute hepatitis                           |
|   | 23. Chronic hepatitis and cirrhosis           |



24. Acute renal failure

25. Chronic renal failure

**Calendar plan of workshops and practical classes**

- |                                     |   |
|-------------------------------------|---|
| 1. Cell injury and death            | 20. Heart failure                               |
| 2. General mechanisms of hypoxia    | 21. Module 5                                    |
| 3. Acid-base disorders              | 22. Lung volumes, capacities, and the spirogram |
| 4. Water and electrolyte disorders. | 23. Ventilation to perfusion mismatch           |
| 5. Module 1                         | 24. Module 6                                    |
| 6. Acute Inflammation               | 25. Acid-peptic disease                         |
| 7. Chronic inflammation             | 26. Pathophysiology of exocrine pancreas        |
| 8. Pathophysiology of Fever         | 27. Pathophysiology of diarrhea                 |
| 9. Pathophysiology of Allergy       | 28. Module 7                                    |
| 10. Module 2                        | 29. Pathophysiology of Jaundice                 |
| 11. Immunodeficiencies              | 30. Overview of liver diseases.                 |
| 12. Pathophysiology of Tumors       | 31. Liver Function tests                        |
| 13. Pathophysiology of Tumors 2     | 32. Glomerular filtration rate(GFR)             |
| 14. Module 3                        | 33. Glomerulonephritis and nephrotic syndrome   |
| 15. Red blood cell disorders        | 34. Module 8                                    |
| 16. White blood cell disorders      | 35. Reworks                                     |
| 17. Module 4                        |   |
| 18. Conduction disorders            |   |
| 19. Dysrhythmias                    |   |

**Text books and required supplies:**

1. General pathophysiology. Selected themes. Общая патофизиология. Избранные темы: методическое пособие для студентов / ГБОУ ВПО «Казан. гос. мед. ун-т» Министерства здравоохранения, каф. патофизиологии; [составители Л.Д.Зубаирова, С.В.Бойчук].– Казань: КГМУ, 2012. –98 с.
2. Pathophysiology of organs and systems. Selected themes. Патофизиология органов и систем. Избранные темы: методическое пособие для студентов / ГБОУ ВПО «Казан. гос. мед. ун-т» Министерства здравоохранения, каф. патофизиологии; [составители Л.Д.Зубаирова, С.В.Бойчук].– Казань: КГМУ, 2011. – 101 с.
3. Tests on pathophysiology/ Тесты по патофизиологии: методическое пособие для студентов /ГБОУ ВПО «Казан. гос. мед. ун-т» Министерства здравоохранения, каф. патофизиологии; [составители Л.Д.Зубаирова, С.В.Бойчук].– Казань: КГМУ, 2012.–72 с.
4. Pathophysiology. 6th Edition, **Authors: Jacquelyn Banasik, Paperback**  
**ISBN:** 9780323354813  
**eBook ISBN:** 9780323625050  
**eBook ISBN:** 9780323510455  
**eBook ISBN:** 9780323510424  
Imprint: Saunders, Published Date: 20th February 2018, Page Count: 1200
5. Pathophysiology. The Official Journal of the International Society for Pathophysiology  
<https://www.journals.elsevier.com/pathophysiology>

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test works assessment, reports or other).

*Routine performance assessment* (homework, oral answer during classes, etc.) is carried out using 10-point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance)

or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test. Grading: 0–69 – “noncredit“, 70-79 – “satisfactory“, 80-89 – “good“, 90-100 – “excellent“.

*Overall student rating* is build up from class attendance (10%), module and test results (50%), final exam results (40%).

### **Classroom rules:**

- Be respectful
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Using phone is allowed only during brakes

### **Example of module No. 1 on the section of General concepts of pathophysiology, Cell injury and death, Hypoxia, Acid-base and Water electrolyte disorders**

1. What is etiology?
2. What does Pathophysiology deal with?
3. Which hormones are increased in stress?
4. Central to the endocrine component of the neuroendocrine response to stress is...
5. The net result of lipid peroxidation is...
6. Which enzymes are activated with the increased intracellular calcium level?
7. The major lipid-soluble antioxidant present in all cellular membranes is...
- 8 Apoptotic cell death is characterized by...
9. Immediate adaptive changes seen in hypoxia are...
10. Blood centralization reaction is characterized by...
- 11 Determine the type of hypoxia if:  $\text{PaO}_2 \rightarrow$ ,  $\text{SaO}_2 \rightarrow$ ,  $\text{CaO}_2 \downarrow$ ?
12. Metabolic alkalosis is a...
13. In what circumstances an overproduction of ketoacids occurs?
14. Respiratory acidosis develops as a result of...
15. Manifestations of metabolic acidosis include...
16. Plasma pH above 7.45, plasma  $\text{HCO}_3^-$  above 25 mmol/L and base excess above 3 mmol/L are characteristics of...
17. The physiologic mechanisms that contribute to edema formation include factors that...
18. The rate at which the kidney excretes or conserves sodium is dependant of...
19. Aldosterone acts at the level of the cortical collecting tubules of the kidneys for...
20. An increase in arterial resistance or decrease in venous resistance is supposed to...

### **Example of module No. 2 on the section of Inflammation, Fever, Allergy**

1. What mediators are synthesized from arachidonic acid through the lipoxygenase metabolic pathway?
2. The local manifestations of acute inflammation
3. What is early-phase of IgE-mediated allergic reaction related to?
4. The differences between anaphylactic and anaphylactoid reactions
5. Cytokines known to cause the elevation of body temperature, mechanism of action

### **Example of module No. 3 on the section of Immunodeficiency and Tumors**

## **Immunodeficiency**

### **1. Adaptive immune response exhibits:**

- a. specific recognition of the microbe
- b. Immunological "memory"
- c. generation of Ag-specific T- and B-cellsd.
- d. all are correct

### **2. Absolute lymphopenia can be a signature of:**

- a. Wiskott-Aldrich syndrome
- b. hereditary angioneurotic edema
- c. Ataxia-Telangiectasia
- d. Chediak-Higashi syndrome

### **3. T-cell receptor (TCR) recognizes a processed antigen peptide...**

- a. in association with a self-recognition protein, called a major histocompatibility complex (MHC) molecule
- b. by membrane-bound immunoglobulin molecules that can bind a specific epitope
- c. both mechanisms indicated above
- d. none of indicated mechanisms

### **4. Secretory immunoglobulin found in saliva, tears, colostrums and bronchial, gastrointestinal, prostatic and vaginal secretions and considered a primary defense against local infections in mucosal tissues is**

- a. Ig E, b. Ig G, c. Ig A, d. Ig D

### **X-linked hyper IgM syndrome is classified as**

- a. secondary cellular immunodeficiency disorder
- b. primary cellular immunodeficiency disorder
- c. secondary humoral immunodeficiency disorder
- d. primary humoral immunodeficiency disorder

## **Tumors**

### **1. Hayflick's limit characterizes:**

- a. the limited number of contacts between cells
- b. the unlimited abilities of cancer cells to proliferate
- c. activation of the cellular check-points in response to DNA damage
- d. cell abilities to the limited number of mitosis

### **2. Epstein-Barr virus might be the etiological factor of the following malignancies, except:**

- a. nasopharyngeal carcinoma
- b. squamous cell carcinoma of the cervix
- c. Burkitt's lymphoma

### **3. p53 is known as a:**

- a. proto-oncogene and decreased activity of this gene decreases the risk of cancer
- b. onco-suppressor gene and its decreased activity decreases risk of cancer
- c. onco-suppressor gene and its decreased activity increases risk of cancer
- d. proto-oncogene and increased activity of this gene increases the risk of cancer

### **4. Tamoxifen is commonly used for therapy of:**

- a. all types of breast cancers shown here
- b. ER-positive breast cancer
- c. chronic myeloid leukemia (CML)
- d. HER2-positive breast cancer
- e. triple-negative breast cancer

### **5. The molecular mechanism of action of aromatase inhibitors is due to:**

- a. inhibition of the microtubules polymerization resulting to the mitotic spindle disassembly and cellular arrest in metaphase
- b. the induction of DNA cross-links or strand-breaks in tumor cells

- c. blockage of the extra-adrenal synthesis of estrogen
- d. prevention of the microtubule disassembly into tubulin monomers and cell cycle arrest in anaphase

**Example of module No. 4 on the section of Pathophysiology of blood**

1. Determine affiliation of the following hemograms with diseases. Explain your answer.

**1. RBC  $3,5 \times 10^{12}/l$ , Hb 82 g/l**

Rt 1%, MCV ↓  
 SI ↓ TIBC ↑ Fer ↓  
 Pt  $190 \times 10^9/l$   
 WBC  $8 \times 10^9/l$

- Neutrophil
- band 4%
- segmented 60%
- Lymphocyte 22%
- Monocyte 9%
- Eosinophil 4%
- Basophil. 1%

**2. RBC  $3,4 \times 10^{12}/l$ , Hb 80 g/l**

Rt 5%, MCV →  
 Pt  $310 \times 10^9/l$   
 WBC  $13 \times 10^9/l$

- Neutrophil
- metamyelocytes 1%
- band 10%
- segmented 59%
- Lymphocyte 21%
- Monocyte 5%
- Eosinophil 3%
- Basophil. 1%

**3. RBC  $2,05 \times 10^{12}/l$ , Hb 64 g/l**

Rt 0.3%, MCV →  
 Pt  $100 \times 10^9/l$   
 WBC  $8 \times 10^9/l$

- Neutrophil
- band 1%
- segmented 38%
- Lymphocyte 22%
- Monocyte 4%
- Eosinophil 0
- Basophil. 0

Blasts 33%

**4. RBC  $3,7 \times 10^{12}/l$ , Hb 122 g/l**

Rt 0.8%, MCV →  
 Pt  $200 \times 10^9/l$   
 WBC  $3 \times 10^9/l$

- Neutrophil
- band 20%
- segmented 22%
- Lymphocyte 50%
- Monocyte 7%
- Eosinophil 1%

- Basophil. 0

**Example of module No. 5 on the section of Pathophysiology of Cardiovascular system**

**1. Normal sinus rhythm is defined by...**

- a. QRS largely regular, P must be positive in limb leads
- b. P must be positive in II but negative in Avl
- c. each and every QRS is preceded by a P, positive in II

**2. The early lesion, or fatty streak is characterized by:**

- a. macrophages and vascular smooth muscle cells full of oxidised LDL cholesterol
- b. skeletal muscle cells full of oxidised LDL
- c. platelets full of oxidised LDL

**3. Key to the onset of acute coronary syndrome ACS is:**

- a. fatty steak formation
- b. plaque disruption and subsequent thrombus formation
- c. hypercholesterolemia

**4. AV nodal conduction abnormalities can occur because of:**

- a. reflex activation of the vagus nerve
- b. activation of sympathetic fibers
- c. both correct

**5. Preload is largely determined by:**

- a. the angiotensinogen
- b. the blood pressure
- c. the venous return to the heart

**6. Diastolic dysfunction can be present in following cases except:**

- a. decreased relaxation
- b. decreased elastic recoil
- c. decreased stiffness of the ventricle

**7. Symptoms of right ventricular failure include the following except:**

- a. accumulation of fluid in the lung venous circulation
- b. generalized edema (anasarca)
- c. ascites

**8. Adrenal disease can cause hypertension by:**

- a. increased production of cortisol
- b. increased production of thrombin
- c. increased production of erythropoietin

**9. The primary mechanism of the shock due to the blood loss is:**

- a. cardiac dysfunction
- b. volume loss
- c. volume maldistribution

**10. The primary mechanism of the anaphylactic shock is**

- a. cardiac dysfunction
- b. volume loss

c. volume maldistribution

**11. Name the type of Dysrhythmia in the following strips.**



**Example of module No. 6 on the section of Pathophysiology of Respiratory system**

**1. The areas that do not participate in gas exchange in the normal lung are referred to:**

- a. anatomic dead space
- b. alveolar dead space
- c. both
- d. all are wrong

**2. Inspiratory reserve volume (IRV) is defined as:**

- a. the amount of air that can be forcibly inspired at the end of normal inspiration
- b. the amount of air that can be forcibly expired at the end of normal expiration
- c. the total amount of gas that can be exhaled following a maximal inhalation
- d. the amount of gas remaining in the lungs at the end of a maximal exhalation
- e. the amount of gas inhaled and exhaled with each resting breath.

**3. The macrophage-derived factor that is involved in the injury of lung parenchyma injury (for example, in emphysema) is the following:**

- a. serotonin
- b. histamine
- c. metalloprotease type 12
- d. elastase

**4. The decrease of the V/Q ratio represents the pathologic processes referred to:**

- a. all are wrong
- b. alveolar dead space
- c. both cases indicated above
- d. shunt

**5. FEV1 is disproportionately reduced as compared to the FVC, resulting in a low FEV1/FVC ratio, in:**

- a. obstructive lung diseases
- b. restrictive lung diseases
- c. both are correct

**6. Factor involved in cardiogenic pulmonary edema pathogenesis is:**

- a. in-creased pulmonary venous pressure (causing in-creased capillary hydrostatic pressure)
- b. loss of integrity of the alveolar epithelium and vascular endothelium
- c. increased alveolar surface tension (thereby lowering interstitial hydrostatic pressure)
- d. decreased capillary colloid osmotic pressure

**7. Technetium 99 is used for:**

- a. perfusion scan procedure
- b. spirometry test
- c. all are wrong
- d. diffusion lung capacity measure

**8. The presence of the transudate in the lungs is typical for:**

- a. cardiogenic pulmonary edema
- b. both types of pulmonary edemas indicated above
- c. all are wrong
- d. non-cardiogenic pulmonary edema

**9. Index Tiffno is typically increased in:**

- a. bronchial asthma
- b. emphysema
- c. pulmonary embolism
- d. chronic bronchitis
- e. interstitial pulmonary fibrosis

**10. The accumulation of eosinophils in bronchial airways is responsible for the following, except:**

- a. non-specific hyperactivity of airways
- b. inability to tolerate well the exercises
- c. specific hyperactivity of airways
- d. reduced lung compliance

**Example of module No. 7 on the section of Pathophysiology of Gastrointestinal system**

1. pH required for *H. Pylori* survival is...
2. The therapeutic activity of proton pump inhibitors is related to the ability to...
3. The most common product of *H. Pylori* urease activity is...
4. Prostaglandins E1 and E2 are able to prevent the stomach lining from the ulcer due to their ability to...
5. Rapid gastric emptying is involved in the pathogenesis of...
6. The decreased levels of pepsinogen in the serum ...
7. Metaplasia of the mucosal surface of duodenum might be a consequence of...
8. Stomach acid represents...
9. The duodenal enzyme involved in the formation of pancreatic enzymes from their inactive precursors (proenzymes) is known as...
10. The mediator (besides CCK) which is known to stimulate secretion of enzymes from zymogen granules is named as...
11. The digestion of the carbohydrates, producing glucose is mediated by...
12. Jaundice in acute pancreatitis is due to the following mechanisms...
13. Blood and pus in the stool are not typical for the following conditions...
14. Osmotic diarrhea is usually observed during...
15. Crohn's disease and ulcerative colitis are belong to...
16. An increased levels of amylase in serum is much less for the patients with acute pancreatitis when compared to the patients with patotitis...
17. The major molecular mechanism explaining the multiple erosions and ulcers in patients with Zollinger-Ellison syndrome is due to...
18. Increased influence of n.vagus on the gastrointestinal tract leads to the consequences...
19. Rheumatoid arthritis and other systemic diseases might be related to ulcer development due to...

20. The substances produced by the pancreas in a ready-to-go state and therefore do not require activation in the duodenal lining.

**Example of module No. 8 on the section of Pathophysiology of Liver and Kidneys**

**1. Hepatitis A virus is spread by:**

- a. the fecal-oral route    b. the intimate contacts    c. the infected blood

**2. What factors are important in pathogenesis of the extrahepatic manifestations of acute viral hepatitis?**

- a. immunologic    b. humoral    c. neurologic

**3. Coagulopathy in which the prothrombin time can be corrected by vitamin K injections but not by oral vitamin K suggests:**

- a. loss of clearance of activated clotting factors  
b. cholestatic disease  
c. decreased coagulation factor synthesis

**4. In patients with severe liver disease, infections can rapidly decompensate into sepsis due to:**

- a. decreased clearance of bacteria by liver endothelial cells  
b. decreased clearance of bacteria by hepatocytes  
c. decreased clearance of bacteria by Kupffer cells

**5. Bilirubin ↑, ALT normal; reticulocytes normal; prothrombin time↑; + parenteral vitamin K falls, urinary changes: urobilinogen absent, faecal changes: stercobilinogen absent. Laboratory findings are due to...**

- a. pre-hepatic jaundice    b. hepatic jaundice    c. post-hepatic jaundice

**6. According to the vascular theory of ARF pathogenesis...**

- a. occlusion of the tubular lumen increases intratubular pressure sufficiently to decrease net filtration pressure  
b. afferent arteriolar vasoconstriction and efferent arteriolar vasodilation reduces glomerular filtration  
c. decreased glomerular filtration results from the afferent arteriolar vasodilation and efferent arteriolar vasoconstriction

**7. Continued excessive sodium ingestion in CRF will contribute to:**

- a. weight gain    b. hyponatremia    c. hypertension

**8. The net effective filtration pressure is a result of:**

- a. the sum of the pressure in Bowman's capsule and the plasma colloidal pressure  
b. the intracapillary pressure minus the sum of the pressure in Bowman's capsule and the plasma colloidal osmotic pressure  
c. the intracapillary pressure and the plasma colloidal osmotic pressure

**9. Which statement is not correct?**

- a. the glomerular filter can be clogged by endothelial swelling during acute inflammation which results in decreased filtration  
b. the podocytes can be injured, allowing the loss of size and charge selectivity which results in decreased filtration  
c. the glomerular filter can be clogged by connective tissue deposition in chronic inflammation which results in decreased filtration



**10. The clinical expression of glomerular endothelium injury is known as:**

- a. nephrotic syndrome b. nephritic syndrome

**Answer the following questions related to the case.**

BP 100/60 mm Hg, HR 80 b/min, RBC  $4.8 \times 10^{12}/l$ , Hb 145g/l, Leu  $5.52 \cdot 10^9/l$

**Serum:** creatinine – 11.1 mg\ml, (N 12-14 mg\ml), urea – 6,8 mmol\l, (N 3-8 mmol/l), proteins – 58 g/l, (N 65-85g/l), albumins – 28g/l, (N 40-50g/l).

**Diuresis:** 2200 ml/day

**Urine:** creatinine 760 mg/ml, proteins –2.8 g/l, glucose – absent, casts – present.

**11. Are there signs of azotemia?**

- a. yes b. no

**12. Make calculation of GFR. Is it...**

- a. reduced b. increased c. normal

**13. What is the mechanism of lowered blood pressure?**

- a. intravascular volume depletion b. reflex vasodilatation c. reflex vasoconstriction

**14. What is the mechanism of hypoalbuminemia?**

- a. hemodilution b. loss of protein synthetic function of the liver c. loss of proteins with urine

**15. What syndrome is the patient having?**

- a. Chronic renal failure b. Nephrotic syndrome c. Acute renal failure d. Nephritic syndrome

**EXAMPLE OF THE FINAL EXAM**

1. Remission is a...
  - a. lesions or impairments that follow or are caused by a disease
  - b. aggravation of symptoms and severity of the disease
  - c. temporal relief of disease
2. Inflammatory diseases, allergic, neoplasia... is a classification according to:
  - a. etiologic factor
  - b. pathogenesis
  - c. affected organ or organ system
3. Brief and controllable periods of stress are known as...
  - a. Distress
  - b. Eustress
  - c. Superstress
4. Necrosis involves...
  - a. Regulated enzymatic digestion of cell components
  - b. Energy dependent activation of caspases
  - c. Release of the products of cell death into the intracellular space
5. Metabolic acidosis can be caused by:
  - a. Decreased production of nonvolatile metabolic acids
  - b. Increased acid secretion by the kidney
  - c. Excessive loss of bicarbonate
6. Which statement is correct?
  - a. Acute lactic acidosis is the most common types of respiratory acidosis
  - b. Lactic acidosis develops in hypoxia
  - c. Lactic acid is produced by the aerobic metabolism of glucose
7. The ICF volume is regulated by:
  - a. organic compounds and solutes that move between the ECF and ICF
  - b. solutes that move between the ECF and ICF
  - c. acids and bases that move between the ECF and ICF
8. An increase in arterial resistance or decrease in venous resistance:
  - a. decreases capillary pressure.
  - b. increases capillary pressure
  - c. increases oncotic pressure
9. Which statement is right?
  - a. albumin can be administered intravenously to treat edema
  - b. folic acid can be used to treat edema
  - c. vasopressine can be administered to treat edema
10. Extracellular sodium content is:
  - a. 13,5-14,5 mEq/L
  - b. 135 - 145 mEq/L
  - c. 1350-1450 mEq/L
11. The increased oncotic pressure in inflammatory site is a consequence of
  - a. activation of lysosomal enzymes with proteolytic activities
  - b. increased vascular permeability
  - c. all are correct
12. The low protein fluid emanating from the intravascular compartment due to an imbalance of the hydrostatic forces across the walls of the microcirculation is
  - a. an exudate
  - b. a transudate
  - c. plasma ultrafiltrate
  - d. all are correct
13. Chemical mediator known to induce the pain
  - a. bradykinin

- b. histamine
  - c. heparin
14. Histological appearances in chronic inflammation include:
    - a. dilatation of small blood vessels within the damaged area
    - b. a mixed inflammatory cell infiltrate containing predominantly macrophages, lymphocytes and plasma cells
    - c. accumulation of fluid in the extra vascular space
    - d. a mixed inflammatory cell infiltrate containing predominantly neutrophils and eosinophils
  15. The mechanism underlying in specific de-sensitization used in therapy of atopic diseases is related to:
    - a. elimination of allergen(s)
    - b. stabilization of mast cell membrane
    - c. synthesis of blocking Abs
    - d. all are correct
  16. The people with blood type I are called as an “universal donors” because:
    - a. decreased blood viscosity
    - b. increased numbers of red blood cells
    - c. absence of red cell antigens
    - d. absence of haemolysins
    - e. all are correct
  17. The inhalation of high doses of some allergens hay dust or mold spores (e.g. thermophilic actinomycetes) is able to induce:
    - a. bronchial asthma
    - b. allergic extrinsic alveolitis (farmer’s lung)
    - c. anaphylactic shock
    - d. all are correct
  18. Types I, II and III hypersensitivity reactions are classified as:
    - a. cell-mediated reactions
    - b. antibodies-mediated reactions
    - c. anaphylactoid reactions
    - d. all are correct
  19. The action of exogenous pyrogens is due to:
    - a. direct action to the thermoregulatory center
    - b. release of endogenous pyrogens
    - c. vasoconstriction and decrease of the heat loss
    - d. all are correct
  20. Hyperpyrexia is characterized with the following level of the body temperature:
    - a. <35.0 C (<95.0 F); b. <36.60 C (<98.0 F); c. 36.6 - 37.20 C (98 - 99.0 F);
    - d. >37.20 C (>99.0 F); e. >41.60 C (>107.0 F)
  21. Adaptive immune response exhibits:
    - a. specific recognition of the microbe
    - b. ability to "remember" the pathogen and quickly produce a heightened immune response on subsequent encounters with the same agent
    - c. all are correct
  22. Primary humoral immunodeficiency disorders can interrupt:
    - a. production of one or all of the immunoglobulins
    - b. recognition of general patterns of microbes and antigens
    - c. immunology tolerance
    - d. all are correct
  23. Persons with X-Linked Agammaglobulinemia are susceptible to:

- a. meningitis, sinus and pulmonary infections with encapsulated organisms such as *S. pneumoniae*, *H. influenzae* type b, *S. aureus*, and *Neisseria meningitidis*
  - b. certain malignancies and cancer development
  - c. acute viral infections
24. The newborn has immunity from his mother. The only immunoglobulin that crosses into the placenta is:
- a. IgG; b. IgD; c. IgM; d. IgA; e. IgE
25. Severe combined immuno-deficiency syndrome (SCIDS) represent the state due to the:
- a. mutations in the gene encoding the common gamma chain shared by receptors for many of the cytokines that direct the differentiation and maturation of both T and B lymphocytes
  - b. deficiency in adenosine deaminase (ADA) deficiency, which leads to accumulation of toxic metabolites that kill dividing and resting T cells.
  - c. all are correct
26. Adjuvant chemotherapy is known as a:
- a. therapy given after surgery to reduce the likelihood of the cancer recurrence
  - b. therapy given before surgery to downstage the tumor, allowing the surgery to be more successful (less invasive surgery can be performed).
  - c. synonymous of the palliative therapy given to relieve the symptoms and reduce the suffering caused by cancer
  - d. all are correct
27. Formation of metastasis is:
- a. infiltration of tissues with cancer cells
  - b. uncontrolled high-speed proliferation of cancer cells
  - c. transfer of cancer cells from primary tumor and formation the secondary tumor
  - d. encapsulation of tumors
28. The anti-mutational step of anti-tumor resistance include:
- a. recognition of cancer cells by cytotoxic lymphocytes and NK-killers
  - b. inhibition and inactivation of carcinogens (free oxygen radicals, hydroperoxides etc.)
  - c. reparation of damaged DNA and activation of anti-oncogenes (onco-suppressors)
29. Chemical carcinogens can be inactivated by:
- a. immunoglobulins preventing their entry to the host cells
  - b. inactivation of oxygen radicals with antioxidant enzymes
  - c. physical and chemical fixation
30. Epstein-Barr virus may be involved in the development of:
- a. nasopharyngeal carcinoma; b. squamous cell carcinoma of the cervix
  - c. hepatocellular carcinoma
  - d. all are correct
31. The neutrophils constitute:
- a. 5% to 6% of the total number of white blood cells
  - b. 55% to 65% of the total number of white blood cells
  - c. 15% to 25% of the total number of white blood cells
32. Acute viral infection are characterized by:
- a. eosinophilia
  - b. lymphocytosis
  - c. basophilia
33. Which statement is wrong?
- a. Leukemia is a disease in which leukocytes proliferate in an uncontrolled fashion
  - b. Leukemia is a disease in which leukocytes proliferate in the bone marrow
  - c. Leukemia is a disease in which leukocytes proliferate only in lymph nodes
34. What cells can be found in the blood count in acute lymphoid leukemia?
- a. Lymphoblast
  - b. Myeloblasts

- c. Metamyelocytes
- 35. Common manifestations of all anemias are:
  - a. the signs of impaired oxygen transport
  - b. jaundice
  - c. impaired coagulation
- 36. Microcytic hypochromic anemia occurs with:
  - a. acute blood loss
  - b. chronic blood loss
  - c. B12 deficit
- 37. How to explain increased pulse rate in the patient with anemia?
  - a. it is a cause of the disease
  - b. it is a compensatory reaction
  - c. it has nothing common with anemia
- 38. Sickle cell anemia results from:
  - a. inherited disorder of the red cell membrane
  - b. a point mutation in the  $\beta$  chain of the hemoglobin molecule
  - c. drug induced disorder of red blood cells
- 39. ET-1, AT II, PAF, TXA<sub>2</sub>...
  - a. are vasodilators, produced by endotheliocytes
  - b. are vasoconstrictors, produced by endotheliocytes
  - c. are vasodilators, produced by platelets
- 40. Which statement is wrong?
  - a. Idiopathic thrombocytopenic purpura typically appears in young woman
  - b. Idiopathic thrombocytopenic purpura presents antiplatelet antibody
  - c. Idiopathic thrombocytopenic purpura presents defects of leukocytes
- 41. Normal sinus rhythm is defined by...
  - a. QRS largely regular, P must be positive in limb leads
  - b. P must be positive in II but negative in Avl
  - c. each and every QRS is preceded by a P, positive in II
- 42. The early lesion, or fatty streak is characterised by:
  - a. macrophages and vascular smooth muscle cells full of oxidised LDL cholesterol
  - b. skeletal muscle cells full of oxidised LDL
  - c. platelets full of oxidised LDL
- 43. Key to the onset of acute coronary syndrome ACS is:
  - a. fatty streak formation
  - b. plaque disruption and subsequent thrombus formation
  - c. hypercholesterolemia
- 44. AV nodal conduction abnormalities can occur because of:
  - a. reflex activation of the vagus nerve
  - b. activation of sympathetic fibers
  - c. both
- 45. Preload is largely determined by:
  - a. the angiotensinogen
  - b. the blood pressure
  - c. the venous return to the heart
- 46. Diastolic dysfunction can be present in following cases except:
  - a. decreased relaxation
  - b. decreased elastic recoil
  - c. decreased stiffness of the ventricle
- 47. Symptoms of right ventricular failure include the following except:
  - a. accumulation of fluid in the lung venous circulation
  - b. generalized edema (anasarca)

- c. ascites (collection of fluid in the peritoneal space)
- 48. Adrenal disease can cause hypertension by:
  - a. increased production of cortisol
  - b. increased production of thrombin
  - c. increased production of erythropoietin
- 49. The primary mechanism of the shock due to the blood loss is:
  - a. cardiac dysfunction
  - b. volume loss
  - c. volume maldistribution
- 50. Sepsis usually is caused by:
  - a. gram-negative bacteremia
  - b. viruses
  - c. worms
- 51. Expiratory reserve volume (ERV) is defined as:
  - a. the amount of air that can be forcibly expired at the end of normal expiration
  - b. the amount of air, which can be exhaled on top of the tidal volume
  - c. vital capacity (VC) plus the inspiratory capacity (IC)
  - d. all are correct
- 52. The changes in FEV1 represent the pathologic processes located predominantly in:
  - a. lung parenchyma
  - b. conducting airways
  - c. all are wrong
- 53. The anatomic dead space is defined as:
  - a. gas-exchanging regions of the lung are ventilated but not perfused
  - b. gas-exchanging regions of the lung are perfused but not ventilated
  - c. both
  - d. all are wrong
- 54. The most important identified single risk factor for the evolution of COPD (other than cigarette smoking) is:
  - a. deficiency of  $\alpha$ 1-protease inhibitor
  - b. high susceptibility to mucus hypersecretion
  - c. inability to inactivation of free oxygen radicals, hydroperoxides etc.
  - d. all are wrong
- 55. Cardiogenic pulmonary edema is typically a consequence of the following factors except:
  - a. increased pulmonary venous pressure (causing increased capillary hydrostatic pressure)
  - b. increased alveolar surface tension (thereby lowering interstitial hydrostatic pressure),
  - c. loss of integrity of the alveolar epithelium and vascular endothelium
  - d. decreased capillary colloid osmotic pressure
- 56. Inspiratory residual volume (IRV) is:
  - a. the amount of air that can be forcibly expired at the end of normal expiration
  - b. the amount of air remaining in the lungs at the end of a maximal inhalation
  - c. the amount of gas in the lungs at the end of a resting tidal breath
  - d. all are correct
- 57. FEV1 is disproportionately reduced as compared to the FVC, resulting in a low FEV1/FVC ratio:
  - a. restrictive lung diseases
  - b. obstructive lung diseases
  - c. all are correct
- 58. The alveolar dead space is defined as:
  - a. gas-exchanging regions of the lung are ventilated but not perfused
  - b. gas-exchanging regions of the lung are perfused but not ventilated

- c. both
  - d. all are wrong
59. Macrophage-derived factor involved in lung parenchyma injury (in emphysema pathogenesis) is the:
- a. elastase
  - b. metalloprotease type 12
  - c. all are wrong
60. Factor involved in non-cardiogenic pulmonary edema pathogenesis is:
- a. increased pulmonary venous pressure (causing increased capillary hydrostatic pressure)
  - b. loss of integrity of the alveolar epithelium and vascular endothelium
  - c. increased alveolar surface tension (thereby lowering interstitial hydrostatic pressure)
  - d. decreased capillary colloid osmotic pressure
61. Hepatitis A virus is spread by:
- a. the fecal-oral route
  - b. the intimate contacts
  - c. the infected blood
62. What factors are important in pathogenesis of the extrahepatic manifestations of acute viral hepatitis?
- a. immunologic
  - b. humoral
  - c. neurologic
63. Coagulopathy in which the pro-thrombin time can be corrected by vitamin K injections but not by oral vitamin K suggests:
- a. loss of clearance of activated clotting factors
  - b. cholestatic disease
  - c. decreased coagulation factor synthesis
64. In patients with severe liver disease, infections can rapidly decompensate into sepsis due to:
- a. decreased clearance of bacteria by liver endothelial cells
  - b. decreased clearance of bacteria by hepatocytes
  - c. decreased clearance of bacteria by Kupffer cells
65. Bilirubin ↑, ALT normal; reticulocytes normal; prothrombin time↑; + parenteral vitamin K falls,  
urinary changes: urobilinogen absent, faecal changes: stercobilinogen absent. Laboratory findings are due to...
- a. pre-hepatic jaundice
  - b. hepatic jaundice
  - c. post-hepatic jaundice
66. According to the vascular theory of ARF pathogenesis...
- a. occlusion of the tubular lumen increases intratubular pressure sufficiently to decrease net filtration pressure
  - b. afferent arteriolar vasoconstriction and efferent arteriolar vasodilation reduces glomerular filtration
  - c. decreased glomerular filtration results from the afferent arteriolar vasodilation and efferent arteriolar vasoconstriction
67. Continued excessive sodium ingestion in CRF will contribute to:
- a. weight gain
  - b. hyponatremia
  - c. hypertension
68. The net effective filtration pressure is a result of:
- a. the sum of the pressure in Bowman's capsule and the plasma colloidal pressure
  - b. the intracapillary pressure minus the sum of the pressure in Bowman's capsule and the plasma colloidal osmotic pressure

- c. the intracapillary pressure and the plasma colloidal osmotic pressure
69. Which statement is not correct?
- the glomerular filter can be clogged by endothelial swelling during acute inflammation which results in decreased filtration
  - the podocytes can be injured, allowing the loss of size and charge selectivity which results in decreased filtration
  - the glomerular filter can be clogged by connective tissue deposition in chronic inflammation which results in decreased filtration
70. The clinical expression of glomerular endothelium injury is known as:
- nephrotic syndrome
  - nephritic syndrome
71. Stomach acid represent the:
- factor of defence from infection preventing ulcer formation
  - aggressive factor favoring the duodenal ulcer formation in rapid gastric emptying
  - all are correct
72. The most accurate method for testing for H. Pylori after eradication therapy is:
- serological antibody test
  - assay for anti-H. Pylori IgG in saliva
  - urea breath test
  - all are wrong
73. What statement is correct? The COX-2 enzyme is known to be:
- present in most tissues as a housekeeper enzyme
  - inducible in inflammation
  - maintain the normal gastric mucosa and influence the kidney function
  - all are wrong
74. Vibrio cholerae is able to induce:
- invasive diarrhea;
  - toxigenic diarrhea
  - all are correct
75. Secretin acts:
- chiefly on the acinar cells to cause release of  $\text{en}^{\text{--}}$ zymes from zymogen granules.
  - chiefly on the pan-creatic duct cells to cause an outpouring of very alkaline pancreatic juice
  - all are wrong
76. The mechanisms involved in the smoking-induced ulcer formation are the following except:
- rapid gastric emptying
  - increased secretion of pepsinogen
  - decreased bicarbonate and mucus production
  - decrease tone of pyloric sphincter
  - direct epithelium damage
  - all are wrong
77. The most common product of H. Pylori urease activity is:
- $\text{NH}_3$
  - $\text{NaOH}$
  - $\text{NH}_2\text{OH}$
  - all are wrong
78. Malabsorptive diarrhea is due to:
- inability to digest or absorb a particular nutrient
  - increased fluid transport out of epithelial cells
  - malabsorbed nutrients or poorly absorbed electrolytes that retain water in the lumen
  - all are wrong
79. Rapid gastric emptying is involved in pathogenesis of:



- a. acute pancreatitis;
- b. chronic pancreatitis
- c. gastric ulcer;
- d. duodenal ulcer
- e. acute diarrhea

80. The mechanisms involved in alcohol-induced ulcer formation are the following except:

- a. abnormalities of GIT motility
- b. increased gastric secretion
- c. decreased bicarbonate and mucus production
- d. direct epithelium damage
- e. all are wrong

### **EVALUATION OF THE MODULE ANSWER**

**The question card of the module 1** consists of 20 tasks. Questions are evaluated by 5 points.

Total:  $5 \times 20 = 100$  points

**The question card of the module 2** consists of 5 tasks. Questions are evaluated by 20 points.

Total:  $5 \times 20 = 100$  points. For example, correct answer - 10 points, correct explanation - 10 points.

Total for one question: 20 points

**The question card of the module 3** consists of 10 tasks. Questions are evaluated by 10 points. Total:  $10 \times 10 = 100$  points

**The question card of the module 4** consists of 4 tasks. Questions are evaluated by 25 points.

Total:  $4 \times 25 = 100$  points. For example, correct answer - 10 points, correct explanation - 15 points.

Total for one question: 25 points

**The question card of the module 5** consists of 10 MCQ evaluated by 7 points each and 3 ECG strips evaluated by 10 points each.

**The question card of the module 6** consists of 10 tasks. Questions are evaluated by 10 points. Total:  $10 \times 10 = 100$  points

**The question card of the module 7** consists of 20 tasks. Questions are evaluated by 5 points. Total:  $5 \times 20 = 100$  points

**The question card of the module 8** consists of 10 theoretical questions evaluated by 6 points each and 5 questions concerning clinical cases evaluated by 8 points each. Total:  $6 \times 10 = 60$  points and  $8 \times 5 = 40$ .

### **EVALUATION OF THE FINAL EXAM ANSWER**

**The question card of the final exam** consists of 80 questions. Grading: 0–69% – “noncredit”, 70–79% – “satisfactory”, 80–89% – “good”, 90–100% – “excellent”.

## **INTRODUCTION TO INTERNAL DISEASES**

**Teachers: PhD, associate professor A. R. Sadykova; PhD, associate professor M. A. Makarov; PhD; assist. prof. E.N.Ivantsov; PhD, assist. prof. V.M. Gazizyanova, PhD, assist. prof. F.A. Magamedkerimova,**

**Building, Department, classroom:** Clinical hospital #7, Clinical hospital #11 Department of Introduction to internal diseases

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**Total hours — 324:**

Lectures 50 hours;  
Practical classes 132 hours;  
Self-study 106 hours;  
Control (Examination) 36 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1718>).

### **Course objectives: The purpose of mastering the discipline**

Course objective of the Introduction to Internal Diseases is teaching students the examination methods and the rules of internal diseases diagnostics in the process of clinical training of a new medical specialist, formation of significant professional skills of patient's physical examination, foundations of clinical thinking and medical ethics.

### **Tasks of the discipline:**

#### **A student must know:**

- anatomico-physiological, age-specific, and sexual peculiarities of healthy and ill persons;
- reasons of the major pathologic processes appearance in the organism and mechanisms of their development;
- the main clinical signs and syndromes of internal diseases and mechanisms of their development;
- symptomatology of the most widespread internal diseases with typical classic course of disease;
- basic principles of treatment for pulmonary, cardiovascular, renal and digestive system diseases;
- symptomatology and basic principles of medical aid in the main emergency conditions.

#### **A student must be able:**

- to use information and scientific literature;
- to elicit interviewing data and to receive comprehensive information about disease and its possible origin in typical cases;
- to perform physical examination of a patient (inspection, palpation, percussion, auscultation, measuring of blood pressure, defining of pulse peculiarities) and to disclose objective signs of disease;
- to compose plan of additional laboratory and instrumental investigations for a patient;
- to diagnose independently major clinical pathological syndromes and to substantiate this diagnosis;
- to establish clinical diagnosis of the most widespread internal diseases in their typical course and to substantiate this diagnosis;
- to interpret typical electrocardiograms in 12 leads either of healthy persons or patients with simple arrhythmias, heart chambers hypertrophy, myocardial infarction;

- to assess results of complete blood count, urinalysis, laboratory investigations of sputum,
- pleural exudates, stool, gastric and duodenal contents;
- to state results of patient checkup in a form of case report with substantiation of provisional
- diagnosis, get-up of temperature chart, drawing up of patient's further investigations;
- to render first aid in the most widespread pathological conditions.

### **Course topics:**

### **Calendar plan of lectures**

#### **5<sup>th</sup> semester**

1. Introductory Fundamental significance of Introduction to Internal Diseases in medical educational system. Notion of disease. Basic principles of diagnosis methodology. Medical ethics. Some issues of history of medicine.
2. The patient interview The patient interview, its portions and meaning for diagnostics. Patient complaints, their classification. Symptom analysis (detailing). Anamnesis Morbi. Anamnesis vitae.
3. General inspection Objective examination of a patient. Temperature curves.
4. General approach to patients with pulmonary diseases The main interviewing data, main complaints: chest pain, cough, dyspnoea, asthma, blood-mixed sputum, pulmonary hemorrhage. Objective data: inspection and palpation of the chest.
5. Lungs percussion data in norm and pathology Percussion as diagnostic method. Comparative percussion. Changes of percussion note above lungs. Topographic percussion. Lungs auscultation data in norm and pathology Auscultation as diagnostic method. Physiological and pathological breath sounds.
6. General approach to patients with cardiovascular diseases Medical history of cardiologic patients, main complaints: dyspnoea, asthma, palpitation, heart pain. Objective data: inspection and palpation of precordium.
7. The heart percussion: relative and superficial cardiac dullness. The heart auscultation: heart sounds in norm and pathology. Heart sounds: mechanism of their formation, their characteristics. Changes of heart sounds intensity, doubling and splitting. Trinomial heart rhythms (gallop rhythms). The heart auscultation: heart murmurs Definition of heart murmurs, classification, mechanism of their appearance. Murmurs characteristics. Differentiation of two valvular murmurs. Organic and functional murmurs. Extracardiac murmurs.
8. General approach to patients with gastrointestinal diseases Medical history and complaints of patients with esophageal diseases: dysphagia, pain, eructation. Complaints of patients with gastric diseases. Laboratory and instrumental methods of esophagus and stomach investigation. General approach to patients with liver and gall bladder diseases Liver structure and physiology. Main syndromes of liver diseases. Investigations of liver functional state. Instrumental investigation of liver.
9. General approach to patients with renal diseases Structure and physiology of kidneys. Main renal syndromes. Zimnitsky and Reberg tests. Stages and characteristics of chronic renal insufficiency. Instrumental investigations of kidneys.
10. Normal electrocardiogram Brief historical data. Biopotential origin in solitary muscular fiber. Vectorial principle in ECG. Dipole. ECG waves and intervals genesis, their characteristics. ECG leads. Changes of heart axis deviation. ECG in heart chambers hypertrophy Some ECG indices. The heart electrical axis deviations. Heart chambers hypertrophy.

11. ECG in automatism and conduction disorders Disorders of automatism: sinus brady-, tachycardia, arrhythmia.
12. Conduction disorders: sino-auricular, intraatrial, atrio-ventricular, interventricular blocks. WPW syndrome. ECG in combined abnormalities of excitation, conduction and automatism Ectopic heart beats (extrasystole): causes and mechanism of their appearance, classification, variants. Paroxysmal tachycardia: causes and mechanism of their appearance, classification. Atrial fibrillation and flutter. Ventricular fibrillation and flutter.
13. ECG changes in Coronary Heart Disease ECG changes in angina. Functional tests. Myocardial infarction: forms, stages and phases, location.

## 6<sup>th</sup> semester

1. Instrumental and laboratory diagnostics of pulmonary diseases Spirometry. Radiologic methods. Laboratory investigations of sputum.
2. Asthma. Emphysema. Classification, etiology, pathogenesis of asthma. Diagnostics of asthma attack. Laboratory and roentgenologic data in asthma. Emphysema - pathogenesis and morphology, clinical and instrumental diagnostics. Diagnostics of respiratory insufficiency.
3. Community-acquired pneumonia. Crupous pneumonia. Definition. Prevalence. Etiology, pathogenesis, classification. Crupous pneumonia - morphological stages and clinical picture. Outcomes and prognosis.
4. Lung abscess. Pleuritis. Definition. Prevalence. Etiology, pathogenesis, pathologic anatomy, classification. Clinical picture. Laboratory and instrumental data. Outcomes. Bronchitis. Bronchiectasis. Bronchopneumonia (focal pneumonia). Bronchitis: definition, classification, clinical signs. Bronchiectasis: classification, etiology, pathogenesis, pathologic anatomy; clinical, instrumental, and laboratory diagnostics. Focal pneumonias: prevalence, classification, clinical course, prognosis.
5. Rheumatic fever: endocarditis, myocarditis, pericarditis. Brief historical data. Definition. Etiology and pathogenesis. Brief pathological anatomical data. Classification and clinical picture of rheumatic fever. Endocarditis. Myocarditis. Pericarditis. Laboratory diagnostics. Outcomes.
6. Mitral valve disease. Occurrence of mitral valve disease. Mechanism of formation. Mitral incompetence. Mitral stenosis.
7. Aortic valve disease. Occurrence of aortic valve disease. Aortic incompetence. Aortic stenosis. Tricuspid valve incompetence. Heart failure. Occurrence of tricuspid valve disease. Etiology. Pathologic physiology and mechanisms of compensation. Clinical and instrumental diagnostics. Classification, pathologic physiology and signs of heart failure.
8. Arterial pulse. Blood pressure. Arterial hypertension. Arterial pulse. Sphygmogram. Main characteristics of pulse. Blood pressure, its origin. System of blood pressure regulation. Brief historical data. Classification of arterial hypertension. Modern conception of etiology and pathogenesis of essential hypertension. Clinical course, stages of disease. Symptomatic hypertension.
9. Atherosclerosis. Ischemic heart disease. Atherosclerosis and its clinical manifestations. *Periods and stages. Ischemic heart disease. Angina pectoris and myocardial infarction. Medical history, clinical, laboratory and instrumental data.*
10. *Peptic ulcer disease. Definition, prevalence, etiology, pathogenesis. Diagnostics. Importance of objective data. Laboratory and instrumental methods. Principles of therapy and prevention.*
11. *Chronic hepatitis and cirrhosis. Chronic hepatitis: definition, classification, clinical and morphologic division. Cirrhosis: classification, symptomatology of various kinds of cirrhosis, outcomes.*

12. *Renal diseases: nephritis and nephritic syndrome. Etiology and classification of renal diseases. Acute glomerulonephritis: etiology, pathogenesis, clinical syndromes. Chronic glomerulonephritis: classification, clinical course. Nephritic syndrome: acute and chronic forms.*

### **Calendar plan of practical classes**

#### **5<sup>th</sup> semester**

1. Module 1 Introductory information: functioning of therapeutical department, polyclinic; care of a patient, medical aid. Acquaintance with the Department of Introduction to Internal Diseases. Scheme of case report. Medical history. Demonstration of a patient medical history.
2. Student self-dependent work with patients: collecting of interviewing data. Discussion with instructor.
3. General examination of a patient: patient's position, level of consciousness, inspection of skin, subcutaneous fat tissue, muscles, bones, joints, lymph nodes examination, detection of edemas.
4. Examination of patients with respiratory tract disorders: interview (main complaints and their pathogenesis), inspection (chest shape, respiratory pattern, depth and rhythm of respiration, count of respiratory rate), chest palpation (defining of chest elasticity, tactile fremitus).
5. Lung percussion: to master percussion technique. Comparative percussion, determination of percussion note character. Topographic percussion. Lungs auscultation: to master auscultation technique. Notion of the main breath sounds.
6. Changes of percussion note in various pulmonary diseases. Changes of lung borders in different pulmonary diseases. Changes of the main breath sounds in various pulmonary diseases. Notion about adventitious breath sounds: mechanism of their appearance, diagnostic meaning.
7. Examination of patients with cardiovascular diseases: medical history (main complaints, their pathogenesis), inspection (patient's position, color of skin, inspection of precordium and main vessels), palpation of apical impulse and precordium. Examination of arterial and venous pulse, central venous and blood pressure.
8. The heart percussion: defining of relative and superficial cardiac dullness borders, vascular bundle borders. The heart auscultation: technique, auscultation points, differentiation between the 1st and the 2nd heart sounds.
9. Percussion changes in cardiovascular disorders: diagnostic meaning of cardiac dullness borders changes. The heart murmurs: mechanism of appearance, classification. Pathologic changes of the heart sounds. "Quail" rhythm, gallop rhythms.
10. Control summing-up on Module 1 "General examination of a patient. Clinical examination of patients with pulmonary and cardiovascular disorders" (examination and check of practical skills).
11. Module 2. Examination of patients with gastrointestinal diseases: medical history (main complaints, their pathogenesis).
12. Oral cavity inspection, inspection of the abdomen, abdominal percussion (defining of ascites), palpation (superficial and deep methodical sliding palpation of the stomach, pylorus, colon, pancreas).
13. Examination of patients with liver and gall bladder diseases, and renal diseases: main complaints, their pathogenesis. Inspection of liver and kidneys areas. Percussion defining of liver and spleen borders. Palpation of liver, spleen, kidneys, bladder.
14. Control summing-up on Module 2 "Examination of patients with gastrointestinal and renal diseases".
15. Module 3. Clinical laboratory diagnostics: investigation of blood - normal qualitative and quantitative indices. Blood picture in anemias and leucosis.
16. Clinical laboratory diagnostics: investigation of urine, sputum, liquid of serous cavities. Physical properties of urine. Chemical investigations of urine. Microscopy of urine sediment. Macro- and microscopic investigation of sputum. Distinctions between transudates and exudates.

17. Clinical laboratory diagnostics: investigation of gastric and duodenal juices, feces analysis. Control summing-up on Module 3: laboratory diagnostics.

6<sup>th</sup> semester

1. ECG examination of the heart: technique of recording, ECG leads. Plan of ECG decoding. Defining of electrical axis deviation. The heart chambers hypertrophy. Atrioventricular heart blocks.

2. ECG examination of the heart: sinuauricular blocks, intraventricular conduction abnormalities. Premature beats (extrasystole). Paroxysmal tachycardia. Atrial flutter and atrial fibrillation. Ventricular flutter and ventricular fibrillation.

3. ECG in ischemic heart disease: angina pectoris, myocardial infarction (stages, phases, topical diagnostics). PhonoCG examination of the heart. Control summing-up on Module 4: instrumental diagnostics of cardiovascular system.

4. Module 5 The major clinical syndromes in pulmonary diseases: syndrome of inflammatory pulmonary consolidation (focal and crupous pneumonia), syndrome of pulmonary cavity (lung abscess). Instrumental diagnostics of pulmonary diseases.

5. Continuation: syndrome of pulmonary hyperinflation (emphysema), syndrome of pleural effusion and air in pleural cavity (exudative pleuritis, pneumothorax), syndrome of bronchial obstruction (asthma). Bronchitis. Bronchiectasis.

6. Notion about rheumatic fever. Classification. Symptomatology of mitral valve disease: mitral stenosis and mitral incompetence. Diagnostic meaning of ECO.

7. Symptomatology of aortic valve disease: aortic stenosis and aortic incompetence. Diagnostic meaning of ECO. Tricuspid incompetence (organic and functional). Circulatory insufficiency. Heart failure (acute and chronic). Medical aid in acute left ventricular insufficiency.

8. Hypertensions. Essential hypertension (hypertensive disease) and secondaryhypertensions. Differential diagnostics.

9. Notion about atherosclerosis and its manifestations. Ischemic heart disease: angina, myocardial infarction. Laboratory and instrumental diagnostics. ECG.

10. Control summing-up on Module 5: diagnostics of pulmonary diseases, cardiovascular disease symptomatology.

11. Symptomatology of gastritis, peptic ulcer disease. Gastric cancer. Enteritis, colitis (ulcerative colitis, Crohn's disease).

12. Major clinical syndromes in hepatic and biliary disorders (jaundice, portal hypertension, hepato-lienal syndrome, hepatic failure). Cholecystitis. Gall stones. Hepatitis and cirrhosis.

13. Symptomatology of pancreatic disorders. Exocrinous insufficiency. Laboratory and instrumental diagnostics.

14. Major clinical syndromes in renal disease (renal edema, renal hypertension, renal eclampsy, renal failure, uremic coma). Diffuse glomerulonephritis. Nephrotic syndrome. Renal amyloidosis. Pyelonephritis. Control summing-up on Module 6: digestive tract and renal disease symptomatology.

15. Module 7 Writing of examination case report. Control summing-up on internal diseases symptomatology (MCQ).

16. Students' case report analysis. Module 8. Exam check-up of practical skills.

### **Text books and required supplies:**

1. V.T.Ivashkin, A.V.Okhlobystin. Internal Diseases Propedeutics. Textbook. / Moscow. – "Geotar-Media". – 2020. – 176 pp.
2. V. N. Oslopov; A. R. Sadykova et ol.; Introduction to internal diseases. Manual. Part I-VIII / Kazan: KSMU, 2006. — 586 pp.
3. V. N. Oslopov; A. R. Sadykova et ol.; Introduction to electrocardiography. Manual./ Kazan: KSMU, 2005. — 102 pp.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1. General examination (inspection), pulmonary and cardiovascular system examination**

1. Notion about the comprehensive patient interview and its parts.
2. Order and strategy of collecting interviewing data.
3. Techniques of percussion.
4. Rules and techniques of lungs auscultation.
5. Breath sounds: generation, normal location.
6. Rhonchi, terms of its origin.
7. Rhonchi, classification.
8. Crepitation, terms of its origin, diseases in which it is observed.
9. "Mitral melody" and mechanism of its appearance.
10. Cardiac murmurs, mechanism of their appearance.
11. How to differentiate systolic and diastolic murmurs?
12. How to establish the point of murmur appearance?

**Example of module No. 2 Examination of gastro-intestinal and urinary tracts**

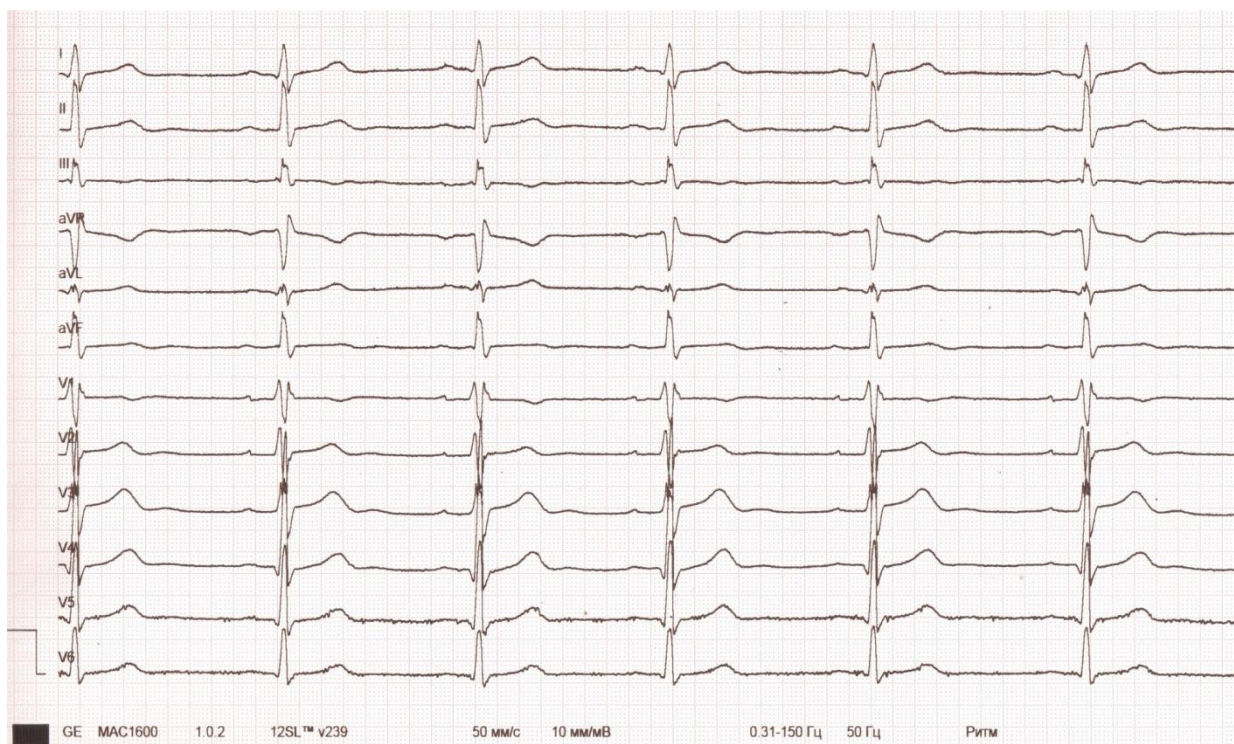
1. What are the complaints of patients with diseases of hepatobiliary system and their pathogeneses?
2. Ascites signs and techniques of its defining (inspection, percussion and fluctuation methods).
3. Technique of liver percussion, its normal dimensions.
4. Technique of liver and gallbladder palpation.
5. Technique of liver percussion, its normal dimensions.
6. Technique of liver and gallbladder palpation.

**Example of module No. 3 Clinical laboratory diagnostics**

<b>Task. BLOOD TEST OF THE PATIENT</b> ESR <u>40</u> (mm/h) Erythrocytes <u>1.3</u> $\times 10^{12}$ / l Hb <u>49</u> (g/l) Reticulocytes <u>0.1</u> (%) Color index <u>1.3</u> Size and shape of red blood cells: <b>macrocytosis , megalocytosis</b> Leukocytes <u>3.5</u> $\times 10^9$ /l Leukoformula (%)																															
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Platelets <u>120</u> $\times 10^9$ /l Blood clotting time ( in min) <u>3</u> <b><u>Cabot rings , Jolly bodies in erythrocytes, giant hypersegmented neutrophils</u></b> <b><u>Megaloblasts 3:100</u></b> A. What pathological changes did the analysis reveal? B. What syndrome/disease most likely caused these changes?																															

**Example of module No. 4 Electrocardiography**





Fill in the ECG-card:

1. Name \_\_\_\_\_
2. Age \_\_\_\_\_
3. Clinical diagnosis \_\_\_\_\_
4. The date of examination \_\_\_\_\_

ECG analysis:

I. \_\_\_\_\_ Rhythm

II. The count of waves amplitude and intervals duration:

$P_I$  = \_\_\_\_ mm;  $P_{II}$  = \_\_\_\_ mm;  $P_{III}$  = \_\_\_\_ mm;  $PQ$  = \_\_\_\_ sec  
 $Q_I$  = \_\_\_\_ mm;  $Q_{II}$  = \_\_\_\_ mm;  $Q_{III}$  = \_\_\_\_ mm;  $P_{II}$  = \_\_\_\_ sec  
 $R_I$  = \_\_\_\_ mm;  $R_{II}$  = \_\_\_\_ mm;  $R_{III}$  = \_\_\_\_ mm;  $QRS_{II}$  = \_\_\_\_ sec  
 $S_I$  = \_\_\_\_ mm;  $S_{II}$  = \_\_\_\_ mm;  $S_{III}$  = \_\_\_\_ mm;  $QRST_{II}$  = \_\_\_\_ sec  
 $T_I$  = \_\_\_\_ mm;  $T_{II}$  = \_\_\_\_ mm;  $T_{III}$  = \_\_\_\_ mm;  $RR_{II}$  = \_\_\_\_ sec

III. Heart rate (per minute) \_\_\_\_\_

IV. Deflection from the norm of ST-segment and T-wave \_\_\_\_\_

V. *The electric systole of the ventricles* \_\_\_\_\_

VI.  $\angle \alpha$  \_\_\_\_\_

Conclusion: rhythm, heart rate, electric axis position, conductivity change, interpretation of the changes of the waves and ST-segment.

### Example of module No. 5 Diagnostics of pulmonary diseases, cardiovascular disease symptomatology.

1. Complaints of patients with coronary heart disease
2. Pathology and pathogenesis atherosclerosis
3. Reversible and irreversible risk factors for atherosclerosis
4. Hemodynamics changes in coronary artery disease
5. Classification of coronary artery disease
6. Physical examination data in patients with angina pectoris
7. Instrumental diagnostics of angina pectoris

8. Physical examination data in patients with myocardial infarction
9. Instrumental diagnostics of myocardial infarction
10. Laboratory diagnostics of myocardial infarction
11. Complications of myocardial infarction

**Example of module No. 6 Digestive tract and renal disease symptomatology.**

1. Jaundice: types, pathogenesis, clinical and laboratory diagnostics.
2. Portal hypertension syndrome: notion, classification, clinical manifestations,
3. Hepatocellular insufficiency: notion, pathogenesis, clinical and laboratory manifestations.
4. Chronic hepatitis: notion, forms, diagnostics.
5. Cirrhosis: notion, etiology, pathogenesis, classification.
6. Symptomatology of cirrhosis.
7. Cholecystitis: notion, etiology, pathogenesis, classification.
8. Symptomatology of acute cholecystitis.

**Example of module No. 7 Writing of examination case report.**

**FORM of MEDICAL CASE REPORT**

THEME \_\_\_\_\_

Student name \_\_\_\_\_

Group № \_\_\_\_\_ Date \_\_\_\_\_

**I. PATIENT'S ID.**

1. Name \_\_\_\_\_

2. Age (date of birth) \_\_\_\_\_

3. Occupation \_\_\_\_\_

4. Home address \_\_\_\_\_

5. Date of admission \_\_\_\_\_

**II. MEDICAL HISTORY**

1. CC \_\_\_\_\_

Symptoms analysis (location, quality, quantity, chronology, setting, aggravating alleviating factors, associated manifestations) \_\_\_\_\_

Secondary complaints \_\_\_\_\_

2. HPI \_\_\_\_\_

History of recent admission \_\_\_\_\_

3. PMH A. Other medical problems \_\_\_\_\_

B. Allergies \_\_\_\_\_

C. Major childhood illnesses \_\_\_\_\_

D. Injuries, hospitalizations, and operations \_\_\_\_\_

E. Immunizations (hemotransfusion) \_\_\_\_\_

4. FH \_\_\_\_\_

5. PSH

A. Infancy, childhood, adolescence. Date of birth \_\_\_\_\_, in time (before term), from \_\_\_\_\_ pregnancy. Age of parents in the time of child birth: father's \_\_\_\_\_ y., mother's \_\_\_\_\_ y. Breast-fed or not (underline the necessary). Began walking at \_\_\_\_\_ y., speaking at \_\_\_\_\_ y., gone to school at \_\_\_\_\_ y., had \_\_\_\_\_ marks. In intellectual and physical growth and development didn't (did) delay from coevals (underline the necessary).

B. Lifestyle. Typical day for the patient \_\_\_\_\_

Recreation the patient engages in \_\_\_\_\_

Sports \_\_\_\_\_ Religious

beliefs patient holds \_\_\_\_\_ Patient's school

experience \_\_\_\_\_

After graduating school \_\_\_\_\_ Patient's military experience \_\_\_\_\_ Clothes and footwear: (non) hygienic, (not) correspond to the season (underline the necessary). Feeding: (not) full, (not) regular (underline the necessary), prefers \_\_\_\_\_

Apartment: \_\_\_\_\_ rooms, separate (communal), (un)comfortable, with all (partial) facilities (underline the necessary).

C. Homelife. Emotional atmosphere at home \_\_\_\_\_ Marriage status \_\_\_\_\_ Family \_\_\_\_\_

D. Occupational life. Nature of the occupation \_\_\_\_\_

Toxic exposures \_\_\_\_\_

E. Sexual history. Pubertal period had gone without (with) complications at \_\_\_\_\_ y. Had sexual contacts from \_\_\_\_\_ y, has (not) \_\_\_\_\_ child(s) (underline the necessary). Menstrual function. Menarche from \_\_\_\_\_ y, cycle length \_\_\_\_\_ d, (ir)regular, duration of bleeding \_\_\_\_\_ d, amount of bleeding \_\_\_\_\_. Menopause from \_\_\_\_\_ y. Amount of pregnancies: deliveries \_\_\_\_\_, abortions \_\_\_\_\_, misbirths \_\_\_\_\_. 11 6. MH Medications (name, dosage, and regimen of each drug the patient is using) \_\_\_\_\_

Habits. \_\_\_\_\_ Tobacco smoking \_\_\_\_\_

Alcohol consumption \_\_\_\_\_

Illicit \_\_\_\_\_ drugs using \_\_\_\_\_

4 III. PHYSICAL EXAMINATION FINDINGS General condition \_\_\_\_\_, t \_\_\_\_\_ °C. Patient's position \_\_\_\_\_, level of consciousness \_\_\_\_\_

Face \_\_\_\_\_ expression \_\_\_\_\_

Constitutional type \_\_\_\_\_. Height \_\_\_\_\_ cm, weight \_\_\_\_\_ kg, BMI \_\_\_\_\_ kg/m<sup>2</sup>. WC.....cm. HC.....cm. WC/HC.....cm. Gait and bearing abnormalities \_\_\_\_\_

Skin: Color: physiologic, pale, cyanosis, hyperemia, icterus, other changes \_\_\_\_\_ (underline the necessary) Moisture \_\_\_\_\_ elasticity \_\_\_\_\_ state of the hair \_\_\_\_\_ presence of exanthema, hemorrhages, vascular changes, scars \_\_\_\_\_ Nails \_\_\_\_\_

\_\_\_\_\_ Subcutaneous fat: degree of its development \_\_\_\_\_

Distribution (places of biggest fat deposition) \_\_\_\_\_ Thickness of cutaneous fold below the scapula \_\_\_\_\_ cm, presence of edema \_\_\_\_\_ point the level of edema) Thyroid gland \_\_\_\_\_

Lymph nodes (size, shape, consistency, motility tenderness, adhesions with each other and surrounding tissues \_\_\_\_\_ Muscles: general development \_\_\_\_\_

Tenderness on palpation \_\_\_\_\_

Muscular tone \_\_\_\_\_

Muscle strength \_\_\_\_\_

Bones. On examination of skull, chest, spine, extremities tenderness and deformations are (not) revealed (underline the necessary) \_\_\_\_\_

Joints \_\_\_\_\_

Respiratory system Nasal breathing is (not) laboured.

Nasal form \_\_\_\_\_

Chest shape \_\_\_\_\_ constitutional type \_\_\_\_\_

Deformities \_\_\_\_\_, symmetry \_\_\_\_\_,

respiratory pattern \_\_\_\_\_

Respiration is (ir)regular, respiration rate \_\_\_\_\_ per min.  
 Chest respiratory motions of both sides of the chest: (un)even, (a)symmetric, there is (no) a lag in motion on \_\_\_\_\_ side of the thorax.  
 Additional respiratory muscles \_\_\_\_\_ (don't) participate in respiration. Tenderness on palpation \_\_\_\_\_, elasticity \_\_\_\_\_ Tactile fremitus \_\_\_\_\_  
 On comparative percussion \_\_\_\_\_  
 Topographic percussion data: Height of apices pulmones standing: from the front: on the right – \_\_\_\_\_ cm above clavicle, on the left – \_\_\_\_\_ cm above clavicles; from the rear: on the level of \_\_\_\_\_ vertebra. Krenig's areas width: on the right – \_\_\_\_\_ cm, on the left – \_\_\_\_\_ cm.  
 Lower lung borders: Topographic lines Right Left Parasternal Midclavicular Anterior axillary Midaxillary Posterior axillary Scapular Paravertebral Defining of diaphragmatic excursion  
 Topographic lines Right (cm) Left (cm) inhal. exhat. total inhal. exhat. total Midclavicular Midaxillary Scapular Lung auscultation \_\_\_\_\_  
 Bronchophony \_\_\_\_\_  
 Cardiovascular system Inspection of precordium \_\_\_\_\_  
 Apical impulse (location, area, height, strength, resistance \_\_\_\_\_  
 Cardiac impulse \_\_\_\_\_ Epigastric pulsation \_\_\_\_\_  
 Other pulsations \_\_\_\_\_  
 Thrills \_\_\_\_\_  
 Heart percussion Cardiac relative dullness borders: right \_\_\_\_\_ left \_\_\_\_\_ upper \_\_\_\_\_  
 The heart diameter: \_\_\_\_ + \_\_\_\_ = \_\_\_\_ cm  
 Heart configuration \_\_\_\_\_  
 Cardiac superficial dullness borders: right \_\_\_\_\_ left \_\_\_\_\_ upper \_\_\_\_\_  
 Superficial dullness diameter: \_\_\_\_\_ cm. Vascular bundle width \_\_\_\_\_ cm  
 Heart auscultation  
 Heart sounds \_\_\_\_\_ Murmurs \_\_\_\_\_  
 Heart rate \_\_\_\_\_ – \_\_\_\_\_ per 1 min., (ir)regular \_\_\_\_\_  
 Vessels examination Arterial pulse \_\_\_\_\_ per 1 min, (ir)regular, filling \_\_\_\_\_, strain \_\_\_\_\_, contour \_\_\_\_\_, (un)equal on both arms.  
 Arteries palpation and auscultation \_\_\_\_\_  
 BP on the left arm \_\_\_\_\_ mm Hg, on the right arm \_\_\_\_\_ mm Hg..  
 Venous pulse: negative, positive. Central venous pressure \_\_\_\_\_ cm.  
 Gastrointestinal tract.  
 Fetor oris \_\_\_\_\_  
 Visible mucous of oral cavity \_\_\_\_\_  
 Tonsills \_\_\_\_\_  
 Gums \_\_\_\_\_  
 Carious tooth \_\_\_\_\_ Tongue \_\_\_\_\_  
 Abdomen shape: flat, rounded. protruded [(un)even], scaphoid (underline the necessary)  
 Respiratory motions of abdominal wall \_\_\_\_\_  
 Auscultation data \_\_\_\_\_  
 Percussion data \_\_\_\_\_  
 Superficial palpation data \_\_\_\_\_  
 Shchetkin-Blumberg's sign \_\_\_\_\_  
 Sigmoid colon \_\_\_\_\_ Cecum \_\_\_\_\_

Transverse colon\_\_\_\_\_

Ascending and descending colon\_\_\_\_\_

Using percussion, auscultopercussio, auscultoaffrication, splashing sound methods the lower stomach border is defined at the level\_\_\_\_\_

Gastric greater curvature\_\_\_\_\_

Pylorus\_\_\_\_\_

Pancreas\_\_\_\_\_

Inspection of the liver area\_\_\_\_\_

Signs of ascites\_\_\_\_\_

Liver span after Kurlov\_\_\_\_\_

Liver palpation\_\_\_\_\_

Gallbladder\_\_\_\_\_

Complementary signs\_\_\_\_\_

Inspection of the spleen area\_\_\_\_\_

Spleen percussion \_\_\_\_\_

Spleen palpation\_\_\_\_\_

Urinary system Inspection of the kidneys area\_\_\_\_\_

Kidneys palpation\_\_\_\_\_

Pasternatsky's sign\_\_\_\_\_

Ureteral algesic points\_\_\_\_\_

Urinary bladder\_\_\_\_\_

V. INVESTIGATIONS DATA

## V. CLINICAL DIAGNOSIS

Main\_\_\_\_\_

Accompanied\_\_\_\_\_

VI. SUBSTANTIATION OF BASIC DIAGNOSIS Diagnosis is based on \_\_\_\_\_

VII. PATHOGENESIS OF SYMPTOMS AND SIGNS \_\_\_\_\_

### Example of module No. 8 Exam check-up of practical skills.

1. Auscultation of the heart
2. Methodic deep sliding abdominal palpation after V.P. Obraztsov and N.D. Strazhesko
3. Liver percussion
4. Palpation of kidneys, bladder and ureteral points

### EVALUATION OF THE MODULE ANSWER

The question card of the module consists of 5 tasks Questions 1 - 5 are evaluated by 20 points (with the step of 5 points)

\* The teacher has the right to remove from 1 to 3 points for incorrect answers

Total:  $5 \times 20 = 100$  points

Questions 1 - 6 are evaluated by 10 points (with the step of 5 points) and questions 7-8 by 20 points

Total:  $6 \times 10 + 2 \times 20 = 100$  points

For example, for the 2nd question from the question card module:

- correct answer - 5 points

- correct explanation - 5 points

**Total for one question: 10 points**

### Examination

#### Sample of examinational card:

1. Anamnesis is a method of subjective examination of the patient. Scientific foundations of the anamnestic method. The importance of anamnesis in identifying initial (functional) changes in the patient's condition and during disease remissions.
2. Auscultation of the heart. Characteristics of noise in aortic stenosis.
3. Pleurisy (dry and exudative). Clinical and laboratory-instrumental diagnostics.
4. ECG signs of hypertrophy of the right and left atria. Clinical interpretation.
5. Study of duodenal contents. Microscopic examination of bile. Clinical significance.
6. Emergency care for bronchial asthma.

### Test tasks

1. Accent of the second tone on the aorta occurs when :

A. Hypertension.  
 B. Myocardial infarction .  
 B. Myocarditis .  
 G. Pericarditis .  
 D. Endocarditis .

2. Indicate the results of the Zimnitsky test that are characteristic of normal functional activity of the kidneys:

A. DD > ND; relative density fluctuations – 17 units.  
 B. DD < ND; relative density fluctuations – 4 units.  
 V. DD > ND; fluctuations in relative density are 2 units.  
 G. DD < ND; relative density fluctuations – 9 units.  
 D. DD < ND; relative density fluctuations are 10 units.

### Criteria for assessing the answer to the examination ticket:

The grade “excellent” is given to the student if he gives the correct answer with explanations and demonstrates knowledge of the theoretical material.

A “good” grade is given to a student if he or she generally gives the correct answer, but cannot fully explain it and does not demonstrate knowledge of the theoretical material with confidence.

The grade “satisfactory” is given to a student if he partially answers the questions correctly, cannot explain his answer, or has shortcomings in his knowledge of the theoretical material.

The grade “unsatisfactory” is given to a student if he gives an incorrect answer and there are multiple deficiencies in knowledge of the theoretical material.

#### Task 6.

#### GENERAL URINE ANALYSIS

#### PHYSICAL AND CHEMICAL STUDY

Quantity per day 2300 (ml)

Colour: **pale yellow** ;

Transparency: **cloudy** ;

Reaction: **acidic** ;

Relative density 1.006-1.014

Protein: contains 3 (g/l);

Bilirubin: **reaction is negative** ;

Urobilin: **reaction is weakly positive** ;

Sugar: **reaction negative**

Acetone reaction is negative

#### MICROSCOPY OF URINE SEDIMENT

Leukocytes in the field of vision 50-60

Epithelium in the field of vision **is flat 3-4, cylindrical 5-6**



Erythrocytes in the field of vision are fresh **1-2**

Crystals of salts in the field of vision (oxalates, phosphates, urates ) \_\_\_\_\_

Cylinders in the field of vision **are hyaline 0-1 , granular 0-1**

Bacteria \_\_\_\_\_ + \_\_\_\_\_

Fungi \_\_\_\_\_

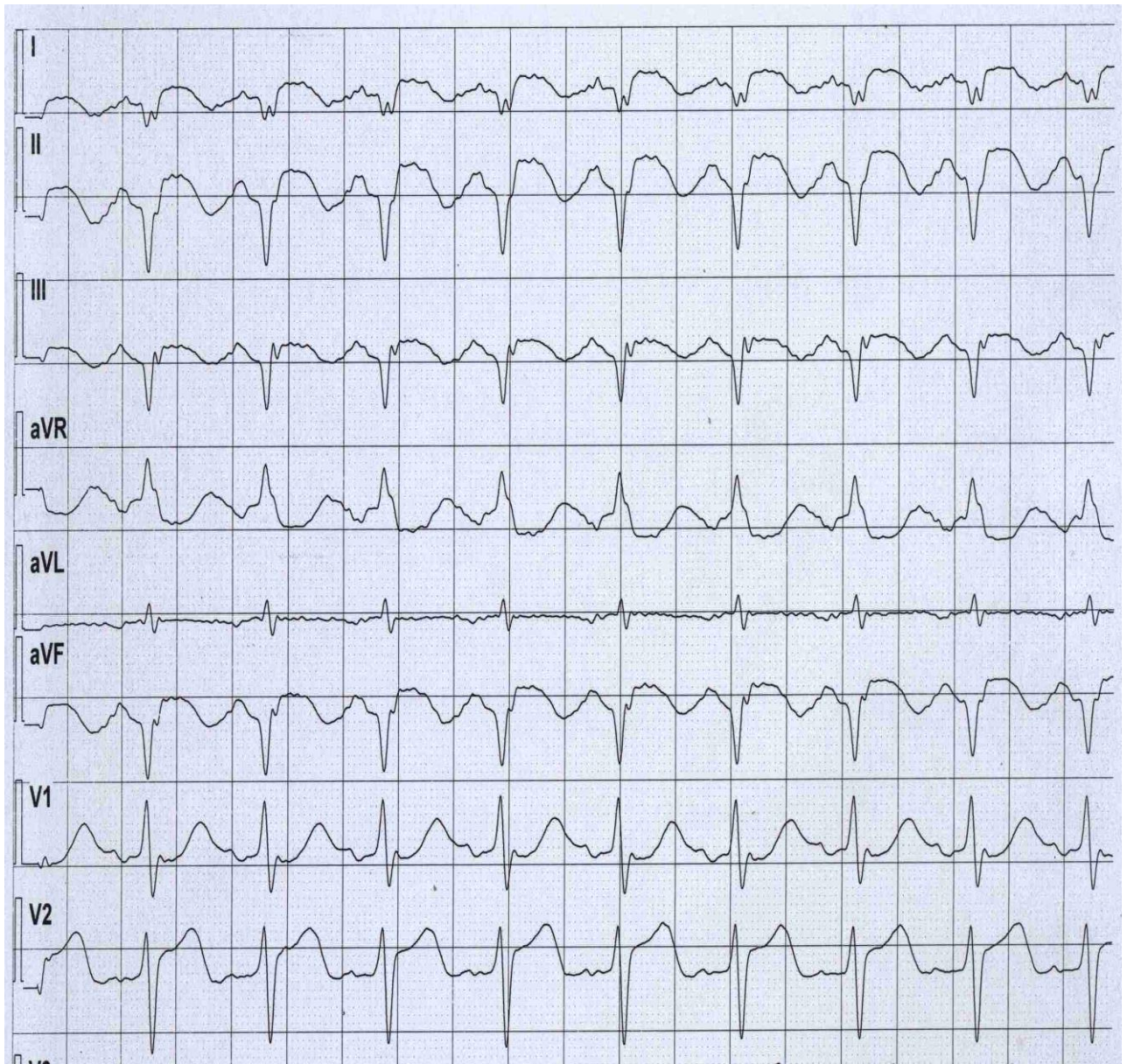
Mucus \_\_\_\_\_

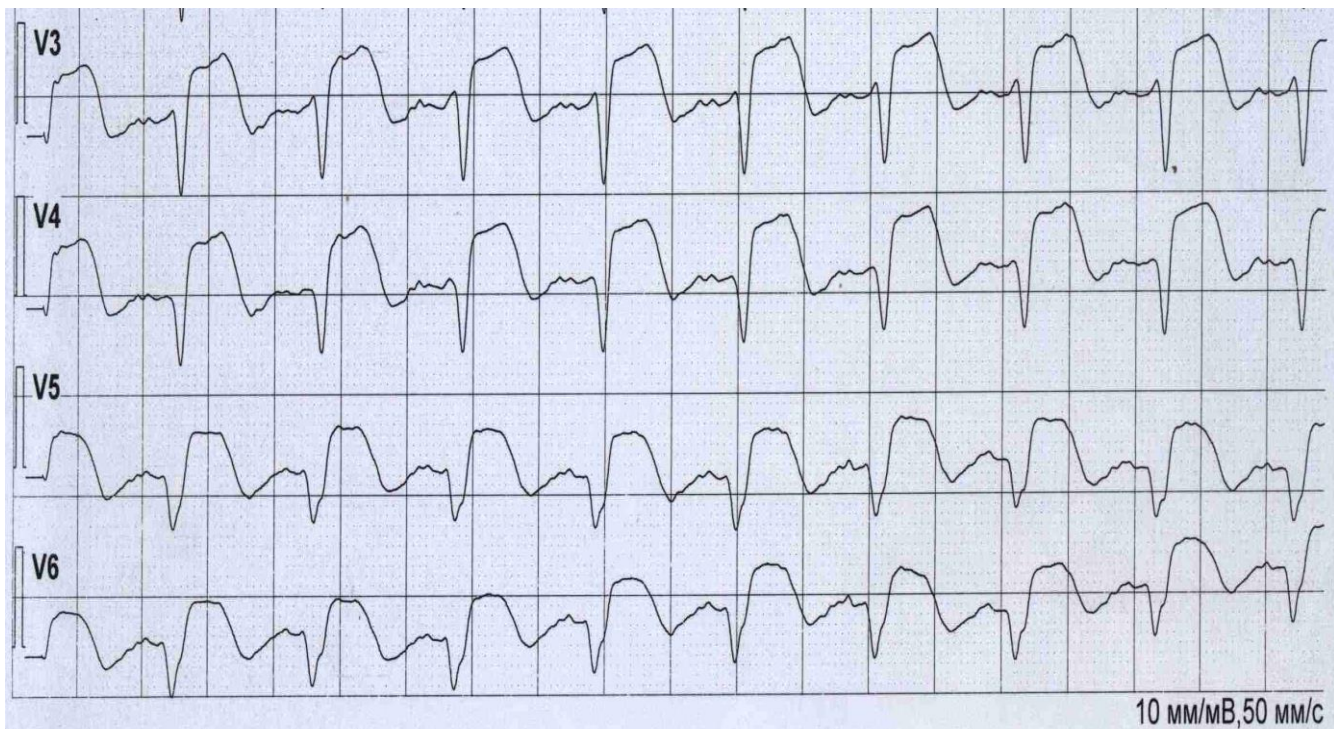
**A. What pathological changes did the analysis reveal ?**

**B. What syndrome/disease most likely caused these changes**

**ECG decoding protocol:**

**ECG #18**





### Electrocardiogram protocol #1 8

Last name, first name, patronymic \_\_\_\_\_

Age \_\_\_\_\_

Clinical diagnosis \_\_\_\_\_

Date of research \_\_\_\_\_

#### I. ECG analysis

1. Sinus rhythm.

2. Measuring the amplitude of the teeth and the duration of the intervals:

$P_I = \_ \text{ mm}$   $P_{II} = \_ \text{ mm}$   $P_{III} = \_ \text{ mm}$

$Q_I = \_ \text{ mm}$   $Q_{II} = \_ \text{ mm}$   $Q_{III} = \_ \text{ mm}$

$R_I = \_ \text{ mm}$   $R_{II} = \_ \text{ mm}$   $R_{III} = \_ \text{ mm}$

$S_I = \_ \text{ mm}$   $S_{II} = \_ \text{ mm}$   $S_{III} = \_ \text{ mm}$

$T_I = \_ \text{ mm}$   $T_{II} = \_ \text{ mm}$   $T_{III} = \_ \text{ mm}$

$P_{II} = \_ \text{ seconds}$

$PQ_{II} = \_ \text{ seconds}$

$QRS_{II} = \_ \text{ seconds}$

$QT_{II} = \_ \text{ seconds}$

$RR_{II} = \_ \text{ seconds}$

3. ST segment deviations from the baseline and T wave changes \_\_\_\_\_

Derived quantities:

4. Heart rate (HR) \_\_\_\_\_ .

5. Systolic index (SI):  $[ QT / RR ] \times 100\% = \_ \%$ .

6.  $QT_{corrected} (QT_c) = QT / \sqrt{RR} = \_$

7. Angle  $\alpha$  in degrees \_\_\_\_\_ .

#### II . Conclusion on ECG:

Sinus rhythm with heart rate \_\_\_\_\_ beats per minute.

Normal position of the EOS (angle  $\alpha = \_^\circ$ )

Conclusion \_\_\_\_\_



**Criteria for assessing the answer to the examination ticket:**

The grade “excellent” is given to the student if he gives the correct answer with explanations and demonstrates knowledge of the theoretical material.

A “good” grade is given to a student if he or she generally gives the correct answer, but cannot fully explain it and does not demonstrate knowledge of the theoretical material with confidence.

The grade “satisfactory” is given to the student if he partially correctly answers the proposed diagnostic task, cannot explain his answer, or has shortcomings in his knowledge of the theoretical material.

The grade “unsatisfactory” is given to a student if he gives an incorrect answer and there are multiple deficiencies in knowledge of the theoretical material.

## PHARMACOLOGY

**Teachers:**

Prof. A.U. Ziganshin,  
Prof. B.A. Bajchurina,  
PhD. A.O. Lobkaryov,  
PhD. D.V. Ivanova,  
PhD. D.O. Nikitin,  
PhD L.R. Kashapov

**Building, Department, classroom:**

Kazan State Medical University,  
Building No. 2, 3<sup>rd</sup> floor,  
Kazan, 6/30 Tolstoy Street,  
Department of Pharmacology,  
Classrooms 301,302, 315, 316

**Contact details:**

- Telephone number: 8-843-236-0512
- E-mail address: ayrat.ziganshin@kazangmu.ru
- Office and working hours: 8 am – 6 pm

**Total hours — 252:**

- Lectures 42 hours;
- Practical classes 99 hours;
- Self-study 75 hours;
- Control 36 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1704>).

### **Course objectives:**

The goals of mastering the **pharmacology** discipline are development of professional competence based on the formation of a systematic approach in students in the field of general and specific pharmacology, prescription, taking into account the focus of specialist training on the object, type and area of professional activity.

### **Tasks of the discipline:**

Knowledge formation:

classification and basic characteristics of drugs;  
pharmacodynamics and pharmacokinetics;  
indications and contraindications to the use of medicines;  
side effects;  
general principles of prescriptions of medicines.

Development of skills:

analyze the effect of medicines according to the totality of their pharmacological effects and the possibility of their use for therapeutic treatment;  
write prescriptions for medicines in certain diseases and pathological processes, based on the features of their pharmacodynamics and pharmacokinetics.

Formation of skills:

prescribing medicines in the treatment of various diseases and pathological processes in the adult population.

### **Course topics:**

#### **Thematic plan of lectures**

##### **the 5<sup>th</sup> semester**

1. Introduction to Pharmacology. Pharmacokinetics.
2. Pharmacodynamics
3. Cholinergic drugs (cholinomimetics. anticholinesterases)
4. Anticholinergic drugs, ganglion blocking agents, neuromuscular blocking agents
5. Adrenergic agonists. Sympathomimetics.
6. Antiadrenergic drugs. Sympatholytics. Local anesthetics.
7. General anesthetics. Sedative-hypnotics
8. Opioid analgesics and antagonists
9. Antipyretic-analgesics, nonsteroidal anti-inflammatory drugs
10. Psychopharmacology. Antipsychotic and anxiolytic drugs
11. Antidepressants. CNS stimulants. Respiratory system drugs
12. Gastrointestinal drugs. Drugs acting on the uterus.
13. Cardiac glycosides and other cardiotonic agents. Antiarrhythmic drugs
14. Antianginal drugs. Hypolipidemic drugs.
15. Antihypertensive agents. Diuretics.
16. Anticoagulants and coagulants. Thrombolytic and antiplatelet agents. Drugs for treatment of anemias.

##### **the 6<sup>th</sup> semester**

1. Antibiotics
2. Sulfonamide preparations. Synthetic antimicrobial agents of various chemical structure.  
Anti-tuberculosis drugs
3. Antiprotozoal agents. Antifungal agents. Antivirals. Anthelmintics. Antitumor agents.

4. Hormone preparations, their synthetic substitutes and antagonists
5. Side effects of drugs. Treatment of drug poisoning.

**Thematic plan of practical classes**  
**the 5<sup>th</sup> semester**

1. Introduction to pharmacology. Prescription writing. Liquid drug forms (solution, ampules, tincture etc.)
2. Prescription writing. Semisolid drug forms. Solid drug forms
3. General pharmacology. Pharmacokinetics
4. General pharmacology. Pharmacodynamics
5. Screening test. Topic "General pharmacology"
6. Autonomic pharmacology. Cholinergic drugs Anticholinesterases.
7. Anticholinergic drugs, ganglion blocking agents, neuromuscular blocking agents.
8. Adrenergic agonists
9. Antiadrenergic drugs.
10. Screening test. Topic: "Pharmacology of peripheral nervous system"
11. General anesthetics. Local anesthetics.
12. Sedative-hypnotics. Antiepileptic drugs. Anti-Parkinsonian drugs
13. Opioid analgesics and antagonists.  
Antipyretic-analgesics, nonsteroidal anti-inflammatory drugs.
14. Antipsychotic and antianxiety drugs.
15. Antidepressants, CNS stimulants and cognition enhancers/
16. Screening test. Theme: "Pharmacology of central nervous system"
17. Respiratory system drugs
18. Gastrointestinal drugs

**the 6<sup>th</sup> semester**

1. Cardiotonic drugs. Antiarrhythmic drugs.
2. Drugs used in ischemic heart disease. Anti-atherosclerotic agents
3. Antihypertensive agents. Hypertensive agents.
4. Diuretics. Drugs affecting the tone and contractile activity of the myometrium.
5. Drugs that affect hematopoiesis and blood coagulation
6. Module No. 4 "Pharmacology of peripheral systems"
7. Antiseptic and disinfectants. Antibiotics.
8. Antibiotics (continued)
9. Sulfonamide preparations. Synthetic antimicrobial agents of different chemical structure. Anti-tuberculosis drugs.
10. Antiprotozoal agents. Antifungal agents. Antivirals. Anthelmintics.
11. Module №5 "Pharmacology of antimicrobial agents"
12. Preparations of peptide hormones, their synthetic substitutes and antagonists
13. Preparations of steroid hormones, their synthetic substitutes and antagonists
14. Antitumor agents. Drugs that affect the immune processes (immunostimulants, immunosuppressants).  
Antihistamines.
15. Side effects of drugs. Treatment of drug poisoning. Final computer testing

**Text books and required supplies:**

1. Kharkevich D.A. Pharmacology. Textbook for medical students / Translation of Russian textbook «Pharmacology» (2017), 12<sup>th</sup> edition, revised and improved. – Moscow, GEOTAR-Media, 2018. – 672 p.

2. Alyautdin, R. N. Pharmacology. Illustrated textbook / ed. R. N. Alyautdin. - Москва : ГЭОТАР-Медиа, 2020. - 312 с. - ISBN 978-5-9704-5665-1. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970456651.html>
3. Essentials of medical pharmacology [Text] : учебник / K. D. Tripathi. - - New Delhi : Jaypee Brothers Medical Publishers (P) Ltd., 2016.

### **Evaluation and grading:**

Rating system for assessing student performance in the discipline "Pharmacology"

The progress of students in the discipline "Pharmacology" is assessed according to the rating system for assessing knowledge according to order of the Rector of the Kazan State Medical University.

The final rating of the discipline is calculated in points (70-100) using a special computer program and is the sum of four components, each of which is assigned a specific weight:

Rating components	Types of educational activity	Weight, %
1. Academic hours	Presence in the lectures and practical classes	10
2. Results of all modules and final test control	Results of all modules	35
3. Assessment of class marks	Average of all class marks	10
4. Exam	Result of exam	45
	Total	100

### **1. Academic hours.**

The number of hours completed is calculated in % of the maximum number of classroom hours of the curriculum for the discipline. In the computer program for calculating the final rating, the number of classroom hours of lectures and practical classes missed by the student, as well as the number of hours of missed lectures and practical classes worked are entered.

If a student misses more than 50% of the classroom hours according to the curriculum (71 hours), the discipline is not certified, and the student must study the discipline again in full.

### **2. Results of all modules and final test control.**

The final results of all modules (control works) are entered into the computer program. The entire discipline "Pharmacology" is divided into 6 modules, which are distributed by semester as follows:  
5<sup>th</sup> semester:

1. General Pharmacology
2. Drugs affecting the peripheral nervous system
3. Drugs affecting the central nervous system

6<sup>th</sup> semester:

4. Drugs affecting the functions of peripheral organs
5. Antimicrobial agents
6. Final computer test

At the end of each module, a control test is carried out with a score in points. The control test on the module is passed until a positive mark is obtained (70-100 points). Upon completion of the study of the entire discipline, computer testing is carried out in all sections of pharmacology. The result of this test is also entered into the computer program for calculating the final rating.

### **3. Assessment of class marks.**

The arithmetic mean value of all current assessments in practical classes is calculated, which were set in accordance with the scale: "unsatisfactory" - 6 points; "satisfactory" - 7 points; "good" - 8 points; "very good" - 9 points; "excellent" -10 points.

In the computer program for calculating the final rating, the arithmetic mean value of the current grades in practical classes for the 5<sup>th</sup> and 6<sup>th</sup> semester is entered separately.

#### **4. Result of the examination.**

A positive mark on the exam is given in the range of 70-100 points. If a student does not attend the exam the score is not set and the rating is not calculated. The exam is conducted in two steps – a computer testing and a written form.

4.1. The computer testing will be held in department computer class. Each student will have to answer 50 MCQ tests with one correct answer. The maximal score for the computer testing is 70 points.

4.2. In the written part students will need to write answers to 5 questions about

- Classification of the drugs,
- Mechanism of action,
- Pharmacological effects,
- Indications,
- Typical side effects

The maximum number of points for this portion is 30 points. The final score of the exam and the results of the final rating for the discipline will be announced to all students next day

#### **Example of module No. 1. General Pharmacology**

Select one correct answer.

1. PHARMACODYNAMICS INCLUDES ALL EXCEPT:

- 1) types of drug action
- 2) phenomena occurring during repeated administration of drugs
- 3) the process of penetration of drugs from the blood into tissues
- 4) mechanisms of drug action
- 5) drug interactions

2. AN EXAMPLE OF THE ACTION OF A DRUG ON AN ENZYME IS ACTION:

- 1) the use of iron preparations in anaemia
- 2) proton pump inhibitors in the gastric mucosa
- 3) anticholinesterase agents inhibit cholinesterase
- 4) beta-adrenomimetics affect beta-adrenoreceptors
- 5) loop diuretics reduce the reabsorption of ions in the ascending thick section of the loop of Henle

3. A LIGAND THAT UPON BINDING TO A RECEPTOR ACTIVATES THE RECEPTOR AND CAUSES A MAXIMAL RESPONSE THE EFFECTOR ORGAN IS:

- 1) agonist-antagonist
- 2) competitive antagonist
- 3) partial agonist
- 4) non-competitive antagonist
- 5) full agonist

4. ATRIAL NATRIURETIC FACTOR IS A LIGAND FOR:

- 1) intracellular receptors
- 2) tyrosine kinase receptors
- 3) extracellular receptors
- 4) G-protein-coupled receptors
- 5) receptors associated with ion channels

5. THE USE OF TRANQUILLISERS IS AN EXAMPLE OF THIS ACTION:

- 1) sedative

- 2) paralytic
- 3) depressing
- 4) excitatory
- 5) tonic

**Example of module No. 2. Drugs affecting the peripheral nervous system**

Select one correct answer.

1.M2-CHOLINORECEPTORS ARE LOCATED IN:

- 1) heart
- 2) skeletal muscle
- 3) carotid tubules of aortic sinuses
- 4) gastric parietal cells
- 5) chromaffin cells of the adrenal medulla.

2.AGONISTS OF M-CHOLINORECEPTORS DO NOT INCREASE:

- 1) tone of the circular muscle of the iris
- 2) salivary gland secretion
- 3) intraocular pressure
- 4) bronchial smooth muscle tone
- 5) bladder tone

3.CARBACHOLINE BELONGS TO:

- 1) anticholinesterase agents
- 2) N-cholinomimetics
- 3) M-cholinomimetics
- 4) M- and N-cholinomimetics
- 5) M-cholinoblockers

4.HOUSEHOLD INSECTICIDAL AGENTS OF THE GROUP OF ORGANOPHOSPHORUS COMPOUNDS ARE:

- 1) M1-cholinomimetics
- 2) Nn-cholinomimetics
- 3) M3-cholinomimetics
- 4) Nm-cholinomimetics
- 5) anticholinesterase agents

5.IN CASE OF POISONING BY ANTICHOLINESTERASE AGENTS THE SPECIFIC ANTIDOTE IS:

- 1) pilocarpine
- 2) rivastigmine
- 3) physostigmine
- 4) lobeline
- 5) atropine

**Example of module No. 3. Drugs affecting the central nervous system**

Select one correct answer.

1. NARCOTIC-TYPE SLEEPING PILLS ARE:

- 1) nitrazepam
- 2) diazepam
- 3) zolpidem
- 4) zopiclone
- 5) phenobarbital

**2.BENZODIAZEPINE RECEPTOR AGONISTS CAUSES:**

- 1) blockade of potential-dependent Na-channels
- 2) enhancement of action of excitatory amino acids
- 3) blockade of T-type Ca-channels
- 4) strengthening of GABAergic inhibitory influences in the CNS
- 5) reduction of dopaminergic influences

**3. BLOCKERS OF POTENTIAL-DEPENDENT NA-CHANNELS INCLUDE:**

- 1) phenobarbital
- 2) diazepam
- 3) phenytoin
- 4) lamotrigine
- 5) ethosuximide

**4.IN STATUS EPILEPTICUS THE DRUG OF CHOICE IS:**

- 1) valproic acid
- 2) ethosuximide
- 3) phenytoin
- 4) diazepam
- 5) lamotrigine

**5. THIOXANTHENE DERIVATIVES INCLUDE:**

- 1) chlorpromazine
- 2) chlorprothixene
- 3) haloperidol
- 4) amisulperide
- 5) droperidol

**Example of module No. 4. Drugs affecting the functions of peripheral organs and systems**

Select one correct answer.

**1.CALCIUM CHANNEL BLOCKERS INCLUDE:**

- 1) nitroglycerin
- 2) nifedipine
- 3) isosorbide mononitrate
- 4) propranolol
- 5) papaverine

**2.THE MECHANISM OF ACTION OF ORGANIC NITRATES INCLUDES ALL EXCEPT:**

- 1) NO activates cytosolic guanylate cyclase
- 2) increases the level of cGMP
- 3) activity of cGMP-dependent protein kinase decreases
- 4)  $\text{Ca}^{2+}$  level inside the cell decreases
- 5) relaxation of vascular SMCs

**3.ORGANIC NITRATES CAUSE ALL LISTED EFFECTS EXCEPT:**

- 1) reduce the heart's oxygen demand
- 2) dilate large epicardial vessels
- 3) improve subendocardial blood flow
- 4) relieve coronary spasm
- 5) reflexively increase coronary blood flow

**4.FIBRATES INCLUDE:**

- 1) cholestyramine
- 2) lovastatin
- 3) clofibrate
- 4) niacin
- 5) nicofuranose

**5. GROUP OF HYPOLIPIDAEMIC AGENTS IS BASED ON THE BINDING OF BILE ACIDS**

- 1) bile acid sequestrants
- 2) statins
- 3) fibrates
- 4) nicotinic acid preparations
- 5) antioxidants

**Example of module No. 5. Antimicrobial agents**

Select one correct answer.

**1.BACTERICIDAL ANTIBIOTICS ARE ALL, EXCEPT:**

- 1) vancomycin
- 2) streptomycin
- 3) ampicillin
- 4) erythromycin
- 5) benzylpenicillin

**2.BROAD SPECTRUM ANTIBIOTICS ARE ALL EXCEPT:**

- 1) tetracycline
- 2) amoxicillin
- 3) gentamicin
- 4) cephalixin
- 5) polymyxin M

**3.MACROLIDES INCLUDE ALL EXCEPT:**

- 1) erythromycin
- 2) spiramycin
- 3) oleandomycin
- 4) gentamicin
- 5) roxithromycin

**4.THE MECHANISM OF ANTIBACTERIAL ACTION OF VANCOMYCIN IS:**

- 1) inhibition of cell wall synthesis
- 2) inhibition of DNA-gyrase enzyme
- 3) inhibition of protein synthesis on bacterial ribosomes
- 4) increase of cell membrane permeability
- 5) inhibition of RNA synthesis in bacteria

**5.OTOTOXIC ANTIBIOTICS INCLUDE:**

- 1) benzylpenicillin
- 2) cefotaxime
- 3) streptomycin
- 4) levomycetin
- 5) imipenem

**«Example of exam ticket»**



# THE PHARMACOLOGY EXAM-2024

Date \_\_\_\_\_

Student's name \_\_\_\_\_ Group number 13 \_\_\_\_\_

Variant XX

Write clearly the answers below:

N	Question	Minimum number of answers expected	Marks (for the teacher only)
1.	Indicate the pharmacological group for each of these drugs: Atropine Morphine Propranolol Heparin Oxytocin	1. Atropine – M-cholinoblocker 2. Morphine – opioid (narcotic) analgesic 3. Aspirin – non-steroidal anti-inflammatory drug (NSAID) 4. Propranolol – non-selective beta-blocker 5. Heparin – direct anticoagulant 6. Oxytocin – peptide hormone, stimulates rhythmic contractions of the uterus	6
2.	Mechanism of action of Diazepam	Diazepam is a <u>benzodiazepine</u> (BZD) <u>tranquilizer</u> . It stimulates BZD receptors in the <u>GABA receptor</u> complex in the CNS and increases affinity of GABA to GABA receptors. As such Diazepam increases the entry of <u>negatively charged chlorine ions</u> into the cell and causes <u>hyperpolarization</u> of the cell membrane. This lead to <u>inhibition of neuronal activity</u> and <u>depresses the excitation</u> and over activity of the CNS. (6 keywords = 6 points)	6
3.	Pharmacological effects of digoxin	1. Positive inotropic action (2 points) 2. Negative chronotropic action (2 points) 3. Negative dromotropic action (2 points)	6
4.	Indications for use of heparin	1. Myocardial infarct (2 points) 2. Venous thrombosis (2 points) 3. Ischemic stroke (2 points)	6
5.	Side effects of nitroglycerine	1. Hypotension (2 points) 2. Headache (1 points) 3. Nausea, vomiting (1 point) 4. Tachycardia (1 point) 5. Flashing (1 point)	6
Total ...			30

## «Evaluation of exam answer»

Total marks for the written part \_\_\_\_30\_\_ (out of 30)

Marks for the MCQ computer testing \_\_\_\_70\_\_\_\_(out of 70)

The final result for the exam \_\_\_\_100\_\_\_\_(out of 100)

## PATHOLOGIC ANATOMY

**Teachers: Professor Raginov Ivan, PhD Akhmetov Timur R, PhD Mikheeva Ekaterina**

**Building, Department, classroom** Tolstogo 6, Department of Pathology, course of Pathoanatomy, Rooms 102-111

### **Contact details:**

- Telephone number: +78432360263 (associate professor Akhmetov Timur)
- E-mail address: timur1111@gmail.com
- Office and working hours: (9-17)

### **Class hours:**

#### **Total – 288 hours.**

Lectures – 52 hours;

Seminars – 105 hours;

Self-study – 95 hours;

Control – 36 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru>)

### **Course objectives: The purpose of mastering the discipline**

#### ***Professional competence***

- At the end of course, the student shall be able to -
- Describe the structure and ultrastructure of a sick cell, the mechanisms of the cell degradation, cell death and repair.
- Correlate structural and functional alterations in the sick cell.
- Explain the disturbances of homeostasis, their mechanisms and the morphological and clinical manifestations associated with it.
- Describe the mechanisms and patterns of tissue response to injury and their clinical manifestations.
- Correlate the gross and microscopic alterations of different organ systems in common diseases to the extent needed to understand disease processes and their clinical significance.
- Develop an understanding of neoplastic change in the body in order to appreciate need for early diagnosis and further management of neoplasia.
- Understand mechanisms of common haematological disorders and develop a logical approach in their diagnosis and management.
- Describe morphological changes and clinical manifestations of infectious diseases

## **Skills**

At the end of one and half years, the student shall be able to -

- Describe the pathological changes in gross and microscopical preparations.
- Recognize morbid anatomical and histopathological changes for the diagnosis of common disorders.
- Based on the case history suggest morphological changes on organ, tissue and cell levels
- Describe the rationale and principles of technical procedures of morphological diagnostical tests.

## **Course topics:**

### **Calendar plan of lectures**

#### **5<sup>th</sup> semester**

1. Introduction to Anatomic Pathology.
- A. Object and methods of pathology. Branches of Pathology. Anatomic Pathology as a field of medicine. Common definitions in pathology. Types of biopsy. Stains in Pathology. History of Pathology in Russia and foreign countries.
2. Cell injury. Accumulations and depositions. Part 1. Types of cell injury. Water overload. Metabolites overload, inherited errors of metabolism. Steatosis (of liver and heart), cholesterol, hyaline. Amyloidosis, classification, pathogenesis and morphology.
3. Accumulations and deposits. Part 2. Storage loading: glycogen, pigments, minerals, and exogenous substances. Hemosiderosis and hemochromatosis. Jaundice. Disorders of melanin metabolism. Metastatic and dystrophic calcification. Wilson's disease.
4. Necrosis and apoptosis. Death. Etiology and pathogenesis of necrosis and apoptosis. Biological role and mechanisms of apoptosis. Differences between necrosis and apoptosis. Types of necrosis. Significance and outcomes. Death. Postmortem changes.
5. Adaptation and disorders of tissue growth. Atrophy and hypertrophy. Hypoplasia and hyperplasia. Metaplasia and dysplasia. Definitions, pathogenesis, clinical examples, morphology, significance.
6. Hemodynamic disorders. Part 1. Edema, hyperemia, congestion. Hemorrhage. Ischemia. Mechanisms, morphology, significance. Classification, clinical and morphological correlation.
7. Hemodynamic disorders. Part 2. Thrombosis and embolism. Infarction. Disseminated intravascular coagulation. Shock. Etiopathogenesis, morphology, clinical significance and outcomes.
8. Inflammation. Etiology and pathogenesis. Chemical mediators and cells involved in inflammation. Vascular and cellular events in inflammation. Acute inflammation. Morphology, clinical and morphological correlation. Significance. Chronic inflammation. Morphology of granulomas.
9. Regeneration and repair. Proliferative capacities of tissues. Factors modifying repair. Wound healing. Immunopathology. Hypersensitivity reactions: types, morphology and significance. Transplant rejection reactions.
10. Neoplasia. Definitions. Tumors and tumor-like lesions. Biological properties of tumor cells. Carcinogenic factors. Precancerous conditions. Classification of tumors. Morphology of tumors. Grading and staging of tumors. Metastasing. Tumor-host interactions.
11. Soft tissue tumors. Classification, morphological features of lipomatous, fibrous, muscle, fibro histiocytic, vascular tumors, tumors of bones and cartilage. Tumors of central nervous system, classifications and clinical features. Teratomas. Tumors of uncertain origin.
12. Anemias: iron deficiency anemia, megaloblastic anemia, hemolytic anemias (hereditary and acquired), aplastic anemia: Pathogenesis, Morphology, hematological features, significance.
13. Leukemias: pathophysiology, hematology and clinical features. Hodgkin's and non-Hodgkin's Lymphomas. Plasma cell tumors

## 6<sup>th</sup> semester

14. Pathology of cardiovascular system part 1. Atherosclerosis, Hypertension, arteriosclerosis. Ischemic heart disease. Definition, etio- pathogenesis. Myocardial infarction: stages, gross and microscopic description, complications and clinical correlation. Cerebrovascular diseases.
15. Pathology of cardiovascular system part 2 . Congenital heart disease. Immune diseases. Systemic lupus erythematosus. Vasculitides. Rheumatic fever and rheumatic heart disease: Incidence, etiopathogenesis, morbid anatomy, histopathology, lesions in the organs, clinical course and sequelae. Cardiomyopathies. Myocarditis.
16. Pathology of lung. Developmental abnormalities. Acute respiratory distress syndrome and Pulmonary edema. Bronchitis. Pneumonia: Lobar, Bronchopneumonia, Interstitial pneumonia. Clinical classification of pneumonia, gross, histopathological description. Clinical correlation, complications. Lung abscess. Chronic bronchitis, bronchiectasis, bronchial asthma and emphysema. Occupational lung diseases. Precancerous lesions of the lung. Tumors of lung and pleura.
17. Diseases of gastrointestinal tract. Pathology of esophagus - congenital defects, esophagitis, Barrett esophagus, esophageal cancer. Gastritis and Peptic Ulcer. Gastric cancer. Precancerous lesions. Carcinoid tumours. MALT lymphoma. Gastrointestinal stromal tumor (GIST) Appendicitis. Idiopathic inflammatory bowel disease. Similarities and differences between Crohn's disease and ulcerative colitis. Intestinal polyps and colorectal carcinoma.
18. Pathology of liver, gallbladder and exocrine pancreas. Viral Hepatitis. Etiology, clinical source and enzymology, histological features and sequele. Alcoholic liver disease. Pathogenesis, morphological manifestations and correlation with clinical features. Liver Cirrhosis. Tumors of liver, and gallbladder. Pathology of exocrine pancreas: acute and chronic pancreatitis, benign and malignant tumors.
19. Pathology of kidneys and genitourinary system. Part1 Modern classification of diseases of kidneys. Glomerulopathies. Nephrotic and nephritic syndromes. Minimal change disease, focal segmental glomerulonephritis, mesangioproliferative glomerulonephritis. Acute postinfectious glomerulonephritis, rapidly progressive glomerulonephritis. End stage kidney.
20. Pathology of kidneys and genitourinary system. Part2. Pyelonephritis and interstitial Nephritis. Etiology, pathogenesis, morphological features and clinical correlation. Tumors of kidney and Renal Pelvis. Classification, morphological features, clinical course. Obstructive diseases of kidney. Tumors of bladder, prostate and testis.
21. Diseases of endocrine system. Pathology of pituitary gland (Panhypopituitarism, Acromegaly and Gigantism, Hypothyroidism). Lesions of Thyroid and parathyroid glands. Hyperthyroidism. Hypothyroidism. Endemic and sporadic Goiter. Graves disease. Thyroiditis. Neoplastic diseases. Pathology of adrenal glands (hypo- and hyperplasia, Cushing's Syndrome Addison's disease, Waterhouse-Friderichsen syndrome, Adrenal Virilism). Pathology of endocrine pancreas (diabetes mellitus).
22. Diseases of female reproductive system. Pathology of pregnancy. Tumors of Cervix and Uterus. Tumors of ovary. Non-neoplastic and Neoplastic lesions of the breast. Pathology of pregnancy: spontaneous abortion, ectopic pregnancy, preeclampsia and eclampsia. Trophoblastic disease. Etiopathogenesis, morphology, diagnostics, complications.
23. Infections of gastrointestinal tract. Viral gastroenteritis. Cholera, Salmonellosis, Typhoid fever, Shigellosis, E.Coli infection, Yersiniosis, Amebiasis. Respiratory infections. Staphylococcal infection. Streptococcal infection. Erysipelas, scarlet fever. Meningococcal infection. Diphtheria. Whooping cough. Quarantinable infections. Anthrax and plague. Epidemiology, pathogenesis, clinical types of infection, morphology, complications.
24. Primary, secondary and disseminated tuberculosis. Tuberculosis in immunocompromised patients. Morphology of T.B. granuloma. Morphology of leprosy. Clinical stages of Syphilis. Pathology of HIV infection. AIDS-defining tumors and infections. SIRS and Sepsis. Etiopathogenesis. Diagnostic criteria for SIRS.

25. Pathology service in Russian Federation and abroad. Part1. Organization, regulatory documents. Diagnosis. Death certification. Structure and algorithm of postmortem diagnosis, ICD-10. Clinical-pathological correlation. Quality control. Clinical-pathological correlation. Discrepancies of diagnoses. Medical errors. Iatrogenesis.
26. Pathology service in Russian Federation and abroad. Part2. Work with surgical and biopsy material. Biopsy. Preparation of specimen for the histological assessment. Fixation, processing. Modern methods in Pathology. Principles and utilization of Immunohistochemistry. Fluorescent in situ hybridization, PCR, NG sequencing.

### **Calendar plan of practical classes (seminars)**

1. Introduction to Anatomic Pathology. Object and methods of pathology. Anatomic Pathology as a field of medicine. Common definitions in pathology. Museum of Anatomic Pathology Department. Instructions for work with microscope, methods of making microscopic slides.
2. Water overload. Steatosis of liver, heart and kidneys. Hyaline and amyloid. Methods of diagnostics.
3. Exogenous and endogenous pigmentations. Hemosiderosis and hemochromatosis. Jaundice. Hyper and hypomelanosis. Calcification. Wilson disease.
4. Necrosis and apoptosis. Death. Etiology and pathogenesis of necrosis and apoptosis. Differences between necrosis and apoptosis. Types of necrosis. Significance. Outcomes. Death. Postmortem changes.
5. Adaptation and tissue growth disturbances. Atrophy and hypertrophy. Hypoplasia and hyperplasia. Metaplasia and dysplasia. Definitions, pathogenesis, morphology, significance
6. Module on topics 1-5.
7. Hemodynamic disorders. Part 1 Edema, hyperemia, congestion. Hemorrhage. Ischemia. Mechanisms, morphology, significance. Classification, clinical and morphological correlation.
8. Hemodynamic disorders. Part 2. Thrombosis and embolism. Infarction. Disseminated intravascular coagulation. Shock. Etiopathogenesis, morphology, clinical significance and outcomes.
9. General aspects of inflammation. Vascular and cellular events in inflammation. Signs of inflammation. Morphology of acute inflammation, peculiarities of serous, fibrinous, suppurative, hemorrhagic, catarrhal inflammation.
10. Chronic inflammation. Morphology of granulomas. Regeneration and repair. Stages. Factors modifying repair. Wound healing. Immunopathology. Hypersensitivity reactions: types, morphology and significance. Transplant rejection reactions.
11. Module on topics 7-10
12. Neoplasia. Theories of cancerogenesis. Biology of tumor growth. Precancerous conditions. Morphology of tumors. Grading and staging of tumors. Metastasing. Tumor-host interactions.
13. Soft tissue tumors. Classification, morphological features of lipomatous, fibrous, muscle, fibro histiocytic, blood vessel tumors, tumors of bones, cartilage and joints. Tumors of central nervous system.
14. Hematology. Anemias: iron deficiency anemia, megaloblastic anemia, hemolytic anemias (including hereditary spherocytosis, sickle cell anemia, thalassemias, immune hemolytic anemias), aplastic anemia. Pathogenesis, Morphology, hematological features, significance.
15. Hemoblastoses. Acute and chronic Leukemias. Hodgkin's lymphoma and non- Hodgkin's Lymphomas. Comparison of leukemia and lymphoma.
16. Module 3 on topics 12-15
17. Pathology of cardiovascular system 1. Atherosclerosis, Hypertension, arteriosclerosis, vasculitides. Ischemic heart disease. Definition, etio- pathogenesis, stages, gross and microscopic description, complications and clinical correlation. Cerebrovascular diseases.

**6<sup>th</sup> semester.**

18. Congenital heart disease. Autoimmune diseases. Systemic lupus erythematosus. Vasculitides. Rheumatic heart disease: histopathology, clinical course and sequelae. Cardiomyopathies, myocarditis, cardiac tumors.
19. Bronchitis. Lobar pneumonia, bronchopneumonia, interstitial pneumonia. ARDS. Atelectasis. Pulmonary edema. Pulmonary hemorrhages. 19. Chronic bronchitis, bronchiectasis, bronchial asthma and emphysema. Occupational lung diseases. Precancerous lesions of the lung. Tumors of lung and pleura.
20. Diseases of gastrointestinal tract. Pathology of esophagus - congenital defects, esophagitis, Barrett esophagus, esophageal cancer. Gastritis and Peptic Ulcer. Overview of etiology and types of gastritis. Complications of peptic ulcer. Gastric cancer. Precancerous lesions. Etiopathogenesis, morphological features, classification and morbid anatomy. Carcinoid tumours. GIST. Malt lymphoma of stomach. Appendicitis. Idiopathic inflammatory bowel disease. Similarities and differences between Crohn's disease and ulcerative colitis. Intestinal polyps & colorectal cancer.
21. Viral Hepatitis. Etiology, clinical course and markers, histological features. Alcoholic liver disease. Liver cirrhosis. Tumors of liver, and gall bladder. Significance of liver biopsy as a diagnostical approach. Pathology of exocrine pancreas: acute and chronic pancreatitis, benign and malignant tumors.
22. Module 4 (on topics 17-21)
23. Glomerulopathies. Nephrotic and nephritic syndromes. Acute postinfectious glomerulonephritis. Etiopathogenesis, morphology, clinical correlation, outcomes. Minimal change disease, focal segmental glomerulonephritis, rapidly progressive glomerulonephritis, Berger's disease, mesangioproliferative glomerulonephritis. Renal failure, end stage kidney.
24. Pyelonephritis and interstitial Nephritis. Etiology, pathogenesis, morphological features and clinical correlation. Obstructive diseases of kidney. Tumors of kidney and renal pelvis. Tumors of bladder, prostate and testis.
25. Diseases of endocrine system Pathology of pituitary gland. Panhypopituitarism, pituitary adenomas, acromegaly and gigantism, prolactinoma. Hyper – and hypothyroidism. Endemic and sporadic goiter. Graves disease. Tumors. Adrenal hypo- and hyperplasia, Cushing's Syndrome, Addison's disease, Waterhouse-Friderichsen syndrome, Adrenal Virilism. Pathology of endocrine pancreas (diabetes mellitus).
27. Diseases of female reproductive system. Pathology of pregnancy. CIN, Tumors of Cervix and Uterus. PCOS, Tumors of ovary. Non-neoplastic and Neoplastic lesions of the breast. Pathology of pregnancy: spontaneous abortion, ectopic pregnancy, preeclampsia and eclampsia. Trophoblastic disease.
28. Module 5 (on topics 23-26)
29. Infections of gastrointestinal tract. Food poisoning. Viral gastroenteritis. Cholera, Salmonellosis, Typhoid fever, Shigellosis, E.Coli infection, Yersiniosis, Amebiasis. Pathogenesis, morphology, clinical features and diagnostics.
30. Respiratory infections. Staphylococcal infection. Streptococcal infection. Erysipelas, scarlet fever. Pathogenesis, morphology, clinical course and outcomes. Meningococcal infection. Morphology and clinical course of diseases caused by meningococci. Diphtheria. Pathogenesis, morphology, diagnostics, complications. Whooping cough. Pathogenesis, morphology. Respiratory viral infections. Influenza, parainfluenza, adenoviruses, rhinoviruses, coronaviral infection.
31. Tuberculosis. Leprosy. Syphilis. Biology of *Mycobacteria* Tuberculosis, *M. Leprae*, *T. Pallidum*. Primary, secondary and disseminated tuberculosis. Tuberculosis in immunocompromised patients. Morphology of T.B. granuloma. Morphology of leprosy. Clinical stages of Syphilis. Pathology of HIV infection. AIDS – associated infections and tumors.
32. Quarantinable infections. Anthrax and plague. Epidemiology, pathogenesis, clinical types of infection, morphology, complications. SIRS and Sepsis. Etiopathogenesis. Clinical

manifestations. Diagnostic criteria for SIRS. Morphology of septicopyemia, septicemia, bacterial endocarditis.

33. Module 6 on topics 27-30.

34. Pathology in Russian Federation. Methods, regulatory documents. Diagnosis. Death certificate. Structure and algorithm of postmortem diagnosis. Clinical-pathological correlation. Regulations of Death certificate arrangement. Postmortem autopsy. Methods of autopsy. Regulations. Autopsy protocol. Quality control. Clinical-pathological correlation. ICD-10. Discrepancies of diagnoses. Medical errors. Iatrogenesis. Clinical-pathological conferences.

35. Handling surgical and biopsy material. Biopsy. Preparation of specimen for the histological assessment. Fixation, processing. Modern methods in Pathology. Immunohistochemistry. Fluorescent in situ hybridization.

36. Module 7 (on topics 1-34.) Quiz with 50 randomized questions on all previous topics.

**Text books and required supplies:**

1. Vinay Kumar, Abul K. Abbas, Jon C. Aster, Andrea T Deyrup M.D. Ph.D. Robbins & Kumar Basic Pathology, 11th Edition, Elsevier, 2022, 840p.
2. Vinay Kumar, Abul K. Abbas, Jon C. Aster. Robbins & Cotran Pathologic Basis of Disease 10th Edition. Elsevier. 2020 -1392p..
3. Harsh Mohan. Textbook of Pathology.8th edition. Jaypee.- 2018 - 1028p
4. Stacey E Mills. Histology for Pathologists. Lippincott Williams & Wilkins; Fifth edition, 2020, 1328 p .
5. Molavi, Diana Weedman. Practice of surgical pathology - Springer - 2017. – 386P.

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined

- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

**Example of module 1 questions. Cell injury. Accumulations. Amyloidosis.**

1. Fatty change of the liver and heart: morphology & outcomes.
2. Classification and etiopathogenesis of amyloidosis.
3. Morphology of amyloidosis. Significance & outcomes.
4. Glycogen storage diseases (etiology, pathogenesis, morphology, outcomes). Von Gierke's disease
5. Hemosiderosis (pathogenesis, morphology). Hemochromatosis (pathogenesis, morphology).
6. Dystrophic and metastatic calcification.
7. Morphologic patterns of necrosis. Microscopic features.
8. Causes & mechanisms of apoptosis.
9. Atrophy (etiology, pathogenesis, examples, morphology, outcomes).
10. Metaplasia and dysplasia (definitions, examples, morphology, significance).

**Example of module 2 questions. Hemodynamic disorders, inflammation**

1. Congestion and hyperemia (etiology, pathogenesis, significance).
2. Pathogenesis of thrombosis. Morphology of thrombus & postmortem clot. Fate of thrombus.
3. Pulmonary & systemic thromboembolism.
4. Fat, air, gas & amniotic fluid embolism.
5. Hemorrhage (etiology, terminology, outcomes).
6. Disseminated intravascular coagulation. (etiopathogenesis, hematological and clinical features, clinical significance).
7. Etiopathogenesis & classification of shock. Stages and morphology of shock ("Shock organs")
8. Cellular events in inflammation. Vascular changes in acute inflammation.
9. Morphology of acute inflammation. Serous, fibrinous, suppurative and hemorrhagic inflammation
10. Granulomatous inflammation (etiology, morphology).

**Example of module 3 questions. Oncomorphology and hematology.**

1. Biologic properties of cancer cell (self-sufficiency in growth signals, evasion of apoptosis)
2. Neoplasms: spread, grading and staging.
3. Nomenclature and classification of tumors.
4. Benign and malignant Epithelial tumors.
5. Differences between benign and malignant tumors.
6. Effects of malignant tumors on the patient. Secondary changes in tumors. Paraneoplastic syndrome.
7. Soft tissue tumors. Classification, morphological features of lipomatous, fibrous, muscle and fibro histiocytic tumors.
8. Tumors of melanocytes. Teratomas.
9. Classification & morphology of CNS tumors.
10. Hemolytic anemias. Intra and extravascular hemolysis

**Example of module 4 questions. General pathology-1**

1. Gross and microscopic description of atherosclerosis. Complications and clinical correlation.
2. Acute myocardial infarction (pathogenesis, dynamics of gross and microscopic changes, complications).



3. Congenital heart diseases (classifications, correlations between anatomical malformations and clinical manifestations).
4. Emphysema (pathogenesis, types, morbid anatomy and cardiac sequelae).
5. Barrett's esophagus (pathogenesis, morphology, significance). Esophageal cancer (risk factors, morphology).
6. Chronic autoimmune gastritis (pathogenesis, morphology, outcomes).
7. Crohn disease. Ulcerative colitis (etiopathogenesis, morphology).
8. Congestion of the liver. Portal hypertension. (etiopathogenesis, gross and microscopic description, outcomes).
9. Alcoholic liver disease (pathogenesis, morphology, outcomes).
10. Tumors of liver (classifications, morphology, spread).

#### **Example of module 5 questions. General pathology-2**

1. Rapidly progressive glomerulonephritis (etiopathogenesis, morphology).
2. Minimal change disease. Focal segmental glomerulosclerosis.
3. Membranous and membranoproliferative glomerulonephritis.
4. Interstitial nephritis. Analgesic nephropathy.
5. Kidney tumors (classification, morphology, outcomes).
6. Tumors of the pituitary gland (morphology, clinical manifestations).
7. Graves disease. Hashimoto thyroiditis. De Quervain thyroiditis (etiopathogenesis, morphology, clinical manifestations and outcomes).
8. Acute, chronic primary & secondary adrenal insufficiency (morphology, clinical manifestations and outcomes).
9. CIN (SIL). Cancer of the cervix (etiology, classification, diagnostics).
10. Ectopic pregnancy. Toxemia of pregnancy (preeclampsia /eclampsia).

#### **Example of module 6 questions. Pathology of infectious diseases**

1. Cholera (etiopathogenesis, morphology, outcomes).
2. Salmonellosis and typhoid fever (etiopathogenesis, morphology, complications).
3. Shigellosis (etiopathogenesis, morphology and complications).
4. Streptococcal infections: scarlet fever. Erysipelas. Poststreptococcal sequelae.
5. Primary tuberculosis (etiopathogenesis, morphology, outcomes).
6. Secondary tuberculosis (etiopathogenesis, morphology, outcomes).
7. Syphilis (pathogenesis, morphology on each stage, outcomes).
8. AIDS defining opportunistic infections. Peculiarities of AIDS associated mycobacterial infections.
9. Anthrax. Plague (pathogenesis, morphology, clinical forms).
10. Malaria: life cycle of parasites, morphology & clinical features.

#### **Module 7.**

Conducted at the educational Portal of Kazan state medical university, Quiz consists of 70 random questions, from the bank of 800 multiple-choice questions (Based on topics of modules 1-6, with emphasis on recognition and description of microscopic slides)

#### **EVALUATION OF THE MODULE ANSWER**

The question card of the module consists of 2 questions. Modules are assessed on the basis of students to provide precise definitions, explain mechanisms, classification, morphological features and clinical significance of a pathologic condition.

Teacher can ask additional question, related to the questions in the card. Maximum points (90-100) given for a full answer with details and examples without mistakes and ability to compare conditions, explain differential diagnosis and modern methods. 80-90 points given for the knowledge of definitions, classification, morphological features skipping part of detail (one

mistake allowed). 70-80 points given for ability to explain definitions, main features, but without good explanation of mechanisms or microscopic features of disease, 2 mistakes allowed. Mark below 70 given for wrong explanation of definitions, inability to give classification or mechanism of disease.

### **Final exam on Pathologic anatomy.**

#### **Example of exam card.**

1. Granulomatous inflammation (etiology, morphology).
2. Stages and morphology of shock.
3. Emphysema (pathogenesis, types, morbid anatomy and cardiac sequelae).
4. Adrenocortical hyperfunction. Hypercortisolism, hyperaldosteronism, adrenogenital syndromes (morphology, clinical manifestations and outcomes).
5. Recognize and describe 2 random microscopic slides

### **Evaluation of exam answer**

The question card of the module consists of 4 theoretical questions. Knowledge of theory assessed on the basis of ability of students to provide precise definitions (diagnostic criteria), explain mechanisms, modern classification, morphological features and clinical significance of a pathologic condition. Teacher can ask additional question, related to the questions in the card.

Total maximum mark for examination is 100 (80 for 4 theoretical question, 4\*20 and 20 points for 2 microscopic slides).

In theoretical part maximum points (18-20) given for a full answer with details and examples without mistakes and ability to compare conditions, explain differential diagnosis and modern methods. 16-17 points given for the knowledge of definitions, classification, morphological features skipping part of detail (one mistake allowed). 14-15 points given for ability to explain definitions, main features, but without good explanation of mechanisms or microscopic features of disease, 2 mistakes allowed. Mark below 14 given for wrong explanation of definitions, inability to give classification or mechanism of disease.

In the practical task (microscopic diagnostics) 20 points given for explaining both microscopic slides, correct recognition of tissue, stain, pathological process. For maximum mark student should be able to explain the microscopic findings confirming the diagnosis. 16-17 points given for correct recognition of organ and disease but not able to explain "why?" 14-15 points given for recognition of organ/tissue in 2 slides but failing to name the pathological process. Mark below 14: not able to distinguish organs and pathological lesions.

Anti-cheating control is based on the ability of student to answer additional basic questions related to the questions in exam card and knowledge of slides.

## **GENERAL SURGERY**

**Teachers: PhD Volkov Dmitry, PhD Izmailov Aleksander,**

**Building, Department, classroom #** Kazan Hospital for War veterans, surgery department, 5<sup>th</sup> floor, room 527

### **Contact details:**

- E-mail address: gs@kazangmu.ru
- Office and working hours: 527 (8.00-16.00)

### **Total:180 h**

Lecture hours 24 h

Class hours: 76 h

Self-study: 44 h

Control: 36 h

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University

### **Course objectives: The purpose of mastering the discipline**

**The aim** of studying general surgery is to teach the student to collect and analyze information about the patient's health status, solve practical problems of diagnosis, treatment, rehabilitation of patients and disease prevention, skills of professional medical behavior, the basics of clinical thinking, and keeping medical documents.

#### **Tasks of the discipline:**

- Purposefully find out about the patient's complaints and medical case;
- Perform a physical examination of a surgical patient, including inspection, palpation, percussion, and auscultation;
- Outline a plan for the examination of a surgical patient;
- Organize surgical activities in accordance with aseptic rules in surgical hospitals and polyclinics, intensive care units, and emergency rooms;
- Carry out all necessary measures to care for surgical patients;
- Provide first aid and determine the type of transport for a patient;
- Perform standard medical diagnostic and procedures;
- Work as a nursing staff in surgical hospitals;
- Identify major surgical syndromes and diagnose major types of purulent infectious diseases, injuries and conditions.

### **Course topics:**

#### **Calendar plan of lectures**

1. **Asepsis, antiseptics.** Sources and methods of surgical infection spread. The concept of aseptic. Organization of work in the surgical department and operating unit. Preparation of surgeon's hands for surgery. Preparation of operating field. The concept of antiseptic. Types of antiseptics. Mechanical antiseptic. Physical antiseptic. Chemical antiseptic. Biological antiseptic. Mixed antiseptic.
2. **Pain and pain relief. Pain syndromes. Local and general anesthesia.** Mechanisms and causes of pain. Characteristics of pain. Narcotic anesthesia. Means and principles of drug treatment for pain syndrome. Types of local anesthesia: pharmacological (terminal, infiltration, conduction) and physical. Drugs for local anesthesia, the mechanism of their action, the main characteristics. Indications for use, types and techniques of novocaine blockades. Components of general anesthesia. The methodology and clinical picture of modern general anesthesia, the stage of anesthesia. Complications of anesthesia and the immediate post-acute period, their prevention and treatment. Types of anesthesia.

3. **Bleeding.** Classification of bleeding. The protective and adaptive reaction of the body to acute blood loss. Clinical manifestations of external and internal bleeding. Clinical and instrumental diagnosis of bleeding.
4. **Modern principles of blood loss treatment.** The concept of blood type. Types and methods of blood transfusion. Hemostasis system research methods. Diseases that cause changes in the blood clotting system. Medications affecting the hemostatic system. Prevention and treatment of thromboembolic complications.
5. **The basics of purulent septic surgery. General issues of acute surgical infection.** General principles of treatment purulent diseases, rational antibacterial therapy, immunotherapy, enzyme therapy, detoxification, stimulating and restorative therapy. General principles of surgical intervention techniques. Modern methods of treatment purulent foci.
6. **General issues of injury surgery. Wounds. The concept of isolated, multiply and combined injuries.** Wounds. Classification of wounds. Pathogenesis and phases of the wound process. Types of wound healing. Primary surgical treatment of wounds, its types. Secondary surgical treatment. Closure of the wound. Purulent wounds are primary and secondary. Radical surgical treatment of a purulent wound.
7. **Closed soft tissue injuries. Bruises, sprains. Prolonged compression syndrome.** Damage to soft tissues, tendons and joints. Bruises, sprains and tears, concussions and compression, prolonged compression syndrome.
8. **Fractures and dislocations.** Classification. The clinical picture. The basic principles of treatment: pain relief, reposition, immobilization, rehabilitation.
9. **10. Burns: thermal, chemical, electrotrauma, radiation burns.** Classification. Determination of the depth and area of burns. Burn disease - phases of the course. Principles of general and local treatment. Radiation and chemical burns.
10. **Stages of treatment surgical patients.** First aid. The concept of the first aid. The basic principles of the organization pre-medical and first aid at the pre-hospital stage. Ambulance and emergency medical services. The importance and functions of specialized emergency medical teams.
11. Ambulatory surgery. The structure of the surgical service of the polyclinic, trauma center.
12. **The preoperative period. The period of the operation. The postoperative period.** Inpatient surgery. The preoperative period. Absolute, relative indications for surgery in planned and emergency surgery. The concept of contraindications to surgery. Criteria for operational risk, ways to reduce it.
13. Preparing the patient for surgery. The objectives of the training.
14. The period of the operation. The concept of a surgical operation. Types of surgical operations: planned, urgent, emergency, radical and palliative. Minimally invasive surgery. Stages of surgical operation.
15. The postoperative period. The body's reaction to operational aggression. The concept of rehabilitation after surgical treatment. Bandages, suture removal, physiotherapy and physical therapy.

#### **Calendar plan of practical classes**

1. **Aseptic techniques.** Introduction to the topic. Getting acquainted with the clinic. The concept of surgery. Brief history of surgery. Current state of surgery. Organizational and legal basis of surgical activity. Ethical and deontological principles in surgery. Organization of work in the surgical department and operating unit. Preparation of surgeon's hands for surgery. Preparation of the operating field.
2. **Antiseptic techniques:** mechanical, physical, chemical, biological, combined.
3. **Non-operative surgical procedures.** Desmurgy. Types of dressings. The concept of dressings and dressing application. Methods of soft bandage application and retention.
4. **Puncture, injections, and infusions.** Drainage and packing of wounds and body cavities. Hollow organ drainage.

5. **Pain and pain relief.** Pain syndromes. Local anesthesia. Blocks. Relief of pain syndromes. Narcosis. Principles and methods of pharmacological management of pain. Types of Local Anesthesia. The use of various types of local anesthetic techniques, including novocaine blocks, is discussed. Indications, contraindications, and methods for their implementation are described, as well as possible complications and methods to prevent them.
6. **General Anesthesia.** Preparation of patients for general anesthesia is discussed, including premedication and methods for its administration. Inhalation and non-inhalation anesthesia techniques, as well as the use of muscle relaxants, are also discussed. The benefits of combining these methods to achieve optimal results are highlighted.
7. **Bleeding Control.** Methods for stopping bleeding are discussed, including both temporary and permanent measures. Techniques for assessing the severity and volume of blood loss are presented, along with the use of various methods to control bleeding.
8. **Modern Principles of Blood Loss Treatment. The basis of transfusiology. Blood and Component Transfusion.** ABO Group System and Rh Factor System. Technique of Component Transfusion. Determination of Blood Groups. Modern Rules for Group-Specific ABO and Rhesus Blood Transfusion. Compatibility Testing for Hemotransfusion. Documentation Management. Filling Out Blood Transfusion Cards. Autohemotransfusion. Blood Reinfusion Technique. Blood Transfusion Reactions and Complications. Organization of Blood Donation Services in Russia. Blood Substitutes. Determination of Quality and Volume of Infusion Therapy in Surgical Diseases. Principles of Modern Component Infusion Therapy.
9. **The basics of purulent septic surgery.** General issues of acute surgical infection. General principles of treatment of purulent diseases, rational antibacterial therapy, immunotherapy, enzyme therapy, detoxification, stimulating and restorative therapy. General principles of surgical intervention techniques.
10. **Examination of surgical patients.** Purposeful clarification of the patient's complaints and the history of the disease. General clinical examination of the patient using examination, thermometry, palpation, percussion and auscultation. Assessment of the local status. Drawing up a patient examination plan. The role of laboratory and instrumental methods in the examination of a surgical patient. Determination of the need for urgent diagnostic and therapeutic measures.
11. **Fundamentals of injury surgery. General issues of injury surgery. Damage to soft tissues, tendons and joints.** Types of injuries and classification of wounds. The concept of isolated, multiple, combined and combined injuries. Complications and risks of injury: immediate, immediate and late. General principles of the organization of prehospital and inpatient trauma care. Damage to soft tissues, tendons and joints. Closed soft tissue injuries. Bruises, sprains and tears, concussions and compression, prolonged compression syndrome.
12. **Wound.** Classification of wounds. Pathogenesis and stages of the wound healing process. Types of wound closure. Principles of initial wound care. Primary surgical interventions for wounds, their types. Secondary surgical treatments. Closure of wounds. Infectious complications associated with wounds. General and local indicators of wound suppuration. Treatment of purulent wounds based on the stage of the wound progression. Modern approaches to surgical management of purulent wounds. Surgical treatment of chronic wounds. Enzyme therapy and antibacterial treatment. Prevention of postoperative wound infection.
13. **Head, chest, and abdominal injuries.** Head injury. Classification. Assessment of the severity of the victim. First aid for head injury. Features of patient transportation. Chest injury. The concept of pneumothorax. Types of first aid. Classification of pneumothorax. Features of assistance with strained, valvular and open pneumothorax. Principles of treatment. Hemothorax. Clinical manifestations of hemothorax. First aid for hemothorax. Features of transportation of patients with breast injury. Abdominal injury. Classification. Clinical,

laboratory and instrumental diagnostics of damage to the organs of the abdominal cavity and retroperitoneal space.

14. **Fractures and dislocations.** Fractures and dislocations. Classification. The clinical picture. Basic principles of treatment: pain management, reposition, immobilization, rehabilitation. Complications of traumatic fractures: pain shock, fatty embolism, acute blood loss, the development of infection and their prevention.
15. **Burns.** Thermal damage. Classification. Determination of the depth and area of burns. First aid for burns. Burn disease - phases of the course. Principles of general and local treatment. Radiation and chemical burns. Electrical injury. Local and general effect of electric current. First aid for electrical injury. Features of further examination and treatment.
16. **Inpatient surgery. The preoperative period. The period of the operation.** Inpatient surgery. The preoperative period. Absolute, relative indications for surgery in planned and emergency surgery. The concept of contraindications to surgery. Criteria for operational risk, ways to reduce it. Preparing the patient for surgery. The objectives of the training. Preparation of the oral cavity, preparation of the gastrointestinal tract, skin. Choosing analgesia and preparing for it. Preparation for emergency operations. The legal and legal basis for conducting examinations and surgical interventions. The period of the operation. The concept of a surgical operation. Types of surgical operations: planned, urgent, emergency, radical and palliative. Types of operations: with the removal of a pathological lesion, reconstructive (reconstructive) and plastic surgery. The position of the patient on the operating table. Principles of choosing operational access. Minimally invasive surgery. Stages of surgical operation. The distribution of responsibilities between all participants in the operation during anesthesia and surgery. Monitoring of the patient's condition during surgery.
17. **Postoperative period.** The postoperative period. The body's reaction to operational aggression. Respiratory disorders, cardiac activity, gastrointestinal and urinary tract functions, thromboembolic complications. Their prevention, diagnosis and treatment. The patient's diet. Pain relief. Prevention, diagnosis and treatment of wound complications: bleeding, suppuration, eventration. The concept of rehabilitation after surgical treatment. Bandages, suture removal, physiotherapy and physical therapy.
18. **Monitoring the independent work of students.**
19. **Outcome.**

### ***Topics of Self-study***

<b>Water-electrolyte disorders in surgical patients and principles of therapy.</b>	The causes of water-electrolyte and acid-base disorders in surgical patients. Clinical and laboratory diagnostics. Indications, contraindications and methods of infusion therapy. Principles of infusion therapy, monitoring of its implementation. Solutions for infusion therapy of water-electrolyte disorders. Infusion program. Basic and corrective infusion therapy. The dangers and complications of transfusion of plasma-substituting solutions. First aid and treatment of these complications. Documentation of infusion therapy.
<b>Endogenous intoxication in surgery and the principles of its correction.</b>	The concept of endogenous intoxication. The main types of endotoxiosis in surgical patients. Toxicosis, endotoxemia. General clinical and laboratory signs of endotoxiosis. Criteria for the severity of endogenous intoxication. Principles of complex treatment of endogenous intoxication syndrome in a surgical clinic. Stimulation of natural detoxification, artificial detoxification, syndrome therapy. Surgical elimination of the source of intoxication.
<b>Nutrition of surgical patients.</b>	The etiological factors underlying eating disorders. Nutritional assessment. Enteral feeding. Nutritional media. Indications and methods for nasogastric and gastrostomy feeding. Gastrostomy and

	enterostomy procedures. Indications for parenteral feeding. Components of parenteral nutrient solutions. Methods and modalities of parenteral feeding delivery.
<b>Critical life disorders in surgical patients.</b>	Clinical assessment of the overall health of patients. Objective methods for determining the severity of a patient's or victim's condition. Types of disturbances in the vital functions of the body in surgical patients: acute respiratory distress, acute cardiac failure, acute kidney and liver failure. Multiple organ dysfunction syndrome. Types, signs, and diagnosis of end-stage conditions: pre-agonal state, agonal state, clinical death. Indicators of biological death. First aid in case of cessation of breathing and blood circulation. Criteria for successful resuscitation. Monitoring systems. Indications for the termination of cardiopulmonary resuscitation. Shock – types, pathogenesis, clinical presentation, diagnosis, stages, and phases of shock. Emergency treatment. Complex therapy. Success criteria for treatment.
<b>Fundamentals of surgery for regional circulatory disorders.</b>	Acute and chronic. The main causes of arterial blood flow disorders. General principles of clinical and instrumental diagnostics. The degree of acute ischemia and the stage of chronic arterial insufficiency. Surgical and conservative treatment. First aid for acute disorders of arterial circulation. Principles of complex treatment. Disorders of venous circulation. Acute venous thrombosis and chronic venous insufficiency. General principles of clinical and instrumental diagnostics. Prevention of complications. Principles of complex treatment. Disorders of lymph circulation. Lymphostasis. The main reasons. Principles of diagnosis and treatment. Necrosis. Clinical forms. Causes of occurrence. Gangrene, pressure sores, trophic ulcers. Dynamics of bed sore development. Prevention and principles of treatment.
<b>Blood clotting disorders in surgical patients and methods of their correction.</b>	The hemostasis system. Research methods. Diseases that cause changes in the blood clotting system. The effect of surgical operations on hemostasis. Medications that affect the hemostasis system. Prevention and treatment of thromboembolic complications. Prevention and treatment of hemorrhagic syndrome. DIC syndrome.
<b>The basics of surgical treatment for parasitic infections.</b>	The concept of surgical parasitic diseases. Echinococcosis. Alveococcosis. Ascariasis. Opisthorchiasis.
<b>The basics of malformation surgery.</b>	The concept of congenital pathology. Congenital malformations of organs and tissues. Malformations of the skull and brain. Malformations of the spine and spinal cord. Malformations of the face. Malformations of the chest and organs of the chest cavity. Congenital heart defects. Malformations of the abdomen and digestive organs. Malformations of the genitourinary system. Malformations of the limbs.
<b>The basics of plastic surgery.</b>	Autoplasty, alloplasty and xenoplasty. Plastic surgery of tissues and organs by various methods. The use of synthetic materials in plastic surgery.
<b>The basics of transplantation.</b>	The use of synthetic materials in transplantation. Limb replantation and understanding of microsurgical techniques. The concept of organ and tissue transplantation.

### **Text books and required supplies:**

1. General surgery [Electronic resource] : textbook / Petrov S.V. - 4th ed., reprint. and additional - M.: GEOTAR-Media, 2012. -<http://www.studmedlib.ru/book/ISBN9785970422816.html>
2. General surgery [Electronic resource]: textbook / V. K. Gostischev. - 5th ed., reprint. and additional - M. : GEOTAR-Media, 2015. <http://www.studmedlib.ru/book/ISBN9785970432143.html>
3. **Evaluation and grading:** Monitoring progress is carried by the end of each module (combination MSQ).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test or combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean change shoes, surgery scrub, face mask and medical cap
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example MSQ of module No. 1. Asepsis and Antisepsis**

#### **1. Which of the following methods help prevent contact infection?**

- a) Sterilisation of linen
- b) Sterilisation of instruments
- c) Sterilisation of suture materials
- d) Surgical scrubbing
- e) Washing of the operating field

Choose the right combination of answers

1. a, b, c, d, 2. a, c, d, e 3. a, b, c, e 4. b, c, d, e 5. a, b, d, e

#### **2. Which method is that mechanical antisepsis?**

- a) Through drainage



- b) Vacuum drainage with electric motor causing negative pressure in a closed drainage system
  - c) Primary surgical debridement
  - d) Ultrasonic cavitation of wounds
  - e) applying proteolytic enzymes
- Choose the correct answer

**3. How long sterilized instruments in an autoclave at a pressure of 1.5 atm**

- a) 20 minutes
- b) 30 min
- c) 45 min
- d) 60 min
- e) 90 min

Choose the correct answer

**4. Asepsis – is a (the definition):**

- a) A set of measures aimed at combating infection in the wound.
- b) A set of activities aimed at the complete destruction of microorganisms in the wound.
- c) A set of measures aimed at preventing and complete destruction of microorganisms in the wound.
- d) A set of measures aimed at preventing the ingress of pathogens into the wound.
- e) A set of measures aimed at eliminating the inflammatory process.

Choose the correct answer

**5. There are antiseptics:**

- a) surgical, mechanical, chemical, biological
- b) The thermal, mechanical, chemical, surgical
- c) Chemical, surgical, thermal, biological
- d) mechanical, physical, chemical, biological
- e) The surgical, mechanical, thermal, physical

Choose the correct answer

**6. Which method is that of mechanical antisepsis?**

- A. Through drainage.
- B. Vacuum drainage with electric motor causing negative pressure in a closed drainage system.
- C. Primary surgical debridement.
- D. Ultrasonic cavitation of wounds.

Choose the correct answer.

**7. Methods of physical antisepsis are as follows:**

- 1. Drainage of subcutaneous connective tissue.
- 2. Irrigation of the wound with chlorhexidine solution.
- 3. Necrectomy.
- 4. Ultrasonic cavitation.
- 5. Immunotherapy.

Choose the right combination of answers:

- A. 1,2. B.2, 3. C.1,4. D. 2,4.

**8. Agents that work as biological antiseptic are as follows:**

- 1. Vaccines and sera.
- 2. Sulphonamides.
- 3. Nitrofurantoin.
- 4. Antibiotics.

5. Proteolytic enzymes.

Choose the right combination of answers:

**9. The sterilization of the operating linen in autoclave under the pressure of two atmospheres should last for:**

- A. 2 hours.
- B. 1 hour.
- C. 45 minutes.
- D. 20 minutes.

Choose the correct answer

**10. Which type of organism is metronidazole specifically useful against? Please select the one best answer**

- A. Aerobic organisms
- B. Anaerobic organisms
- C. Gram stain-positive organisms
- D. Gram stain-negative organisms
- E. Fungal infections

**Example MSQ variant Midterm assessment and exams**

**1. Which of the following methods help prevent contact infection?**

- a) Sterilisation of linen
- b) Sterilisation of instruments
- c) Sterilisation of suture materials
- d) Surgical scrubbing
- e) Washing of the operating field

Choose the right combination of answers

1. a, b, c, d, 2. a, c, d, e 3. a, b, c, e 4. b, c, d, e 5. a, b, d, e

**2. Which method is that mechanical antisepsis?**

- a) Through drainage
- b) Vacuum drainage with electric motor causing negative pressure in a closed drainage system
- c) Primary surgical debridement
- d) Ultrasonic cavitation of wounds
- e) applying proteolytic enzymes

Choose the correct answer

**3. The following antibiotics exert toxic effect on the auditory nerve:**

- a) Penicillins
- b) Aminoglycosides
- c) Tetracyclines
- d) Cephalosporines
- e) Macrolides

Choose the correct answer

**4. The concentration of Novocain used for infiltration anesthesia should be as follows**

- a) 1%
- b) 0,5%
- c) 0,25%
- d) 10%

e) 5%

Choose the correct answer

**5. The agents used in conventional premedication include the following:**

- a) Hexenal (thiopentone sodium)
- b) Atropine sulphate (methacine)
- c) Promedol (morphine fentanyl)
- d) Strophanthin (corglucon)
- e) Calcium gluconate (chloride)

Choose the right combination of answers

1. a, b, d, 2. c, d, e 3. b, c 4. d, e 5. a, c, d, e

**6. Melaena is characteristic of bleeding from which of the following organs:**

- a) Lungs
- b) Upper intestinal tract
- c) Rectum
- d) Kidneys
- e) Spleen

Choose the correct answer

**7. The types of hemorrhage classified by clinical implication and relation to the environment include which of the following**

- a) Latent
- b) External
- c) Secondary
- d) Capillary
- e) Internal

Choose the correct answer

**8. The cause of late secondary bleeding is which of the following**

- a) Rise in blood pressure
- b) Purulent destruction of the thrombus
- c) Loss of vessel spasm
- d) Erosion of the vessel wall
- e) The injury of vessels, slip of ligature

Choose the correct answer

**9. Which blood component contains agglutinin?**

- a) Serum
- b) White blood cells
- c) Red blood cells
- d) Platelets
- e) Monocytes

Choose the correct answer

**10. During blood grouping with cyclones, monitoring the reaction of agglutination should last for:**

- a) 3-5 seconds
- b) 20-30 seconds
- c) 1 minute
- d) 2 minutes
- e) 2,5 minutes

Choose the correct answer

**11. Haemodilution is one of the following**

- a) Direct blood transfusion
- b) Blood dilution
- c) Autologous plasma transfusion
- d) Autologous blood transfusion
- e) Exchanging blood transfusion

Choose the correct answer

**12. Preparations for parenteral nutrition are combined with glucose**

- a) To dilute the main solution
- b) To decrease the risk of anaphylaxis
- c) To boost the energy value of the main solution
- d) To decrease the risk of hypercoagulation
- e) To accelerate assimilation of amino acids

Choose the correct answer

**13. Which types of enema are used to prepare the patient for intestinal surgery**

- a) Hypertonic
- b) Siphon
- c) Cleansing
- d) Nutritious
- e) Magic

Choose the correct answer

**14. A weight to press on the wound after operation is applied to**

- a) Prevent wound dehiscence
- b) Relieve pain
- c) Prevent infection
- d) Prevent thrombosis and embolism
- e) Prevent bleeding from wound

Choose the correct answer

**15. The optimum temperature for storage of preserved blood:**

- a) -2 °
- b) -1 °
- c) 0 - 1 °
- d) 2 - 6 °
- e) 8 -12 °

Choose the correct answer

**16. When should the shaving skin before planned surgery?**

- a) two days before surgery
- b) one day before surgery
- c) the night before surgery
- d) in the morning before surgery
- e) immediately before an operation, on the operating table

Choose the correct answer

**17. Indications for amputation**

- a) trophic ulcer
  - b) osteomyelitis
  - c) gangrene
  - d) thrombophlebitis
  - e) phlegmone
- Choose the correct answer

**18. What is paronychia?**

- a) all the finger tissue inflammation
  - b) inflammation of the periungual bed
  - c) inflammation of the nail bed
  - d) interphalangeal joint inflammation
  - e) an inflammation of the finger tendon
- Choose the correct answer

**19. Place of the usual localization of hydradenitis:**

- a) the axilla
  - b) inguinal region
  - c) neck
  - d) back
  - e) face
- Choose the correct answer

**20. Recurrent erysipelas of the lower extremities is often complicated:**

- a) osteomyelitis
  - b) lymphostasis
  - c) sepsis
  - d) thrombophlebitis
  - e) periostitis
- Choose the correct answer

**21. Occlusive dressing is applied:**

- a) for hip fractures
  - b) with an open pneumothorax
  - c) for capillary bleeding
  - d) when a venous bleeding
  - e) if damaged soft tissue
- Choose the correct answer

**22. The main symptom of a brain injury?**

- a) dizziness
  - b) headache
  - c) vomiting
  - d) increased heart rate
  - e) loss of function of brain regions
- Choose the correct answer

**23. The main symptom of a brain concussion?**

- a) retrograde amnesia
- b) increased reflexes
- c) increased heart rate
- d) mydriasis

e) deep rhythmic breathing

Choose the correct answer

**24. What is the optimal time for primary debridement?**

a) to 6 hours.

b) up to 8 h.

c) up to 12 h.

d) up to 18 h.

e) up to 24 h.

Choose the correct answer

**25. As a chemical method of stopping bleeding calcium chloride is used intravenously in the following dosage:**

a) 1% - 30.0

b) 2% - 20.0

c) 5% - 15.0

d) 10% - 10.0

e) 20% - 5,0

Choose the correct answer

**26. What should be done primarily in a patient with an open fracture and bleeding from a major artery damaged?**

a) immobilizing a limb

b) the introduction of cardiac and vasoconstrictor

c) the introduction of drugs for pain relief

d) use of a tourniquet on the limb

e) applying a wound dressing

Choose the correct answer

**27. Which of these methods do you use to stop the parenchymal bleeding?**

a) pressure bandage

b) tamponade

c) vascular suture

d) ligation of the bleeding blood vessels

e) leaving clamp on the bleeding vessel

Choose the correct answer

**28. How long sterilized instruments in an autoclave at a pressure of 1.5 atm**

a) 20 minutes

b) 30 min

c) 45 min

d) 60 min

e) 90 min

Choose the correct answer

**29. For what purpose the patient before surgery is not allowed to eat?**

a) it is difficult to introduce the probe into the stomach

b) possible regurgitation in breathing ways

c) difficult breathing control

d) difficulty in intubation

e) acidosis occurs

Choose the correct answer

**30. At what concentration is used for hypertonic saline clyster?**

- a) 1%
- b) 2%
- c) 5%
- d) 10%
- e) 20%

Choose the correct answer

## IMMUNOLOGY

**Teachers:** Assoc. Prof. Tsybulkin N.A., Assis. Prof. Valeeva A.R., Assis. Prof. Khakimova M.R.

**Building, Department, classroom:** 1) Republican Clinical Hospital, Polyclinic department (terminal 4), Department of Clinical Immunology and Allergology, rooms 512, 515, 516; 2) 21 st Polyclinic, educational unit, room of Department of Clinical Immunology and Allergology

**Contact details:**

- Telephone number: 89179117010 (Assist. Prof. Alina Valeeva)
- E-mail address: aliv05@mail.ru, immunal@mail.ru
- Office and working hours: Republican Clinical Hospital, Polyclinic department (terminal 4), Department of Clinical Immunology and Allergology, rooms 513 (9-16)

**Total hours** — 108:

- Lectures 18 hours;
- Practical training 45 hours;
- Self-study 45 hours;

**Course description:**

**Lecture** is an oral presentation about particular subject by the lecturer. It is usually held for the course of students at the same time.

**Practical training** is aimed to apply theoretical knowledge into practice. The skills are developed during problem solving process with supervisor.

**Self-study** is a work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1257>)

**Course objectives: The purpose of mastering the discipline:**

**The purpose of mastering the discipline**

-to develop the ability to analyze the patterns of immune system functioning, to validate the main methods of clinical and immunological investigations, to assess the functional state of the organs of the immune system, to provide medical care for urgent and life-threatening conditions in patients with immune system disorders.

**Tasks of the discipline:**

- To form knowledge in the field of structure, functions, age-related features of the immune system
- To form knowledge in the field of basic methods of clinical and immunological investigations
- To develop the skills for performing immunological investigations and interpretation their results in order to identify the immune disorders

- To form knowledge in the field of pathogenesis and principles of diagnosis of the immune system disorders
- To form knowledge in the field of providing medical care for urgent and life-threatening conditions associated with immune system disorders

### **Course topics:**

#### **Calendar plan of lectures**

1. Introduction to immunology. The system of innate immunity
2. The interaction between innate and adaptive immunity
3. Characteristics of cells of adaptive immunity
4. Humoral immune response
5. Cell-mediated immune response
6. Anti-infection immunity
7. Pathogenetic basics of immunopathology
8. Allergic diseases. Emergency care for acute allergic reactions. Part 1.
9. Allergic diseases. Emergency care for acute allergic reactions. Part 2.

#### **Calendar plan of practical trainings**

1. Innate immunity. Phagocytosis.
2. Humoral factors of innate immunity. Complement system.
3. Organs of immune system
4. Cells of immune system
5. Module 1.
6. Antigens
7. Antibodies
8. Antigen- antibody interactions
9. Vaccines. Antibody preparations
10. Immune response
11. Module 2.
12. Age-related features of the immune system. Immune status assessment.
13. Diagnostic programs in allergology.
14. Allergic diseases of the respiratory system and skin.
15. Anaphylactic shock. Module 3.

### **Text books and required supplies:**

1. Khaitov, R. M. Immunology : textbook / Rakhim M. Khaitov. - 2nd updated edition. - Moscow : GEOTAR-Media, 2022. - 272 p. - 272 c. - ISBN 978-5-9704-7089-3. URL : <https://www.studentlibrary.ru/book/ISBN9785970470893.html>
2. Handbook on discipline "Immunology" / Skorohodkina O.V., Vasilyeva A.A., Khakimova R.F., Tsybulkin N.A., Ziganshina G.F., Kurmaeva N.S. – Kazan: KSMU, 2017. – 117 p.
3. Basic concepts in immunology: / V. Tsybulkina, N. Tsybulkin. — Kazan : Medicine, 2014. — 170p. ISBN 978-5-7645-0543-5.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (written papers/oral answer/test/ reports/presentation).

*Routine performance assessment* (homework, oral answers, solving clinical cases etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified



in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University. For tests: Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (oral answer).

"Excellent" grade (9-10 points) is given to the student if the aim was set correctly, the presentation content corresponds with the aim, the student understands the material, critically evaluates the sources of information, uses the sources published in the past 10 years.

"Good" grade (8-9 points) is given to the student if the aim was set correctly, the presentation content corresponds with the aim, the student understands the material, gives answers to the questions.

"Satisfactory" grade (7-8 points) is given to the student if the aim was set correctly, the student understands the material, gives answers to the questions.

"Poor" grade (less than 7 points) is given to the student if the presentation was not prepared by the student, the content does not correspond with objectives of the topic.

"Credit" grade - is given to the student if the aim was set correctly, the student understands the material, gives answers to the questions

"Non-credit" grade - is given to the student if the presentation was not prepared by the student, the content does not correspond with objectives of the topic.

Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Example of module No. 1.**

Ticket 1

1. Concept of innate immunity. Classification of factors of innate immunity.
2. Natural killers. Origin, markers, properties.

Ticket 2

1. Classical way of activation of system of complement.
2. Central organs of immune system. Thymus. Structure. Functions.

### **Example of module No. 2**

Ticket 1

1. Antigen system of erythrocytes of ABO(H).
2. Stages of cell-mediated immune response.

Ticket 2

1. Effector properties of antibodies.
2. Enzyme-linked immunosorbent assay. Principle of method.

### **Example of module No. 3**

Ticket 1

1. Antigens: definition, properties, classification.
2. Anaphylactic shock. Definition, etiology, pathogenesis.

Ticket 2

1. Peripheral organs of immune system. Spleen. Structure. Functions.
2. Allergic rhinitis. Classification. Symptoms.

## EVALUATION OF THE MODULE ANSWER

"Excellent" grade (9-10 points) is given to the student if the answer corresponds with the question, the student understands the material, the answer is complete and detailed.

"Good" grade (8-9 points) is given to the student if the answer corresponds with the question, the student understands the material, but the answer is incomplete.

"Satisfactory" grade (7-8 points) is given to the student if the answer corresponds with the question, the student understands the material, but unable to highlight the key points and the answer is incomplete.

"Poor" grade (less than 7 points) is given to the student if the answer does not correspond with the question.

## TOPOGRAPHIC ANATOMY AND OPERATIVE SURGERY

**Teachers: Associate Professor Farid Bashirov, Associate Professor Sergey Obydenov, PhD Vahe Markosyan, assistant Bulat Sakhabetdinov, assistant Sultan Targachev**

**Building, Department, classroom #** Gorky Street, 35 a, Department of Operative Surgery and Topographic Anatomy

### **Contact details:**

- Telephone number: 89033069224 (PhD Vage Markosyan)
- E-mail address: vage.markosyan@gmail.com
- Office and working hours:

### **Total hours — 180:**

Lectures 30 hours;

Practical classes 69 hours;

Independent work 45 hours;

Control 36 hours)

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher. Classes are conducted on a cadaver.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University.

### **Course objectives: The purpose of mastering the discipline**

Aims of mastering the discipline: "topographic anatomy and operative surgery" is anatomical and surgical training of students necessary for subsequent classes in clinical departments and independent medical activities.

**Tasks of the discipline:**

To form knowledge in the field of:

- to provide students with information to acquire knowledge of topographic anatomy and operative surgery to the extent necessary for further education and professional activity in practical healthcare.
- creation of students' knowledge of the topographic anatomy of regions, organs and systems.
- mastery of elementary surgical actions and some typical surgical techniques by students.

**Course topics:****Calendar plan of lectures**

1. Methods used in topographic anatomy, operative surgery – doctrine of principles and operation technique, surgical terminology.
2. Topography of the anterolateral abdominal wall. Herniology
3. Topography of abdominal cavity organs. Intestinal sutures, intestinal resection
4. Gastrorrhaphy, gastrotomy, gastrostomy, gastroenterostomy, gastrectomy, vagotomy with drainage operations.
5. Operations on liver and bile ducts.
6. Topography of retroperitoneal space. Operations on kidneys and urinary tract
7. Topography of pelvis
8. Operations on pelvic organs
9. Topography of thorax
10. Operations on thoracic wall and thoracic organs.
11. Topography of neck. Operations on neck organs
12. Topography of the limbs
13. Operations on the limbs
14. Topography of cerebral part of the skull.
15. Trepanation of the skull. Facial surgery

**Calendar plan of Practical training**

1. Methods used in topographic anatomy.
2. Operative surgery – doctrine of principles and operation technique, surgical terminology.
3. Topography of the anterolateral abdominal wall.
4. Herniology
5. Topography of abdominal cavity organs. Intestinal sutures, intestinal resection
6. Gastrorrhaphy, gastrotomy, gastrostomy, gastroenterostomy, gastrectomy, vagotomy with drainage operations.
7. Operations on liver and bile ducts.
8. Topography of retroperitoneal space.
9. Operations on kidneys and urinary tract. Module on topics 1-9.
10. Topography of pelvis.
11. Topography of pelvis.
12. Operations on pelvic. Module on topics 10-12.
13. Topography of thorax
14. Operations on thoracic wall and thoracic organs. Module on topics 13-14.
15. Topography of neck.
16. Operations on neck organs.
17. Module on topics 15-16.
  - a. Circle
18. Topography of the upper limb
19. Topography of the lower limb
20. Operations on the limbs. Module on topics 18-20.
21. Topography of cerebral part of the skull.

22. Topography of facial part of the skull.
23. Trepanation of the skull. Facial surgery. Module on topics 21-23.

**Text books and required supplies:**

1. Topographic Anatomy and Operative Surgery. In 2 volumes. Volume 1 [Electronic resource]: textbook / Sergienko V.I., Petrosyan E.A., Frauchi I.V.; under the general editorship of Y.M. Lopukhin. - 3rd ed., corrected. - M.: GEOTAR-Media, 2010. - <http://www.studentlibrary.ru/book/ISBN9785970417560.html> Bruce M.Mahan, Rolie J.Myers. University Chemistry. Fourth edition: Addison Wesley Longman. – 1998. – 1076 p.
2. Topographic Anatomy and Operative Surgery. In 2 volumes. Volume 2 [Electronic resource]: textbook / Sergienko V.I., Petrosyan E.A., Frauchi I.V.; under the general editorship of Y.M. Lopukhin. - 3rd ed., corrected. - M.: GEOTAR-Media, 2010. - <http://www.studentlibrary.ru/book/ISBN9785970417584.html> I.V. Fedjunina. An introduction to physical and colloidal chemistry. For English-speaking students of the faculty of general medicine/ Kazan: KSMU, 2011. — 78 c.

**Evaluation and grading:**

Progress is monitored at the end of each module using a test.

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10-point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt, the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge, skills and abilities in a discipline or its section in the form of a test. Assessments: 0–69 — “unsatisfactory”, 70–79 — “satisfactory”, 80–89 — “good”, 90–100 — “excellent”.

*Exams* are held in forms of test. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

A student's overall rating is based on class attendance, module results and midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

## FACULTY SURGERY

**Teachers: Prof. Oleg Karpukhin, PhD Arsen Kurbangaleev, PhD Anna Zaharova, PhD Aidar Shakurov, PhD Kirill Sakulin, PhD Yulia Pankratova.**

**Building, Department, classroom** # Orenburgskiy trakt Street, building 138, 6 floor

**Contact details:**

- Telephone number: +79046601139 (PhD Aidar Shakurov)
- E-mail address: aydarsha@gmail.com
- Office and working hours: 8-16

**Total hours – 180:**

Lectures 26 hours

Practice classes 75 hours

Independent work 43 hours

Control 36 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practice classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Independent work** is working with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/>).

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **faculty surgery** discipline are formation of systematic knowledge and skills of surgical treatment of patients with acute surgical pathology of abdominal viscera, acquaintance to clinical presentation of surgical diseases, laboratory and instrumental diagnostic studies, conservative treatment and surgical interventions of most common abdominal surgical pathology.

**Tasks of the discipline:**

- to form knowledge of etiology, pathophysiology and clinical presentation of surgical diseases, laboratory and instrumental diagnostic studies, conservative treatment and surgical interventions of most common abdominal surgical pathology
- to form skills of physical examination of patients, of using laboratory and instrumental studies
- to form skills of making diagnosis with establishing of treatment plan including indications for surgery
- to form knowledge of steps of most common surgical interventions for acute surgical abdominal pathology
- to form knowledge of possible complications after abdominal surgery
- to form knowledge of most common urgent conditions related to abdominal pathology

**Course topics:**

**Calendar plan of lectures**

1. History of Department of Surgical Diseases of KSMU.
2. Abdominal wall hernias.
3. Appendicitis.
4. Peritonitis.
5. Diseases of esophagus.
6. Diseases of thyroid gland.
7. Diseases of stomach and duodenum.

8. Abdominal trauma.
9. Diseases of liver and biliary tract.
10. Diseases of pancreas.
11. Intestinal obstruction.

### **Calendar plan of practice classes**

1. Clinical examination of patient with abdominal pathology.
2. Anatomy of abdominal wall hernias. Clinical presentation, diagnosis and treatment of hernias. Complications of hernias, diagnosis and management. Inguinal, femoral, paraumbilical, postoperative ventral hernias. Giant hernias.
3. Acute appendicitis: etiology, classification, clinical presentation, diagnosis, management. Acute appendicitis in pregnant, elders and children. Complications of appendicitis. Complications after appendectomy.
4. Peritonitis: definition and classification. Clinical examination of patient with peritonitis, laboratory findings. Role of imaging studies in diagnosis. Management of different types of peritonitis. Surgical intervention for peritonitis. Source control. Relaparotomy. Minimally invasive techniques in intraabdominal abscesses treatment.
5. Anatomy and physiology of esophagus. Imaging studies in esophageal pathology diagnosis. Esophageal burns: etiology, clinical presentation, management. Early and late complications after esophageal burns. Management of esophageal burns. Surgical treatment of esophageal burns and their complications.
6. Thyroid gland and its function. Thyroid gland diseases, classification, clinical presentation and physical examination. Laboratory tests, imaging studies and biopsy in thyroid gland pathology diagnosis. Thyrotoxicosis, complications, management. Conservative management of thyroid gland diseases. Radiotherapy. Indications for surgery. Postoperative complications, diagnosis and management.
7. Anatomy and physiology of stomach and duodenum. Peptic ulcer disease. Etiology, clinical presentation. Role of endoscopy and histologic evaluation in diagnosis. Differential diagnosis. Management: conservative approach and role of surgery in our days. Complications of peptic ulcer disease. Perforated ulcer: diagnosis, management. Penetrated ulcer: diagnosis, management. Peptic ulcer bleeding: classification, diagnosis, management. Endoscopic hemostasis. Surgery for peptic ulcer bleeding. Pyloric stenosis: etiology, clinical presentation, instrumental diagnosis, management. Surgical treatment, preoperative preparation and postoperative management.
8. Abdominal trauma. Classification, clinical presentation, laboratory and instrumental diagnosis. FAST, CT scan in patients with abdominal trauma. Management on prehospital stage. Indications for surgical intervention, types of surgery in abdominal trauma. Blood reinfusion. Damage control.
9. Biliary tract anatomy and physiology. Laboratory and imaging studies in patients with biliary pathology. Gallstone disease: classification, clinical presentation, diagnosis and management. Role of surgery. Complications of gallstone disease. Acute cholecystitis: classification, clinical presentation, diagnosis and management. Indications of surgery and role of US-guided procedures.
10. Acute pancreatitis: definition, classification. Pathophysiology of acute pancreatitis. Clinical presentation, diagnosis. Conservative management. Minimally invasive treatment. Step-by-step approach. Indications for surgery, types of interventions.
11. Intestinal obstruction. Classification. Clinical presentation, diagnosis. Conservative management. Indications for surgery. Different types of intestinal obstruction. Functional intestinal obstruction.
12. Case history presentation. Final test.

### **Text books and required supplies:**

1. Textbook of Emergency General Surgery. Federico Coccolini, Fausto Catena. 2023. <https://doi.org/10.1007/978-3-031-22599-4>
2. Chassin's Operative Strategy in General Surgery. An Expositive Atlas. Carol E. H. Scott-Conner, Andreas M. Kaiser, Ninh T. Nguyen, Umut Sarpel, Sonia L. Sugg. 2022. <https://doi.org/10.1007/978-3-030-81415-1>
3. Surgery. An Introductory Guide for Medical Students. Umut Sarpel. 2021. <https://doi.org/10.1007/978-3-030-65074-2>
4. Textbook of Hernia. William W. Hope, William S. Cobb, Gina L. Adrales. 2017. <https://doi.org/10.1007/978-3-319-43045-4>
5. Operative Strategy in General Surgery. An Expositive Atlas Volume I. Jameson L. Chassin. 2012. <https://doi.org/10.1007/978-1-4612-6042-4>
6. Operative Strategy in General Surgery. An Expositive Atlas. Volume 2. Jameson L. Chassin. 2013. <https://doi.org/10.1007/978-1-4757-4172-8>

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (mcq's).

*Routine performance assessment* (homework, tests during classes, case studies etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of oral answering for questions and cases. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of MCQ**

Douglas space abscess after appendectomy is characterized by all signs, except:

1. hectic temperature
2. deep pelvic pain and tenesma
3. restricted mobility of the diaphragm

4. prolapse of the vaginal wall or the anterior rectal wall
5. painful rectal examination

### **Example of case study**

A patient operated 5 days ago for acute phlegmonous appendicitis had pain in the right upper quadrant, increasing on inspiration. The temperature increased to 38.7°C. Heart rate is 100, tongue's wet. Abdominal wall is soft on palpation, but slightly painful in right side. Liver comes out from under rib arc at 6 cm. Greco-Ormer's symptom is positive. Radiological examination showed no changes in pulmonary parenchyma. Pleural sinus on the right side has a small amount of effusion. Right hemidiaphragm is flattened, mobility is limited. White blood cells  $16 \times 10^9$ .

What kind of complication is it? What kind of study could help to clarify the diagnosis? Your management of this patient?

### **EVALUATION OF THE MODULE ANSWER**

The grade for the test is set in proportion of correct answers:

90-100% - excellent.

80-89% - good.

70-79% - satisfactory.

Less than 70% of correct answers is "failing grade".

Evaluation criteria for case study.

"excellent" - the student freely, with deep knowledge of the material, correctly and fully solved the case study (all tasks are completed, all questions are correctly answered).

"good" - the student is quite convincing, with minor theoretical mistakes correctly answered the questions or made minor mistakes in the answer;

"satisfactory" - if the student is not confident enough, answered to the questions of a case study with significant theoretical errors and poorly mastered skills;

"failing grade" - the student has very little understanding of the subject and made significant mistakes in answering to most of the questions of the case study, incorrectly answered to additional questions.

### **Example of exam ticket**

Exam is presented by oral answer for exam ticket which includes 1 theoretical question and 1 case study.

1. Goiter. Classification. Etiology. Clinical signs, diagnosis, treatment and prevention. Indications for the surgery, types of surgery. Intra and postoperative complications, treatment and prevention.

2. The 50 years old woman was admitted in hospital on the 4th day of the disease. After physical examination and laboratory tests clinical diagnosis resulted in acute appendicitis. The surgeon decided to operate the patient. After entering to the abdominal cavity appendicular mass has been revealed.

Your further actions during surgery and management of the patient?

### **EVALUATION OF THE EXAM ANSWER**

Evaluation criteria for theoretical question:

"excellent" (90-100 points) - the answer is correct, scientifically argued, with references to the learned material.

"good" (80-89 points) - the answer is correct, scientifically argued, but without references to the learned material.

"satisfactory" (70-79 points) - the answer is correct, but not scientifically argued, or the answer is wrong.

"failing grade" (0-69 points) - the answer is incorrect and not scientifically argued.



Evaluation criteria for case study:

"excellent" (90-100 points) - the student freely, with deep knowledge of the material, correctly and fully solved the case study (all tasks are completed, all questions are correctly answered).

"good" (80-89 points) - the student is quite convincing, with minor theoretical mistakes correctly answered the questions or made minor mistakes in the answer;

"satisfactory" (70-79 points) - if the student is not confident enough, answered to the questions of a case study with significant theoretical errors and poorly mastered skills;

"failing grade" (0-69 points) - the student has very little understanding of the subject and made significant mistakes in answering to most of the questions of the case study, incorrectly answered to additional questions.

Maximum rating is presented by the average of marks for answers for theoretical question and case study.

## RADIOLOGY

**Teachers: PhD Yusupova Alsu Faridovna, Fatkhutdinova Aida Tagirovna, Nemirovskaya Tat'yana Anatol'evna**

**Building, Department, classroom:** RKH, Department of Oncology and Radiology, the office of the associate professor

**Contact details:**

- Telephone number: 89872906427 (PhD Yusupova Alsu Faridovna)
- E-mail address: a.f.yusupova@mail.ru

Office and working hours: RKH, the professor's office (9 -15)

**Total hours — 144 hours:**

Lectures 22 hours;

Practical classes 60 hours

Selfstuding course – 62 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=2243>).

**Course objectives:**

The goals of mastering the **radiology** discipline are getting a notion about the most important radiological examinations of the organs and body systems, how to use them in reaching diagnosis of the most frequently performed diseases; getting a notion about the most important types of radiological treatment.

**Tasks of the discipline:**

- to get a notion about types of radiation, used in modern imaging, interaction of radiation with matter and radioactivity;
- to get a notion about the most important radiological examinations of the lungs and mediastinum, heart, bones and joints, gastrointestinal tract, the liver, biliary tract and pancreas, the genitourinary system, how to use them in reaching diagnosis of most frequently performed diseases;
- to plan radiological examinations of the patient with pathology of the lungs and mediastinum, heart, bones and joints, gastrointestinal tract, the liver, biliary tract and pancreas, the genitourinary system;
- to know the main radiological syndromes and symptoms of the lungs and mediastinum, heart, bones and joints, gastrointestinal tract, the liver, biliary tract and pancreas, the genitourinary system lesions.

**Course topics:**

The list of disciplines, and their topics those are necessary to study Radiology:

1. Radiophysics, interaction of radiation with matter and radioactivity, radioisotopes and radiopharmaceuticals, quantities and units of radiation dose, biophysics;
2. Normal anatomy;
3. Pathological anatomy;
4. Introduction to Internal Diseases;
5. General Surgery.

**Calendar plan of lectures**

1. Radiophysics. Types of most important radiological examination (4 hours);
2. The lungs and mediastinum radiology (4 hours);
3. The heart and vessels radiology (4 hours);
4. The gastrointestinal tract radiology (4 hours);
5. The liver, biliary and urinary system radiology (2 hour)
6. Artificial intelligence in Radiology (4 hours).

**Calendar plan of practical training (course):**

1. Radiophysics. Types of most important radiological examination.
2. The lungs and mediastinum radiology.
3. The heart and vessels radiology.
4. Module on topics 1-3.
5. The gastrointestinal tract radiology.
6. The liver, biliary tract radiology.
7. The genicourinary system radiology.
8. Module on topics 5-7.
9. Outcoming testing. Final test.

**Text books and required supplies:****Main:**

1. FUNDAMENTALS OF RADIOLOGY. Manual, Part 1 /Юсупова А.Ф. – Казань: КГМУ, 2005. 71 с.
2. FUNDAMENTALS OF RADIOLOGY. Manual, Part 2 /Юсупова А.Ф. – Казань: КГМУ, 2006. 101 с.
3. FUNDAMENTALS OF RADIOTHERAPY. Manual/Юсупова А.Ф. – Казань: КГМУ, 2010. 47 с.

**Supplementary:**

1. A Global TextBook of Radiology / Edited by Holger Petterson, MD, Series on Diagnostic Imaging from NICER Institute, 1995, 1 and 2 book.
2. Radiografic anatomy / Frank Slaby, Eugene R. Jacobs / The National Medical Series for Independent Study / A. Williams and Wilkins medical publication / 1999, 1 and 2 book.
3. Radiology and Imaging for medical students, David Sutton // Published by Elsevier, a division of Reed Elsevier, India PVT, LTD, Seventh edition in India, 2004 (SBN: 81-8147-081-8), ISBN 0-443-05917-9
4. Fundamentals of Radiology, Harvard University Press 5/e due 91/96 cloth 0-674-32927-9
5. Fundamentals of Diagnostic Radiology, University of California, Davis Williams & Wilkins, 1/e 1994 cloth, 0-683-01011-5, 158.95
6. Textbook of radiotherapy/ Walter and Millers, sixth edition/ Churchill Livingstone/ An imprint of Elsevier Limited, - 2008, - ISBN 13^ 978 0 443 06201 8.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

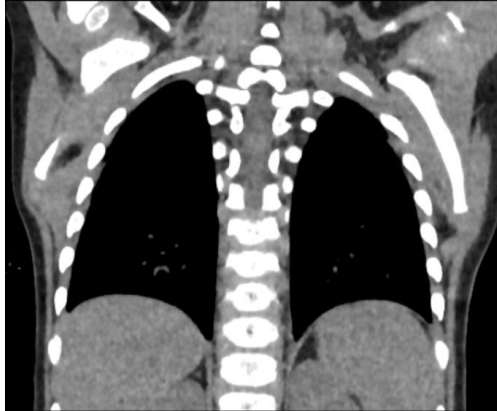
### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1.**

1. What types of radiological studies exist?
2. What are the most important radiological examinations of the lungs? Tell about them.
3. What are the most important radiological examinations of the heart? Tell about them.

4. The physical foundations of x-ray.
5. Name the presented method of visualization:



### Example of module No. 2

1. What are the most important radiological examinations of the gastrointestinal tract? Tell about them.
2. Tell about endoscopy.
3. What are the most important radiological examinations of the genitourinary system? Tell about them.
4. Name the structure indicated by the arrow:



5. Name the structure indicated by the arrow:



### EVALUATION OF THE MODULE ANSWER

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment.

## **MEDICAL REHABILITATION**

**Teachers: Prof. Takhavieva F.V., assistant Khayrutdinova O.S., assistant Bikchurin N.M.**

**Building, Department, classroom Healthcare Centre (OSC) Mayakovsky 11, 4<sup>th</sup> floor, classroom**

**Contact details:**

- Telephone number: 89625624427 (Khayrutdinova O.S.)
- E-mail address: khayros.kzn@gmail.com
- Office and working hours: 9:00-17:00

**Total hours: 108 h:**

Lectures 18 h

Practical classes 45 h

Self-study 45 h

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgm.kcn.ru:40404/moodle/login/index.php>).\_\_

**Course objectives: The purpose of mastering the discipline**

The purpose of mastering the discipline (module): to teach students a set of diagnostic and therapeutic measures aimed at restoring or compensating for impaired human body functions and disability in sick and disabled people; to consolidate and expand the scope of skills; to deepen concepts about the methodology of clinical thinking; to develop interdisciplinary thinking among students, followed by the formation of the necessary volume of practical skills for independent work in outpatient care facilities.

**Tasks of the discipline:**

The objectives of the discipline are:

- study of the theoretical foundations of medical rehabilitation;
- student's mastery of the principles of medical rehabilitation in general medicine;
- acquisition by the student of practical skills in carrying out rehabilitation measures in general medicine;
- formation of behavior among patients and their relatives aimed at maintaining and improving the level of health, motivation to lead a healthy lifestyle.

A special feature of the discipline is the need to develop in students the ability, based on previously acquired knowledge, to conduct a comprehensive "supranosological" assessment of a person's

condition (both sick and healthy), factors affecting his health, and to develop a program for his recovery.

### **Course topics:**

#### **Calendar plan of lectures**

1. Sports Medicine Overview Emergency Care of Athletic Injury Doping Control Procedures Sports nutrition. Organization of medical and physical education institutions.
2. Physical culture and sports as a means of promoting health. Forms and methods of control over the functional state of a person. Prevention of diseases, preservation and improvement of physical performance.
3. General principles of physical therapy and physiotherapy (FT). Physical therapy and FT in the medical rehabilitation system. Systematization of physical therapy and physiotherapy.
4. Physical therapy for diseases. The mechanism of action of physical exercises on the body of a healthy and sick person. Basic principles of physical exercise training.
5. Massage as the method of treatment and rehabilitation.
6. Physical therapy, massage in the medical rehabilitation of patients with cardiovascular and pulmonary diseases.
7. Basic principles of rehabilitation of patients with pathology of the central and peripheral nervous system. Specific rehabilitation methods. Rehabilitation measures during various periods of cerebral stroke, traumatic brain injury, and spinal cord injury.
8. Rehabilitation measures for vertebroneurological syndromes. Rehabilitation of patients with peripheral neuropathies and plexopathies.
9. Rehabilitation in traumatology, orthopedic disorders.

#### **Calendar plan of practical classes**

1. Basic principles of rehabilitation. Types, means, principles, stages of rehabilitation. Accounting for efficiency. Active and passive methods of medical rehabilitation.
2. Physiotherapy as a method of rehabilitation. Clinical and biophysical substantiation of the use of physiotherapy in medical rehabilitation. Classification of physiotherapy methods and their field of application.
3. The general basics of massage. classification, basic techniques. Massage of body parts. Massage for various diseases.
4. Organization of medical and physical education services. The tasks and content of medical supervision of people engaged in physical education, sports, physical therapy. Getting to know the work on sports medicine and physical therapy at a medical and physical education dispensary. The scheme of medical examination of people involved in physical education and sports. Research and assessment of physical development, physique, features of the musculoskeletal system; recommendations for the correction of physical development disorders.
5. Polyclinic admission for admission of various contingents to physical education and sports.
6. Physical culture and sports as a means of promoting health. Forms and methods of control over the functional state of a person. Assessment of the functional state of the body. Functional tests with physical activity. Special functional tests. Determination of physical performance, preparation of a medical report. Definition of a medical group.
7. Module on topics 1-6.
8. Conducting an individual medical examination and drawing up an individual wellness or treatment program.
9. General characteristics of the physical therapy method and clinical and physical justification of the therapeutic use of physical exercises.
10. Indications and contraindications for the appointment of physical therapy.
11. Organization of physical therapy in the hospital and polyclinic. Equipment of the gym for physical therapy. The procedure for the appointment of therapeutic gymnastics, and the

registration of the card No. 42. Classification of physical exercises with their demonstration. Accounting for the effectiveness of LG classes. Medical supervision of physical therapy classes.

12. Forms and methods of control over the functional state of the patient.
13. Module on topics 8-12.
14. Physical therapy, massage in the medical rehabilitation of patients with cardiovascular diseases (coronary artery disease, hypertension, heart defects).
15. Clinical and physiological substantiation of the effect of physical training, PT, massage on the cardiovascular system. Physical therapy, PT, massage for myocardial infarction at inpatient and polyclinic stages of rehabilitation. Physical therapy, PT and massage for hypertension, indications and contraindications.
16. Physical therapy. FT, massage in neurology and neurosurgery. Basic principles of rehabilitation of patients with pathology of the central and peripheral nervous system. Specific rehabilitation methods. Rehabilitation measures during various periods of cerebral stroke, traumatic brain injury, and spinal cord injury. Rehabilitation of patients with peripheral neuropathies and plexopathies. Mechanisms, prognosis, and signs of restoration of nerve conductor function. Rehabilitation measures for vertebro-neurological syndromes.
17. Physical therapy. FT, massage for diseases of the pulmonary system. Basic principles of rehabilitation of patients with pathology of the pulmonary system. Main tasks, forms and means, preparation of rehabilitation treatment programs. Indications and contraindications for the appointment of physical therapy, massage, PT.
18. Physical therapy for diseases of the gastrointestinal tract, metabolic disorders (obesity, diabetes mellitus). Main tasks, forms and means, preparation of rehabilitation treatment programs. Indications and contraindications for the appointment of physical therapy, massage, PT.
19. Physical therapy, PT, massage for fractures of limb bones and muscle tendon injuries. Basic principles of rehabilitation for limb injuries. Immobilization, post-immobilization and recovery periods, the main goals, objectives and means of physical therapy, PT, massage. Hydrokinesitherapy, walking education and training, occupational therapy, mechanotherapy.
20. Physical therapy, PT, massage in orthopedics (flat feet, scoliosis, posture defects, osteochondrosis of the spine). Physical therapy products: corrective exercises, spinal relief, position treatment, restorative gymnastics. The tasks of physical therapy, PT, and massage for various degrees of scoliosis. Defects in posture. Means and features of physical therapy techniques for posture defects. PH techniques for flat feet. Features of massage for orthopedic diseases.
21. Physical therapy, PT, massage in abdominal surgery. Features of physical therapy in the pre- and postoperative periods. The tasks of physical therapy, PT, massage in the late postoperative period, depending on the nature, volume of surgery and the specifics of the course of the postoperative period. Efficiency accounting methods
22. Physical therapy during pregnancy and in the postpartum period.
23. Clinical and physiological justification of the use of physical therapy. Organization of physical therapy in a women's clinic and hospital. Physical education during pregnancy. The organization of physical exercises in the first and second periods of labor. Complexes of physical exercises for independent and operative delivery. Physical therapy, PT, massage for chronic inflammatory diseases of the female genital organs. Schemes for the construction of physical therapy in the subacute period and in the recovery period. Physical therapy, PT, massage for incorrect positions of the uterus. Physical therapy for omissions of the internal genitals. Physical therapy, PT, massage for functional urinary incontinence. The scheme of classes for partial and complete incontinence. PH in abdominal and vaginal gynecological operations.
24. Module on topics 14-22.
25. Outcoming testing. Final test.

### **Text books and required supplies:**

1. Braddom's physical medicine & rehabilitation / edited by David X. Cifu; associate editors, Darryl L. Kaelin, Karen J. Kowalske, Henry L. Lew, Michelle A. Miller, Kristjan T. Ragnarsson, Gregory Worsowicz.-Fifth edition, 2016 Elsevier. ISBN: 978-0-323-28046-4 [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20130099252>
2. Essentials of physical medicine and rehabilitation: musculoskeletal disorders, pain, and rehabilitation/edited by Walter R. Frontera, Julie K. Silver, Thomas D. Rizzo, Jr.-Third edition, Elsevier Saunders, 2015. ISBN: 978-1-4557-7577-4. [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C2011007549X>
3. Umphred's neurological rehabilitation / [edited by] Darcy Umphred ... [et al.].-6th ed., Elsevier Mosby, 2015. ISBN 978-0-323-07586-2 [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20090605900>
4. Physical rehabilitation of the injured athlete/[edited by] James R. Andrews, Gary L. Harrelson, Kevin E. Wilk. – 4th ed., Elsevier Saunders, 2012. ISBN: 978-1-4377-2411-0. [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20090417926>

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes



### **Example of module No. 1.**

CHOOSE THE MOST CORRECT ANSWER.

#### **Evaluation criteria:**

The test score is given in proportion to the proportion of correct answers:

90-100% - "excellent" score 80-89% - "good" score

70-79% - "satisfactory" score Less than 70% of correct answers – "unsatisfactory" score.

### **Example of module No. 2**

2.1. During the Martinet-Kushelevsky test, it was revealed: initial PS = 12 beats per minute in 10 seconds, BP = 117/76 mmHg. PS in the first 10 seconds after loading – 18 beats per minute, BP in the first minute of recovery – 147/75 mmHg, PS in the first 10 seconds the second minute of recovery was 15 beats per minute, blood pressure in the second minute of recovery was 128/72 mmHg, PS in the first 10 seconds of the third minute of recovery was 12 beats per minute, blood pressure in the third minute of recovery was 118/71 mmHg, at 4 and 5 minutes of recovery PS and blood pressure did not differ from the indicators 3 minutes of recovery time. What is the type of reaction of the cardiovascular system to a functional test? Justify the answer.

2.2. During weightlifting training camps, during an orthoclinostatic test, it was revealed that the pulse rate increase in three athletes (group 1) was 5-7 beats per minute, in four (group 2) 8-10 beats per minute, and in seven (group 3) 10-12. What are your recommendations for performing loads for each of these three groups of athletes?

#### **Evaluation criteria:**

"Credited" – the student demonstrates a thorough knowledge of the material in the section: the complete correct answer and its justification are given.;

"Not counted" – lack of knowledge in the section being studied: the answer is incorrect or incomplete, there is no justification.

### **Example of module No. 3**

Topic: filling out a physical education student's examination card (for a real subject) with the preparation of an individual "fitness program"

**Task 1.1.** Interview the physical education student, note the specifics of his wishes, complaints, general and sports history.

**Task 1.2.** To conduct an objective examination of a physical education student (including sports somatoscopy, anthropometry, functional studies). Calculate the main indices of physical development of this athlete.

**Task 1.3.** Analyze the data obtained and make a conclusion about (a) physical development, (b) functional condition and (c) fitness of the athlete.

**Task 1.4.** Evaluate (a) contraindicated and (b) permitted sports and physical activity for this athlete. Give (c) recommendations on self-monitoring, as well as (if necessary) on follow-up, kinesiotherapy, nutrition correction, daily routine, and bad habits. Substantiate the answer.

#### **Evaluation criteria:**

An excellent grade is given to the student if the proposed wellness programs fully take into account the individual characteristics of the surveyed, as well as complete correct answers to all questions, scientifically reasoned, with links to the topics covered.

The student is rated "good" if the proposed wellness programs take into account the individual characteristics of the surveyed, but the remaining questions are answered briefly, scientifically reasoned, but without references to the topics covered.

A "satisfactory" grade is given to a student if he is generally guided in programming, but uses a non-individual "template" approach, admits inaccuracies in answering other questions; the

answer is correct, but not scientifically substantiated, or the answer is incorrect, but an attempt is made to substantiate it from alternative scientific positions covered in the course.

An "unsatisfactory" grade is given to a student if he is fragmentary in his understanding of the problem under consideration, the answer is incorrect and not scientifically substantiated.

## OTORHINOLARYNGOLOGY

**Teachers: PhD Dilyara Shakurova, Diana Zvorygina**

**Building, Department, classroom:** Municipal clinical Hospital number 18, Department of Otorhinolaryngology, Professor's room and assistant room

**Contact details:**

- Telephone number: 89872842546 (PhD Dilyara Shakurova)
- E-mail address: ent.doc87@mail.ru
- Office and working hours: assistant room (8-17)

**Total hours: 108 h**

Lectures 18 h

Practical classes 45 h

Self-study 45 h

**Course description:**

**Lectures 18 hours** - is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes (workshop) 45 hours** - are usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student, and is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Independent work 45 hours** - is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University

**Course objectives: The purpose of mastering the discipline**

The mastering special methods of diagnosis and treatment of diseases of the ear, nose and paranasal sinuses, pharynx and larynx; formation of medical thinking that ensures the solution of professional tasks and the application of knowledge on otorhinolaryngology in medical activities to provide medical care in emergency conditions; mastering the basics of prevention, diagnosis, treatment and rehabilitation of patients with ear and upper respiratory tract pathology

**Tasks of the discipline:**

- to acquaint students with the prevalence and significance of diseases of the ear, nose and throat in general pathology, with the principles and methods of dispensary work, noting the importance of timely detection and rehabilitation of these organs in the prevention of general morbidity and in the improvement of the population;
- to show students the features and possibilities of the examination of ENT organs – endoscopy, acumetry, vestibulometry, olfactometry, gustometry and their significance in the general system of clinical examination of the patient;

- to familiarize students with the etiology, pathogenesis, clinical signs, prevention and treatment of diseases of the ear, nose, pharynx and larynx, which are common and cause complications and related diseases;
- to teach students practical skills and methods of emergency treatment for injuries, foreign bodies, bleeding and acute diseases of the ENT organs.

### **Course topics:**

#### **Calendar plan of lectures**

1. Anatomy and physiology of the nose and paranasal sinuses
2. Acute diseases of the nose and paranasal sinuses (acute rhinitis, acute sinusitis, nosebleeds)
3. Chronic diseases of the nose and paranasal sinuses
4. Anatomy and physiology of the pharynx; acute diseases of the pharynx
5. Chronic diseases of the pharynx
6. Anatomy and physiology of the larynx; acute diseases of the larynx
7. Chronic diseases of the larynx
8. Anatomy and physiology of the ear; acute and chronic diseases of the ear
9. Tumors of the ENT organs

#### **Calendar plan of Practical classes**

1. The technique of examination of ENT organs. Acute diseases of the nose and paranasal sinuses
2. Chronic diseases of the nose and paranasal sinuses. Rhinogenic and orbital complications
3. Acute diseases of the pharynx.
4. Chronic diseases of the pharynx.
5. Anatomy, physiology and methods of laryngeal examination. Acute diseases of the larynx.
6. Chronic diseases of the larynx. Laryngeal dyskinesia
7. Tumors of the upper respiratory tract and ear.
8. The examination methods of auditory and vestibular analyzers. Acute diseases of the external and middle ear
9. Chronic diseases of the ear. Otogenic intracranial complications. Non-purulent ear diseases

### **Text books and required supplies:**

1. Otorhinolaryngology: textbook / V.T.Palchun, A.I. Kryukov, M.M. Magomedov. - 2nd ed., revised. and additional - M.: GEOTAR-Media, 2020. - 560 p.
2. Beerbohm H. Diseases of the ear, nose and throat / Hans Baerbohm, Oliver Kaschke, Tadeus Navka, Andrew Swift; lane from English – 2nd ed. – M.: MEDpress-inform, 2016. 776 pp.
3. Pediatric otorhinolaryngology: textbook / M. R. Bogomilsky, V. R. Chistyakova. — 2nd ed., revised. and additional - M.: GEOTAR-Media, 2012. - 576 p.
4. Otorhinolaryngology: textbook / ed. S. A. Karpishchenko. - Moscow: GEOTAR-Media, 2018. - 464 p.
5. Otorhinolaryngology: national guidelines. Brief edition / ed. Yu. K. Yanova, A. I. Kryukova, V. V. Dvoryanchikova, E. V. Nosuli. - 2nd ed., revised. and additional - Moscow: GEOTAR-Media, 2024. - 992 p.

### **Evaluation and grading:**

#### **Level 1 – knowledge assessment**

To evaluate learning outcomes in the form of knowledge, the following types of control are used:

— **oral survey;**

Evaluation criteria:

“Excellent” (90-100 points) – the oral communication fully reveals the topic, the student answers all additional questions, talks; tells, practically without looking into the text. “Good” (80-89 points) – the oral message reveals the topic, but requires additions, the student answers all additional questions; tells based on the text, but without reading it. “Satisfactory” (70-79 points) - the oral

message reveals the topic, but requires additions, the student cannot answer most of the additional questions, partially reads the text during the story. “Unsatisfactory” (0-69 points) - the oral message does not reveal the topic, the student cannot answer most of the additional questions, reads out the text.

— **test;**

Evaluation criteria:

“Excellent” – 90-100 correct answers. “Good” – 80-89 correct answers. “Satisfactory” – 70-79 correct answers. “Unsatisfactory” – 69 or less correct answers.

#### Level 2 – skill assessment

To assess learning outcomes in the form of skills, the following types of control are used:

— **case problems;**

Evaluation criteria:

“Excellent” (90-100 points) – the correct diagnosis has been made and justified, the optimal method of treatment has been proposed, errors in monitoring the patient are indicated. “Good” (80-89 points) – the correct diagnosis has been made and partially justified, the optimal method of treatment has been proposed, the not all patient observation errors. Satisfactory” (70-79 points) – a correct diagnosis has been made, but not substantiated, the optimal method of treatment has not been proposed, errors in monitoring the patient have not been indicated. “Unsatisfactory” (0-69 points) – a correct diagnosis has not been made and not substantiated, not the optimal method of treatment is proposed, errors in monitoring the patient are not indicated.

#### Level 3 – skills assessment

To assess learning outcomes in the form of skills, the following types of control are used:

— **case problems;**

Evaluation criteria:

The grade “excellent” is given if the student masters the algorithm for providing emergency care in full. The grade “good” if he does not fully master the algorithm for providing emergency care. The grade “satisfactory” if the student partially knows the algorithm for providing emergency care. The grade is “unsatisfactory” ", is set if the student does not know the algorithm for providing emergency care.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

Classroom rules:

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

#### **Example of module No. 1.**

Example of test control

1. What are the main symptoms of otosclerosis?

1) Progressive hearing loss and tinnitus

2) hearing loss

3) noise in the ear

4) pain in the ear.

Answer – 1.

2. What treatment tactics for otohematoma of the auricle?

- 1) Prescription of antibiotic therapy
- 2) UHF, semi-alcohol compresses
- 3) puncture of the hematoma
- 4) opening and drainage of the otohematoma, application of a pressure bandage, antibacterial therapy.

Answer – 4

### **Example of module No. 2**

Task 1. A 24-year-old patient complains of pain in her left ear, which intensifies when chewing and radiates to her temple. She has been sick for 3 days, the disease is associated with trauma to the ear canal with a match. Objectively: the auricle is not changed, the external auditory canal is narrowed in the membranous-cartilaginous section due to a limited round-shaped infiltrate on the anterior wall, the skin is hyperemic. The eardrum is partially visible and not changed. Palpation of the tragus and touching the auricle are painful. Hearing acuity is not impaired. Make a diagnosis, carry out a differential diagnosis and prescribe treatment.

Answer: Furuncle of the external auditory canal. Treatment is conservative, for abscess formation, opening and draining the boil.

### **Example of module No. 3**

Assess the correctness of the algorithm for opening a paratonsillar abscess: 1. Mesopharyngoscopy 2. Probing of paratonsillar abscess 3. Puncture of paratonsillar abscess 4. Opening of paratonsillar abscess 5. Separating the wound edges of the peritonsillar abscess 6. Sanitation of the oral cavity

Sample answer: 1. Wearing sterile gloves and holding a spatula in the right hand, we perform mesopharyngoscopy.

2. Using a blunt probe, we determine the area of fluctuation of the paratonsillar abscess.

3. Using a sterile syringe, we perform a puncture in the area of fluctuation of the paratonsillar abscess.

4. Using a scalpel, we make an incision into the mucous membrane in the area of the peritonsillar abscess puncture.

5. We separate the edges of the incision with a mosquito clamp of the peritonsillar abscess.

6. Sanitizing the oral cavity by rinsing with an aseptic solution.

## **NEUROLOGY, MEDICAL GENETIC, NEUROSURGERY**

**Teachers:** Prof. Enver Bogdanov, PhD Aisylu Faizutdinova, PhD Alexandr Kazantsev, PhD Shamil Bogdanov

**Building, Department, classroom:** RCH, Orenburgsky tract 138, bild. A, Department of Neurology, rooms 214, 217

**Contact details:** e-mail address: [enver\\_bogdanov@mail.ru](mailto:enver_bogdanov@mail.ru) (head of department - Prof. Enver Bogdanov), [aisluzab@mail.ru](mailto:aisluzab@mail.ru) (teaching assistant - PhD Aisylu Faizutdinova)

### **Total hours — 216:**

- Lectures 30 hours;
- Practical classes 90 hours;
- Independent work 60 hours;
- Control 36 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. It involves active participation of students in problem discussion and requires preliminary preparation by the student. **Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

### **Course objectives: The purpose of mastering the discipline**

The objectives of mastering the discipline are to develop systemic knowledge, skills and competencies in the field of diagnostics, prevention and treatment of acquired and hereditary pathology of the nervous system in medical students.

### **Tasks of the discipline:**

- 1) to teach students the ability to study the nervous system, symptoms of its damage, diagnosis of symptoms and syndromes and making a topical diagnosis;
- 2) to give students modern knowledge about the etiology, pathogenesis, clinical picture, diagnosis, treatment and prevention of the main diseases of the nervous system;
- 3) to form in the student clinical neurological thinking, the ability to independently diagnose the most common neurological diseases, treat emergency neurological conditions and prevent diseases of the nervous system;
- 4) to teach methods of genetic analysis of diseases, provide knowledge in the field of the main forms of hereditary diseases and methods of genetic analysis.

### **Course topics:**

#### **Plan of lectures**

1. Introduction to Neurology. Approach to the patient with a neurologic problem: Key steps in neurological diagnosis. Neurologic examination.
2. Sensory syndromes.
3. Motor syndromes.
4. Cranial nerves and PNS syndromes
5. Autonomic and liquor-dynamic syndromes
6. Cognitive syndromes. Methods of laboratory and instrumental diagnostics in neurology
7. Disorders of the cerebrovascular system
8. Disorders of peripheral nerves. Disorders of muscle and the neuromuscular junction. Myasthenia. Etiology, pathogenesis, clinical features, treatment.
9. Demyelinating diseases of the nervous system.
10. Infectious diseases of the nervous system.
11. Autonomic disorders. Epilepsy and paroxysmal conditions. Headaches
12. Disorders of higher cortical function. Neurologic changes of normal aging. Dementia. Alzheimer's disease
13. Introduction to Neurosurgery. Neoplasms of the nervous system. Head and spinal injury. Degenerative diseases of the nervous system. Syringomyelia
14. Fundamentals of medical genetics. Methodology of genetic research in the clinic of nervous diseases
15. Hereditary diseases of the nervous system.

#### **Plan of practical classes**

### General Neurology (40 h)

1. Introduction to neurological disorders. Clinical neuroanatomy and physiology. Covers of brain. Cerebrospinal fluid (5h.)
2. Sensation and peripheral nerve pathology (5h.)
3. Voluntary movements and it's disorders (5h.)
4. Extrapyramidal and cerebellar disorders (5h.)
5. Brainstem and cranial nerves lesions (5h.)
6. Autonomic disorders (5h.)
7. Cognitive functions. Syndromes of focal brain lesions (5h.)
8. Topical diagnosis in neurology. Methods of investigation in neurology. Control of the Module 1: test and practice skills (5h.)

### Clinical Neurology and Neurosurgery (40 h)

1. Disorders of the cerebrovascular system. Acute and chronic neurovascular syndromes. Ischemic strokes. Transient ischemic attacks. Hemorrhagic strokes Spontaneous intracranial hemorrhage Saccular aneurysms. Vascular dementia (5h.)
2. Disorders of peripheral nerves. Diabetic distal symmetrical polyneuropathy. Carpal tunnel syndrome. Bell's palsy. Disorders of muscle and the neuromuscular junction. Duchenne muscular dystrophy (Muscular dystrophies) Dermatomyositis (Inflammatory myopathy) Primary hyperkalemic periodic paralysis (channelopathies). Myasthenia gravis. Botulism. Disorders of the spinal cord and vertebral bodies. Amyotrophic lateral sclerosis Transverse myelitis and myelopathy Low back pain with radiculopathy (5h.)
3. Demyelinating diseases of the nervous system. Multiple sclerosis. Encephalomyelitis. Guillain-Barré syndrome (5h.)
4. Infectious diseases of the nervous system. Prion diseases Bacterial meningitis Brain abscess Herpes simplex virus encephalitis (5h.)
5. Disorders of the extrapyramidal system and cerebellum. Essential tremor Parkinson's disease Huntington's disease Hyperkinetic syndromes. Spinocerebellar ataxias (5h.)
6. Neoplasms of the nervous system. Head and spinal injury. Hydrocephaly. Neurological syndromes in patients with Anomaly, Malformations and Degenerative diseases. Syringomyelia (5h.)
7. Epilepsy and syncope. Epilepsy as disease Epileptic events Classification Treatment Status epilepticus. Autonomic dystonia (5h.)
8. Neurologic changes of normal aging. Disorders of higher cortical function. Aphasias Intelligence Dementia Alzheimer's disease. Mental retardation. Control of the Module 2: test and case report (5h.)

### Medical genetics (10 h)

1. Introduction to Neurogenetics. Genetic terminology Types of heredity. Types of heredity and genetic analysis of appropriate neurological conditions. Trinucleotide repeat disorders. Anticipation in genetics Understanding the genetic basis of common Neurological diseases Development of new medicines through genetic engineering. Neuroepidemiology. (5h.)
2. Hereditary diseases of the nervous system. A clinical approach to the diagnosis of common inherited neuropathies. Clinical features and diagnosis of Hereditary neuropathy Differential diagnosis Typical CMT phenotype Treatment of CMT Prognosis of CMT Genetic counselling family / diagnostic / predictive / ante-natal. Control of the Module 3: test (5h.)
3. Final test.

### **Text books and required supplies:**

1. Diseases of nervous system / V.A. Parfenov. — Moscow : Medical Informational Agency, 2023. — 432 p. [Электронный ресурс]

2. [Bradley's Neurology in Clinical Practice](#) / [Robert B. Daroff](#), [Joseph Jankovic](#), [John C. Mazziotta](#), and [Scott L. Pomeroy](#), Seventh Edition, 2016, Elsevier. ISBN: 978-0-323-28783-8 [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20130000801>
3. Core techniques in operative neurosurgery / [edited by] Rahul Jandial, Paul C. McCormick, Peter McLaren Black. Elsevier Saunders, 2011. ISBN 978-1-4377-0907-0 [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C2009041300X>
4. Emery and Rimoin's Principles and Practice of Medical Genetics , Sixth Edition (Rimoin, David; Korf, Bruce), 2013 Elsevier Ltd [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20090630051>
5. Duus' Topical Diagnosis in Neurology : anatomy, physiology, symptoms [Text] : учебник / M. Baehr, M. Frotscher ; with contributions by W. Kueker ; translated by E. Taub : 400 illustrations, most in color, by G. Spitzer, B. Gay . - 4th. rev. ed. - Stuttgart ; New York : [s. n.], 2005. - 517 p. : il. ; 21 см. - Index : p. 497-517. - ISBN 3-13-612804-4 (97 экз.)
6. Fundamentals of Neurologic Disease [Text] / L. E. Davis with M. K. King, J. L. Schultz. - New York : Demos, 2005. - 235 p. : il ; 20 см. - АНГЛ. - Index : p. 227-235. - ISBN 1-888799-84-6 (98 экз.)
7. Epilepsy : Global Issues for the Practicing Neurologist [Text] : a publication of the world federation of neurology. Vol. 2 / J. Engel [et al.] ; World Federation of Neurology. - New York : Demos, 2005. - 140 p. : il. ; 21 см. - (Seminars in Clinical Neurology). - Index : p. 135-140. - ISBN 1-888799-88-9 (97 экз.)
8. Neurology secrets / [edited by] Joseph S. Kass, Eli M. Mizrahi. Sixth edition., Philadelphia, PA : Elsevier, Inc, 2017. ISBN 9780323359481 [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20120061583>

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

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- Be careful with equipment



- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### Forms of control

**Module 1 “General Neurology” control include test tasks (50% of Mod. 1 rating) and practical skills (50% of Mod. 1 rating)**

#### **Example of test tasks**

1. You have detected hypesthesia in the patient's right middle zone of Zelder, as well as hemihypesthesia on the opposite side of the body (left). The symptoms developed simultaneously. Specify the level of damage:
  - a) **brain stem on the right** (correct answer)
  - b) left hemisphere of the brain
  - c) right hemisphere of the brain
  - d) root of the trigeminal nerve on the left
  - d) brain stem on the left
2. The patient complains of a rash on the forehead on the left in the form of blisters filled with clear fluid. Your assumption:
  - a) damage to the second branch of the trigeminal nerve
  - b) damage to the Gasserian ganglion on the left with involvement of the third branch
  - c) damage to the facial nerve above the origin of the greater petrosal nerve
  - d) **damage to the Gasserian ganglion on the left with involvement of the first branch** (correct answer)
  - d) no correct answer
3. The patient has prosoparesis, increased lacrimation, hypogeusia. Determine the level of damage to the facial nerve.
  - 1) in the area of the exit from the stylomastoid foramen
  - 2) **above the exit of the chorda tympani nerve** (correct answer)
  - 3) above the exit of the stapedius nerve
  - 4) above the exit of the greater petrosal nerve
  - 5) in the area of the geniculate ganglion.

#### *Evaluation criteria:*

The test score is given in proportion to the percentage of correct answers:

90-100% - excellent grade

80-89% - "good" rating

70-79% - "satisfactory" rating

Less than 70% of correct answers – “unsatisfactory” rating.

#### **List of the practical skills**

1. Mental status examination	3. Motor examination
a) Alertness, attention, cooperation	a) muscle bulk
b) Memory	b) muscle tone
c) Cognition	c) muscle strength
d) Mini Mental Status Examination	d) gait
e) Moods and affects	4. Muscles commonly tested and their nerve root and peripheral nerve
f) Speech and language	a) Arm Proximal : Deltoid, Biceps, Triceps
2. Cranial nerves examinations:	

<ul style="list-style-type: none"> <li>a) CN I (olfactory): Identification by smell...</li> <li>b) CN II (optic nerve) <ul style="list-style-type: none"> <li>1) Visual acuity</li> <li>2) Visual fields</li> </ul> </li> <li>c) CNs III, IV, VI (oculomotor, trochlear &amp; abducens). <ul style="list-style-type: none"> <li>1) Pupils: size, shape, direct and consensual reaction light, reaction to accommodation</li> <li>2) Appearance of eyes: ptosis, exophthalmos</li> <li>3) Eye movements</li> <li>4) Conjugate movements</li> <li>5) Nystagmus</li> </ul> </li> <li>d) CN V (Trigeminal) <ul style="list-style-type: none"> <li>1) Corneal</li> <li>2) Jaw jerk</li> <li>3) Sensory</li> <li>4) Motor</li> </ul> </li> <li style="padding-left: 40px;">CNVII (facial)</li> <li>5) Eye closure</li> <li>6) Smile</li> <li>7) Wrinkling of forehead</li> <li>8) Taste (anterior 2/3 of tongue)</li> <li>e) CNVIII Auditory&amp; vestibular) <ul style="list-style-type: none"> <li>1) Auditory acuity</li> <li>2) Weber test</li> <li>3) Rinne's test</li> </ul> </li> <li>f) CNIX (Glossopharyngeal) <ul style="list-style-type: none"> <li>1) Touch sensation of posterior pharyngeal wall</li> <li>2) Gag reflex or swallowing</li> <li>3) Elevation of Palate</li> </ul> </li> <li>g) CNX (Vagus)</li> <li>h) CN XI (Accessory) <ul style="list-style-type: none"> <li>1) Head turning</li> <li>2) Shoulder shrug</li> <li>3) Sternocleidomastoid or trapezius atrophy</li> </ul> </li> <li>i) CN XII (Hypoglossal) <ul style="list-style-type: none"> <li>1) Tongue atrophy or fasciculation</li> <li>2) Rapidity and strength of tongue movements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>b) Distal: Flexor carpi radialis and ulnaris (flexion wrist), Extensor carpi radialis (extension wrist); Abd pollicis brevis (thumb abduction); Abd. Digiti minimi (little finger abduction)</li> <li>c) Leg proximal: iliopsoas (hip flexion), quadriceps (knee extension), Hamstrings (knee flexion)</li> <li>d) Leg distal: tibialis anterior (ankle dorsiflexion); Gastrocnemius (ankle flexion); Tibialis posterior (ankle inversion); Extensor hallucis longus (great toe dorsiflexion); Foot flexors (dorsiflexion of all toes); Straight-leg-raising test (sciatica)</li> </ul> <p>5. Types of involuntary movements</p> <ul style="list-style-type: none"> <li>a) tremor</li> <li>b) dystonia</li> <li>c) chorea</li> <li>d) ballismus</li> <li>e) tics</li> <li>f) myoclonus</li> </ul> <p>6. Coordination</p> <ul style="list-style-type: none"> <li>a) limb coordination; finger –to –nose test; heel-to-shin</li> <li>b) Trunkal stability: stance and gait, Romberg's sign</li> <li>c) Ataxia; Rapid alternating movements</li> <li>d) Rebound</li> <li>e) Tandem gait</li> </ul> <p>7. Sensation (differentiate peripheral, segmental, central lesions)</p> <ul style="list-style-type: none"> <li>a) pain</li> <li>b) temperature</li> <li>c) vibration</li> <li>d) position</li> <li>e) Touch</li> </ul> <p>8. Reflexes (segmental innervation, nerve), scoring deep tendon reflexes</p> <ul style="list-style-type: none"> <li>a) Biceps jerk</li> <li>b) Triceps jerk</li> <li>c) Knee jerk</li> <li>d) Ankle jerk</li> </ul> <p>9. Signs of meningeal irritation</p> <ul style="list-style-type: none"> <li>a) Nuchal rigidity</li> <li>b) Kernig's sign</li> <li>c) Brudzinski's sign</li> </ul> <p>10. Autonomic function: reveal thermal and sweating deregulation, vasomotor and trophic disturbances, orthostatic hypotension.</p>
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*Evaluation criteria:*

"Excellent" (90-100 points) Fully knows and masters the technique of neurological examination, according to the department's program, masters clinical reasoning, can answer additional questions, has additional information

"Good" (80-89 points) Can and has mastered the technique of neurological examination, according to the department's program, partially has mastered clinical reasoning, can partially answer additional questions

"Satisfactory" (70-79 points) Can and has mastered the technique of neurological examination, according to the department's program, cannot answer additional questions, does not have mastered clinical reasoning

"Unsatisfactory" (0-69 points) Does not know how and does not possess the technique of neurological examination

**Module 2 "Clinical Neurology and Neurosurgery" control include test tasks (20% of Mod. 2 rating), clinical case (30% of Mod. 2 rating) and patients case report (50% of Mod. 2 rating)**

**Example of test tasks and Evaluation criteria** – see above.

**Example of clinical case:**

A 52-year-old female patient complained of intense pain and burning in the area of her right eye and eyebrow. She had been ill for about a day. The patient's grandson is currently ill with chickenpox.

On examination of the neurological status: the general condition is close to satisfactory. Body temperature is 37. In the area of the upper eyelid of the right eye and forehead on the right, there is hyperemia of the skin, vesicular rash spreading to the scalp. The conjunctiva of the right eye is hyperemic, the eye is watery. Pupils uniform. Separate horizontal nystagmoid twitching of the eyeballs. Tendon reflexes are uniformly brisk. Pathological reflexes absent. There are no meningeal symptoms.

Questions and tasks:

1. Specify the leading symptoms and syndromes of the disease;
2. Specify the site of the pathological process (topical diagnosis);
3. Specify the nature of the pathological process (clinical, nosological diagnosis).
4. What additional research needs to be done?
5. Specify the basic principles of treatment.

Answers: 1. Right-sided prosopalgia, herpetic rash along the 1st branch of the trigeminal nerve on the right.

2. Damage to the right semilunar ganglion by the Herpes zoster virus with the spread of rashes along the first branch of the trigeminal nerve.

3. Herpetic ganglionitis of the Gasserian (semilunar) ganglion. Herpetic neuropathy of the 1st branch of the trigeminal nerve.

4. X-ray of the paranasal sinuses.

5. Antiviral treatment.

*Evaluation criteria:*

"Excellent" (90-100 points) Correctly solves a clinical problem, knows the symptoms and syndromes of the main neurological diseases, has the correct direction in judgments about the problem, knows how and owns the algorithm for making a diagnosis, diagnostic search, prescribing adequate treatment, has additional information about nosology

"Good" (80-89 points) Correctly solves a clinical problem, knows the symptoms and syndromes of the main neurological diseases, has the correct direction in judgments about the problem,

partially knows how and has mastered the algorithm for making a diagnosis, diagnostic search, appointment of adequate treatment

"Satisfactory" (70-79 points) Partially correctly solves a clinical problem, partially knows the symptoms and syndromes of the main neurological diseases, has a correct but inaccurate direction in judgments about the problem, partially knows how and owns the algorithm for making a diagnosis, diagnostic search, and prescribing an adequate treatments

"Unsatisfactory" (0-69 points) Cannot solve a clinical problem, does not know the symptoms and syndromes, does not know how and does not possess the algorithm for making a diagnosis, diagnostic search, prescribing adequate treatment

### **Example of the Neurology department patient's case report.**

#### *Evaluation criteria:*

"Excellent" (90-100 points) Correctly solves a clinical problem of the Neurology department patient, knows the symptoms and syndromes of the main neurological diseases, has the correct direction in judgments about the problem, knows how and owns the algorithm for making a diagnosis, diagnostic search, prescribing adequate treatment, has additional information about nosology; showed due respect to the patient and his family.

"Good" (80-89 points) Correctly solves a clinical problem of the Neurology department patient, knows the symptoms and syndromes of the main neurological diseases, has the correct direction in judgments about the problem, partially knows how and has mastered the algorithm for making a diagnosis, diagnostic search, appointment of adequate treatment; showed due respect to the patient and his family.

"Satisfactory" (70-79 points) Partially correctly solves a clinical problem of the Neurology department patient, partially knows the symptoms and syndromes of the main neurological diseases, has a correct but inaccurate direction in judgments about the problem, partially knows how and owns the algorithm for making a diagnosis, diagnostic search, and prescribing an adequate treatments; showed due respect to the patient and his family.

"Unsatisfactory" (0-69 points) Cannot solve a clinical problem of the Neurology department patient, does not know the symptoms and syndromes, does not know how and does not possess the algorithm for making a diagnosis, diagnostic search, prescribing adequate treatment. During the examination, the student did not show proper respect to the patient and his family.

### **Module 3 "Medical genetics" control include test tasks**

**Example of test tasks and Evaluation criteria** – see above.

**Final control (Exam)** include practical skills control and answer on the questions.

#### **Answer form**

Name \_\_\_\_\_

Group № \_\_\_\_\_

Date \_\_\_\_\_

Ticket № (theory) \_\_\_\_\_

Ticket № (practice) \_\_\_\_\_

<b>Theory:</b>	Points for the answer	Max. points
Question №1		100
Question №2		100
Question №3		100
Question №4		100
Question №5		100

<b>Practice:</b>	Points for the answer	Max. points	
		100	

Calculation of the average score for the exam and then calculation of the general rating of discipline in 1C

**List of the practical skills** – see above (in Module 1)

**Example of questions**

<ol style="list-style-type: none"> <li>1. CN V (Trigeminal nerve) anatomy, lesions. Trigeminal neuralgia.</li> <li>2. Basal ganglia anatomy and their connections. Clinical syndromes of basal ganglia lesions.</li> <li>3. Hemorrhagic stroke: Treatments, prevention.</li> <li>4. Chronic inflammatory demyelinating polyneuropathy (CIDP): Causes, symptoms, diagnosis, management.</li> <li>5. Which of the following statements about mutagens is correct? Mutagens are               <ol style="list-style-type: none"> <li>(A) Agents that can produce a permanent alteration of structure or function in an organism after exposure during embryonic or fetal life</li> <li>(B) Common causes of congenital anomalies in humans</li> <li>(C) Responsible for causing most autosomal recessive diseases</li> <li>(D) Responsible for causing most autosomal dominant diseases</li> <li>(E) Capable of affecting both somatic cells and germ cells in humans</li> </ol> </li> </ol>
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## FACULTY THERAPY

**Teachers: PhD Dilyara Mukhametova, PhD Elina Kirillova, PhD Guzel Nurullina, PhD Eugeniya Bodryagina, PhD Dilyara Akberova, PhD Irina Fayrushina**

**Building, Department, classroom #** 6th floor of the Republican Clinical Hospital, (Orenburg tract 138), Department of Hospital Therapy, room#1-9

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**Total hours: 288 hours:**

Lectures 40 hours

Practice classes 135 hours

Independent work 77 hours

Control 36 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practice classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The practice classes involve active participation of students in problem discussion. It requires preliminary preparation by the student.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1129#section-0>).

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the **faculty therapy** discipline are to acquire knowledge about the etiology, pathogenesis, clinical manifestations of major diseases of internal organs and the ability to recognize occupational diseases; to deepen of concepts about the methodology of clinical thinking, development and justification of recommendations for the diagnosis, treatment, prevention and disability of patients; to consolidate of the scope of skills; to interpret of the most common instrumental and laboratory methods for studying patients with a therapeutic profile; to develop of interdisciplinary thinking among students with the subsequent formation of the necessary amount of practical skills for students to work independently in outpatient care institutions.

### **Tasks of the discipline:**

To form knowledge in the field of:

- to form an understanding among students about the ethical and deontological aspects of medical activity in communication with colleagues, nurses and nurses, patients and their relatives;
- to teach students to conduct and interpret the survey, physical examination, clinical examination, the results of modern laboratory and instrumental studies;
- to form students' skills in identifying the main pathological symptoms and syndromes of diseases using knowledge of the fundamentals of biomedical and clinical disciplines, taking into account the laws of the course of pathology;
- to teach students the correct diagnosis based on the survey, physical examination and the results of laboratory and instrumental studies;
- to teach students to prescribe adequate treatment for patients in accordance with the diagnosis, to implement an algorithm for choosing drug and non-drug therapy for patients with diseases of a therapeutic profile;
- to form a concept for students on the prevention of the onset of diseases, healthy lifestyle skills that help maintain their physical activity at the proper level, and eliminate bad habits;
- to develop students' skills in the use and maintenance of regulatory documents adopted in healthcare, maintaining a medical record of an inpatient.

### **Course topics:**

#### **Calendar plan of lectures**

1. Kazan school of internal medicine. Methodology of diagnosis.
2. Methodology of treatment.
3. Atherosclerosis. Ischemic heart disease. Stable angina.
4. Acute coronary syndrome. Myocardial infarction.
5. Arterial hypertension.
6. Arrhythmias and conduction disorders.
7. Pneumonia.
8. Asthma.
9. Chronic obstructive pulmonary disease.
10. Peptic Ulcer disease. Natural history of H. pylori infection.
11. Glomerulonephritis.
12. Chronic kidney disease.
13. Anemia.
14. Leukemia. Acute leukemia. Chronic leukemia.
15. Osteoarthritis.
16. Rheumatoid arthritis.
17. Gout.
18. Nonalcoholic Liver Fatty Disease.
19. Liver cirrhosis. Portal hypertension.

20. Emergency in internal medicine.

**Calendar plan of practice classes**

1. Atherosclerosis. Ischemic heart disease. Stable angina.
2. Acute coronary syndrome. Myocardial infarction.
3. Arterial hypertension.
4. Arrhythmias and conduction disorders.
5. Acute rheumatic fever. Chronic rheumatic heart disease.
6. Chronic heart failure.
7. Pneumonia.
8. Asthma.
9. Chronic obstructive pulmonary disease.
10. Gastroesophageal reflux disease.
11. Peptic Ulcer disease
12. Chronic pancreatitis.
13. Supervision of patients and writing a student medical case.
14. Student medical case protection. Test control (MCQ).
15. Upper urinary tract infections.
16. Glomerulonephritis.
17. Chronic kidney disease.
18. Anemia. Iron deficiency anemia. Vitamin B12 deficiency anemia. Folate deficiency anemia.
19. Leukemia. Acute Lymphoblastic Leukemia. Acute Myeloid Leukemia. Chronic Lymphocytic Leukemia. Chronic Myeloid Leukemia.
20. Multiple myeloma.
21. Osteoarthritis.
22. Rheumatoid arthritis.
23. Gout.
24. Systemic lupus erythematosus.
25. Chronic hepatitis.
26. Liver Cirrhosis.
27. Emergency in internal medicine.
28. Supervision of patients and writing a student medical case.

**Text books and required supplies:**

1. Update and Review of Internal Medicine 2001: sept. 30- Oct. 5, 2001: Vol. 1-2. - New Mexico: Flavor of Southwestern in Santa E, 2001
2. Outpatient Therapy: textbook / [F. D. Akhmatova, V. F. Benevskaya, O. V. Bykova et al.]; edited by V. N. Larina. - Moscow: GEOTAR-Media, 2023. - 450, [6] p : il. ; 21 cm. - (Textbook). ISBN 978-5-9704-7708-3 :
3. Forchheimer, Frederick. The Prophylaxis and Treatment of Internal Diseases: designed for the use of practitioners and advanced students of medicine / F. Forchheimer. - New York : D. Appleton and Company, 1907. - xvii, [1], 652, [4] p.
4. Current Medical Diagnosis & Treatment: Adult ambulatory & Inpatient Management / Ed. L. M. Tierney, S. J. McPhee, M. A. Papadakis. - 41st ed. - New York: McGraw-Hill, 2002. - 1857 p. - (a LANGE medical book). - ISBN 0-07-112443-8
5. Clinical Medicine: A textbook for medical students and doctors / Edit.: P. Kumar, M. Clark. - 6th. ed. - Edinburgh: Elsevier Ltd, 2008. - 1508 p.: il. - ISBN 9780702027635

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

### **Level 1 – mcq test**

#### **Examples of mcq test:**

1 The main auscultative symptoms of COPD include

- a. wet large-bubbly wheezes
- b. crepitation
- c. wet, small-bubbly wheezes
- d. dry whistling wheezes

Correct answer: d

2. The method of diagnosis of Chronic Obstructive Pulmonary Disease is

- a. radiology
- b. spirometry
- c. laryngoscopy
- d. electrocardiography

Correct answer: b

The mark of mcq test is proportion of correct answers:

90-100% - mark "excellent"

80-89% - mark "good"

70-79% - mark "satisfactorily"

Less than 70% of the correct answers are "unsatisfactory".

### **Level 1 - oral survey**

#### **Examples of Questions:**

Questions for the oral survey on the topic 2.1. Atherosclerosis. Ischemic heart disease. Stable angina:

- 1) Stages of atherosclerotic plaque formation.
- 2) Risk factors for Atherosclerosis.

#### **Example of answer:**

1) The atherosclerosis process: 1. Fatty streaks formation, 2. Atheroma formation. 3. Atherosclerotic plaques formation. Atherosclerosis is a common disease in which fatty deposits called atheromatous plaques appear in the inner layers of arteries. Formation of these plaques starts with the deposition of small cholesterol crystals in the intima and its underlying smooth muscle. Then the plaques grow with the proliferation of fibrous tissues and the surrounding smooth muscle and bulge inside the arteries and consequently reduce the blood flow. Connective tissue production by fibroblasts and deposition of calcium in the lesion cause sclerosis or hardening of the arteries. Finally, the uneven surface of the arteries results in clot formation and thrombosis, which leads to the sudden obstruction of blood flow. Hyperlipidemia and hyperglycemia are related to increased oxidative damage, which affects antioxidant status and lipoprotein levels.

2) Major Risk Factors of Atherosclerosis: 1. Unhealthy blood cholesterol levels. This includes high LDL cholesterol and low HDL cholesterol. 2. High blood pressure. Blood pressure is considered high if it stays at or above 140/90 mmHg over time. If patient has diabetes or chronic kidney disease, high blood pressure is defined as 130/80 mmHg or higher. 3. Smoking. Smoking can damage and tighten blood vessels, raise cholesterol levels, and raise blood pressure. 4. Insulin resistance. This condition occurs if the body can't use its insulin properly. Insulin is a hormone that helps move blood sugar into cells where it's used as an energy source. 5. Diabetes. With this disease, the body's blood sugar level is too high because the body doesn't make enough insulin or doesn't use its insulin properly. 6. Overweight or obesity. The terms "overweight" and "obesity" refer to body weight that's greater than what is considered healthy for a certain height. 7. Lack of physical activity. A lack of physical activity can worsen other risk factors for atherosclerosis, such as unhealthy blood cholesterol levels, high blood pressure, diabetes, and overweight and obesity. 8. Unhealthy diet. An unhealthy diet can raise your risk for atherosclerosis. Foods that are high in saturated and trans fats, cholesterol, sodium (salt), and sugar can worsen other atherosclerosis risk factors. 9. Older age. In men, the risk increases after age 45. In women, the risk increases after age



55. 10. Family history of early heart disease. Risk for atherosclerosis increases if patient's father or a brother was diagnosed with heart disease before 55 years of age, or if patient's mother or a sister was diagnosed with heart disease before 65 years of age.

**Assesment criterias.**

**"Excellent"** (9-10 points) is set if the student demonstrates knowledge of the topic material, based on familiarization with the required literature and additional modern publications; actively participates in the discussion; gives logical and reasoned answers to the questions posed without teacher's leading questions.

**"Good"** (8-8.9 points) is set if the student demonstrates knowledge of the topic material, based on familiarization with the required literature; participates in the discussion; gives clear answers to teacher's leading questions.

**"Satisfactory"** (7-7.9 points) - the student demonstrates knowledge of more than half of the required topic material; low activity in the discussion; gives a positive answer to most of the teacher's leading questions.

**"Unsatisfactory"** (6-6.9 points) is set if the student don't has knowledge in the studied topic; low activity in the discussion; gives incorrect answers to the teacher's leading questions.

**Level 2 – Practical skills**

**Examples of Practical skills:**

1) Constitution: normostenic type, asthenic type, hypersthenic type. Height (sm), weight (kg). Body mass index (BMI): calculation formula, normal and pathology. General nutrition: good, excessive, low, cachexia.

2) Palpation of lymph nodes: localization (occipital, parotid, submandibular, cervical, supra- and subclavicular, axillary, inguinal, etc.), size, shape, surface, texture, mobility, cohesion with the skin and surrounding tissue; skin condition above them.

**Example of answers:**

1) Constitution: hypersthenic type. Height (160 sm), weight (90 kg). Body mass index (BMI) is 35,1 kg/m<sup>2</sup>, abnormal – moderate degree of obesity. General nutrition: excessive.

2) Auscultation of the lungs: main respiratory noises – vesicular breathing in all lungs without adverse respiratory noise; Bronchophony is symmetrical.

**Assesment criterias.**

**"Excellent"** (90-100 points) is set if the student has systematic theoretical knowledge (knows the methodology, practical skills; gives a clear, complete description of the data obtained during the physical examination of the patient), independently demonstrates the implementation of practical skills without errors.

**"Good"** (80-89 points) is set if the student has theoretical knowledge (knows the methodology, practical skills; gives the clear, complete description of the data obtained during the physical examination of the patient), independently demonstrates the implementation of practical skills, allowing for some inaccuracies (minor errors), which it independently detects and quickly corrects.

**"Satisfactory"** (70-79 points) - the student has satisfactory theoretical knowledge (knows the basic principles of the methodology for performing practical skills; gives an insufficiently complete description of the data obtained during the physical examination of the patient), demonstrates the implementation of practical skills with some errors that may correct when corrected by their teacher.

**"Unsatisfactory"** (69 or less points) is awarded if the student does not have a sufficient level of theoretical knowledge (does not know the methodology for performing practical skills) and / or cannot independently demonstrate practical skills with serious mistakes.

**Level 3 – Clinical case.**

**Examples of the Clinical case.**

Patient E., 23, an auto mechanic, fell ill two weeks ago after hypothermia. A district doctor at the place of residence diagnosed acute tonsillitis. Amoxicillin therapy was recommended for 10 days,

but after 3 days, due to a significant improvement in health and normalization of body temperature, the patient stopped treatment. Two weeks after these events, the patient noted the appearance of puffiness on the face, general weakness and malaise, decreased appetite, headache, and urine became dark red and decreased its amount. Along with the above symptoms, the patient was concerned about abdominal and lower back pain. When measuring blood pressure-AD 140/90 mm Hg.

On examination: the skin is pale. During auscultation of the lungs, the respiration is vesicular, there are no side respiratory noises, RR – 17 per minute. The heart tones are muted, the rhythm is correct. Blood pressure -140 and 90 mm Hg. heart rate-90 beats per minute. The abdomen is soft and painless. The size of the liver dullness according to Kurllov is 11×9×8 cm. Diuresis-700 ml per day. A laboratory study was conducted.

CBC: hemoglobin-136 g / l, white blood cells-10.8×10<sup>9</sup>/l, ESR-70 mm / h.

Urinalysis: relative density-1025, proteinuria-1.5 g / l, white blood cells-14-15 in the field of vision, red blood cells-completely cover the entire field of vision.

Biochemical blood analysis: total protein-62 g / l, albumin-39 g/l, cholesterol – 4.5 mmol/l, urea – 5.6 mmol/l, creatinine – 110 mmol/l, GFR – 79.4 ml/min / 1.73 m according to CKD-EPI, titer ASL-O – 1:1000.

Ultrasound of the kidneys: the kidneys are enlarged in size, the contours are smooth, the location is typical; differentiation of parenchymal layers is disturbed, the echogenicity of the parenchyma is moderately increased; the calyx-pelvis system is without deformities and ectasia.

Questions:

1. Specify the main clinical and laboratory syndrome.
2. Assume the most likely diagnosis. Justify your diagnosis.
3. Name the patient's examination plan.
4. Prescribe the necessary therapy.
5. Specify in which cases immunosuppressive therapy is performed for this disease.

Answers:

1. Acute post-streptococcal glomerulonephritis. Nephritic syndrome. Arterial hypertension of 1 degree, the risk 3.

2. The diagnosis of "acute poststreptococcal glomerulonephritis" (APSGN) set in identifying clinical and laboratory signs of acute glomerulonephritis that developed after 1-6 weeks after infection caused by  $\beta$ -hemolytic Streptococcus group A. the patient characteristic changes in the urinalysis, there are indications of previous streptococcal infection, the characteristic dynamics antistreptococcal antibodies.

3. Titer of anti-streptococcal antibodies (ASL-O, anti-streptogialuronidase, anti-streptokinase, anti-DNA-Aza B, anti-NAD), CRP, serum complement level, antibodies to DNA.

Microscopy of urine.

A kidney biopsy is usually performed during an atypical course of APSGN to exclude other possible diseases, as well as at the late onset of the disease without any connection with a recently transferred streptococcal infection.

4. Mode-bed rest with severe edema, macrohematuria, moderate/severe hypertension, heart failure (usually in the first 3-4 weeks). When the state improves, the mode is gradually expanded.

Diet: with limited consumption of salt (up to 1-2 g / day) and liquid in the acute period of the disease, especially with a rapid increase in edema, oliguria and hypertension. The volume of fluid is calculated based on the previous day's diuresis, taking into account extrarenal losses, the intake of fluid should not exceed the diuresis by more than 200 ml with a protein restriction to 0.5 g/kg/day with a decrease in kidney function of less than 60 ml/min (until the normalization of GFR and creatinine in the blood, but no longer than 2-4 weeks).

In severe edema - diuretic therapy. With severe hypercoagulation-anticoagulant therapy.

1. In case of rapid progression of APSGN and/or detection of more than 30% of half-moons in the kidney biopsy, it is suggested to conduct "pulse therapy" with Methylprednisolone. If the nephrotic syndrome persists for more than 2 weeks, steadily increased creatinine levels (without a

tendency to further increase and normalization) and if it is impossible to perform a kidney biopsy, it is recommended to use Prednisone inside at a dose of 1 mg/kg/day for 1-2 months.

**Assesment criterias.**

“**Excellent**” (90–100 points) is set if the task is completed, conclusions are drawn;

“**Good**” (80–89 points) - the task is completed, but one or two minor errors of a logical or actual nature are made, conclusions are drawn;

“**Satisfactory**” (70–79 points) - serious errors of a logical and factual nature were made, an attempt was made to formulate conclusions;

“**Unsatisfactory**” (less than 70 points) - the content of the task is not conscious, the conclusions are inadequate to the task.

*Exams* are held in oral form.

**Example of the Final exam.**

**Examination ticket №15**

1) Gastroesophageal reflux disease. Risk factors. Pathogenesis. Classification. Clinic, esophageal and extra esophageal manifestations. Diagnostics. The principles of non-pharmacological and pharmacological therapy.

2) The exacerbation of asthma. The clinical picture. Determining the degree of severity. Principles of therapy.

3) B12 and folic acid-deficient anemia. Definition. Causes for development. Pathogenesis. Classification. The clinical picture. Diagnostics. Principles of therapy. Prevention.

**Grading:**

0–69 – “**Unsatisfactory**”,

70–79 – “**Satisfactory**”,

80–89 – “**Good**”,

90–100 – “**Excellent**”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

## OPHTHALMOLOGY

**Teachers:** Endzhe Minnullina,

**Building, Department, classroom** Department of Ophthalmology, 1, 3

**Contact details:**

- Telephone number: 89872786671 (Endzhe Minnullina)
- E-mail address: enze-90@mail.ru
- Office and working hours: 1 (8-17)

**Class hours: 108 hours:**

Lectures – 18 h

Practical classes – 45 h

Self-study – 45 h

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material).

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the discipline “Ophthalmology” are to develop in medical students systematic knowledge and skills of epidemiology, etiology, pathogenesis, diagnosis and clinic of acquired diseases of the organ of vision and its appendages.

**Tasks of the discipline:**

To form knowledge in the field of:

- teaching students the etiology, pathogenesis, clinical picture and pathomorphology of ophthalmological pathology in humans;
- education in the organization and technology of providing ophthalmological care to the population

**Course topics:****Calendar plan of lectures**

1. Introduction to ophthalmology. A brief history of ophthalmology. Kazan School of Ophthalmologists. Anatomical and physiological features of the organ of vision.
2. Visual analyzer and its functions.
3. Physiological optics.
4. Disease of the eyelids, conjunctiva, lacrimal organs.
5. Pathology of the cornea.
6. Disease of the choroid and lens.
7. Glaucoma (1 lecture)
8. Glaucoma (2 lecture)
9. Injuries and burns of the organ of vision.

**Calendar plan of practical lesson**

1. Anatomy and diagnostic methods of the organ of vision. Visual functions.
2. Refraction, accommodation, astigmatism, presbyopia, anisometropia, selection of glasses.
3. Corneal disease.
4. Pathology of the oculomotor system of vision. Orbital disease.
5. Diseases of the eyelids, conjunctiva and lacrimal organs.
6. Diseases of the lens. Disease of the choroid.
7. Glaucoma.
8. Retinal diseases. Diseases of the optic nerve. Orbital disease.
9. Injuries and burns of the organ of vision.

**Text books and required supplies:**

1. Kalla Gervasio-Travis Peck. The Wills Eye Manual : Office and Emergency Room Diagnosis and Treatment of Eye Disease / Kalla Gervasio-Travis Peck: Wolters Kluwer Health, 2022.
2. Gary H. Cassel. The Eye Book : A Complete Guide to Eye Disorders and Health / Gary H. Cassel: Johns Hopkins University Press, 2021.
3. Valerie Biousse-Nancy J. Newman. Neuro-Ophthalmology Illustrated / Valerie Biousse-Nancy J. Newman: Thieme, 2020
4. Kuldev Singh-William E. Smiddy-Andrew G. Lee. Ophthalmology Review : A Case-Study Approach / Kuldev Singh-William E. Smiddy-Andrew G. Lee: Thieme, 2019
5. Information Resources Management Association. Ophthalmology : Breakthroughs in Research and Practice / Information Resources Management Association: Medical Information Science Reference, 2018

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (definitions, practical skills, medical history, emergency ophthalmology).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline (modules). Grading: 0–69 points – noncredit; 70–100 points – credit. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Module No. 1. Terms****Ticket No. 1**

1. Cataract
2. Keratitis
3. Myopia
4. Hypermetropia
5. Astigmatism

Ticket No. 2

1. Iritis
2. Cyclite
3. Choroiditis
4. Glaucoma
5. Conjunctivitis

**Module No. 2. Practical skills**

**Ticket No. 1**

1. Visometry
2. Perimetry

**Ticket No. 2**

1. Tonometry
2. Ophthalmoscopy

**Module No. 3. Medical history**

1. Myopia
2. Hypermetropia
3. Astigmatism
4. Cataract
5. Keratitis
6. Dacryoadenitis
7. Dacryocystitis
8. Coloboma of the century
9. Retinitis
10. Optic neuritis

**Module No. 4. Emergency ophthalmology**

**Ticket No. 1**

1. Abscess of the century

## OCCUPATIONAL DISEASES

**Teachers: Prof. Raily Garipova, PhD Olga Ishteryakova**

**Building, Department, classroom #** NUK, Department of Hygiene, Occupational Medicine, 409,403

**Contact details:**

- Telephone number: 89172553844 (Prof. **Raily Garipova**)
- E-mail address: railygaripova@mail.ru
- Office and working hours: 402 (9-17)

**Class hours**

**Total hours — 72 hours:**

Lectures 10 hours;

Practical classes 30 hours;

Independent work 32 hours;

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=947>)

### **Course objectives: The purpose of mastering the discipline**

The purpose of teaching the discipline "**Occupational diseases**" at the Faculty of Medicine is to form students and acquire scientific knowledge about the mechanisms of adverse effects of factors of the industrial environment and the labor process on the body of workers, about the clinical manifestations of the most common occupational diseases, the principles of organizing measures for sanitary, hygienic and medical prevention of occupational diseases and poisoning.

The objectives of teaching are to teach students to collect a professional history using a professional route and sanitary and hygienic characteristics of working conditions, to conduct an objective examination of patients in a occupational pathology clinic, to establish a diagnosis taking into account special laboratory, radiological and functional methods, to carry out an examination of professional ability to work, labor and medical and social rehabilitation of patients with occupational diseases.

### **Course topics:**

#### **Calendar plan of lectures**

1. The concept of occupational diseases. The classification of occupational diseases, List of occupational diseases. Principles of diagnosis of occupational diseases. Prevention of occupational diseases
2. Hand-arm vibration syndrom. Whole-body vibration syndrom.
3. Noise-induced hearing loss.
4. Occupational lung diseases: classification and overview. Pneumoconiosis. Occupational bronchitis and COPD
5. Occupational musculoskeletal diseases
6. Occupational Blood Disorders. Occupational Neurology

#### **Calendar plan of practical classes**

- 1 The concept of occupational diseases. The classification of occupational diseases, List of occupational diseases. Principles of diagnosis of occupational diseases. Prevention of occupational diseases.
- 2 Hand-arm vibration syndrom. Whole-body vibration syndrom.
- 3 Noise-induced hearing loss.
- 4 Pneumoconioses: etiological factors, classification, clinical and radiological characteristics. Silicosis and other pneumoconiosis. Silicotuberculosis.
- 5 Occupational bronchitis and COPD: etiology, clinical and functional features.
- 6 Occupational hypersensitive pneumonitis (exogenous allergic alveolitis). Occupational asthma
- 7 Work-related musculoskeletal disorders: etiological factors, clinic, diagnostic, treatment.

### **Text books and required supplies:**

1. Occupational diseases [Electronic resource]: textbook / N.A. Mukhin [et al.]. - 2nd ed., reprint. and additional - M. : GEOTAR-Media, 2016. - <http://www.studmedlib.ru/book/ISBN9785970436660.html> Bruce M. Mahan, Rollie J. Myers. University Chemistry. Fourth edition: Addison Wesley Longman. – 1998. – 1076 p.
2. Occupational diseases [Text]: textbook / [N. F. Izmerov et al.]; edited by N. F. Izmerov. - Moscow : Akademiya, 2011. - 463, [1] p.
3. Occupational diseases [Text]: textbook / V. V. Kosarev, S. A. Babanov. - M. : GEOTAR-Media, 2010. - 366,
4. Educational and methodical manual on the discipline occupational diseases for students of the Faculty of Medicine

### **Evaluation and grading:**

Monitoring progress is carried by the end of course (written papers/oral examination/test)

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module**

The following types of control are used to evaluate learning outcomes in the form of knowledge:

1. testing;
2. – oral messages;

Topics of the reports

1. Occupational diseases from the effects of biological factors. The connection of infectious diseases with the profession.
2. Occupational diseases of medical workers. Risk factors. Principles of diagnosis
3. Occupational neoplasms of various organs and systems.
3. Control work:
  1. The main FBS, spirometric and radiological changes in chronic dust bronchitis and COPD.



2. Classification of vibration disease. The main clinical syndromes and their characteristics in EB from exposure to local and general vibration

### **EVALUATION OF THE MODULE ANSWER**

TCU in the discipline "Occupational diseases" is conducted in the form of an assessment of the completion of tasks for independent work on an educational portal, oral surveys, test control, as well as by evaluating the performance of abstracts and reports. The current control of the results of independent work is carried out at each lesson selectively for 30-50% of students. At the end of each section of the thematic plan (module) TCU is held for all students of the group. In seminar classes, the teacher evaluates any particularly successful action (for example, participation in a discussion), and only the solution of a full-fledged task is recorded with a mark. Teachers will strive to determine the assessment in a dialogue (external assessment of the teacher + external assessment of students + self-assessment). The student has the right to reasonably challenge the assessment. For each learning task or group of tasks showing mastery of a particular skill, a separate mark is placed.

The assessment of students' academic performance on a separate topic is expressed on a 10-point scale, according to the section (module) on a 100-point scale. The assessment is necessarily reflected in the educational journal.

When conducting the intermediate certification (offset), the results of the TCU are taken into account and a point-rating system is applied, approved by the Regulations of the Kazan State Medical University on the forms, frequency and procedure for current monitoring of academic performance and intermediate certification of students. The test is conducted within the classroom hours allocated for the development of the academic discipline "Occupational diseases" at the last seminar session.

The final (rating) score consists of module scores (maximum 100 points per module), the current score (maximum 10 points), and the score received on the test (maximum 100 points).

Assessment and evaluation criteria:

0-69 (unsatisfactory):

- Lectures:

- o Non-attendance of lectures or a large number of absences

- o Lack of lecture

- notes o Unsatisfactory behavior during the lecture

- Practical exercises:

- o Non-attendance of practical classes or a large number of absences.

- o Incorrect answer or refusal to answer

- o Lack of activity in the classroom

- o Low level of proficiency in the material.

- Curation sheet:

- o there are many errors.

- o Lexical and grammatical errors in assignments.

70-79 (satisfactory):

- Lectures:

- o Attending most of the lectures

- o Partial absence of lecture notes/incomplete taking notes

- Practical exercises:

- o Attending most of the practical classes

- o The answer is correct, but insufficient

- o Low activity in the classroom

- o Low level of proficiency in the material.

- Curation sheet:

- completed, but with errors

- o Lexical and grammatical errors in assignments.

80-89 (good):

- Lectures:
  - o Attending all lectures, skipping only for a good reason
  - o Availability of summaries of all lectures
- Practical exercises:
  - o Attendance of all practical classes, absences only for a good reason
  - o A correct, sufficient answer.
  - o Average activity in the classroom
  - o Average level of proficiency in the material.
- The curation sheet
  - o is executed mostly without errors 90-100 (excellent):
- Lectures:
  - o Attending all lectures, skipping only for a good reason
  - o Availability of detailed summaries of all lectures
- Practical exercises:
  - o Attendance of all practical classes, absences only for a good reason
  - o Regular correct answers, including using additional literature
  - o High activity in the classroom
  - o A free level of knowledge of the material.
- Curation sheet:
  - o executed without errors and borrowings
  - o There are no lexical or grammatical errors.

## UROLOGY

**Teachers: PhD Eduard Zubkov, PhD Ilyas Nuriev, Ayrat Nurtdinov**

**Building, Department, classroom #** Butlerova street 47, Department of Urology

**Contact details:**

- Telephone number: +79173962205 (PhD Ilyas Nuriev)
- E-mail address: ilyasrustamovich@mail.ru
- Office and working hours: Department of Urology (9-17)

**Total 108 h**

Lecture hours: 18 h

Class hours: 45 h

Self study hours: 45 h

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

**Course objectives: The purpose of mastering the discipline:**

To familiarize students with the most common diseases of the genitourinary system, issues of etiology and pathogenesis, methods of diagnosis, prevention and treatment of urological diseases.

**Tasks of the discipline:**

- Training in clinical symptomatology of urological diseases
- Training in modern methods of diagnosing these diseases
- Training in basic special and modern methods of treatment of urological patients
- Study of malignant diseases of the genitourinary system and urgent conditions of patients
- Mastering the basic practical skills necessary for the examination and supervision of urological patients
- Mastering the issues of medical and labor expertise, prevention and therapeutic measures in urological patients

**Course topics:**

**Calendar plan of lectures**

1. Semiotics of urological diseases. Instrumental methods of investigation in urology. Laboratory investigation.
2. Urological inflammatory diseases. Urosepsis.
3. Tuberculosis of the genitourinary system
4. Bladder and kidney cancers
5. Prostate cancer. Benign prostatic hyperplasia
6. Abnormal development of the urinary tract system
7. Nephroptosis. Hydronephrosis
8. Urolithiasis
9. Urgent conditions in urology

**Calendar plan of practical classes**

1. Semiotics of urological diseases. Methods of examination of urological patients
2. Urolithiasis. Hydronephrosis
3. Urological inflammatory diseases.
4. Bladder and kidney cancers: symptoms, diagnosis, treatment.
5. Prostate tumors: symptoms, diagnosis, treatment.
6. Abnormal development of the urinary tract system
7. Trauma of the urinary system and male genital system
8. Acute and chronic renal failure
9. Urgent conditions in urology

**Text books and required supplies:**

1. B.K Komyakov. Urology. 2021. 451p
2. Smith & Tanagho's General Urology EIGHTEENTH EDITION. 2012. 768p
3. Campbell-Walsh UROLOGY Ninth Edition. 2007. 528 p
4. The European Association of Urology (EAU) Pocket Guidelines 2023

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified

in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Standard control tasks or other materials necessary for the assessment of knowledge, skills, and (or) work experience characterizing the stages of competence formation in the process of mastering the educational program**

#### **Level 1 – assessment of knowledge**

The following types of control are used to evaluate learning outcomes in the form of knowledge:  
— **test;**

Examples of tasks:

1. What is affected by pyelonephritis: a) renal pelvis; b) glomerular system; c) interstitial kidney tissue; d) tubular apparatus; e) all of the above is true. 2. Which of the following are they contribute to the occurrence of chronic pyelonephritis: a) an infectious focus outside the organs of the urinary system; b) acute abdominal diseases; c) the presence of hepertonia; d) all of the above is true; e) urinary tract obstruction.

Evaluation criteria:

The score on the test is set in proportion to the proportion of correct answers: 90-100% - the score is "excellent" 80-89% - the score is "good" 70-79% - the score is "satisfactory" Less than 70% of correct answers – rated "unsatisfactory"

— **test work;**

Examples of tasks:

1. Urosemitotics. 2. Urolithiasis. 3. Specific and non-specific inflammatory diseases. 4. Tumors of the genitourinary system.

Evaluation criteria:

"Excellent" (90-100 points) – the work answers the question in full, the correct interpretation of the terms is given, the key questions are considered, the literature is correctly selected. "Good" (80-89 points) – the work answers the question in full, the correct interpretation of the terms is given, the key issues of the topic are partially considered, the literature is selected correctly, but does not go beyond the recommended one. "Satisfactory" (70-79 points) – the work responds to the question posed, but not fully, the correct interpretation of the terms is given, the key issues of the topic are partially considered, the literature is selected correctly, but does not go

beyond the recommended one. "Unsatisfactory" (0-69 points) – the work does not answer the question posed, the term is misinterpreted, the key issues of the topic are not touched upon, a high percentage of borrowings without references to scientific literature.

#### — **Oral presentations/reports;**

Examples of tasks:

- Modern treatment of urolithiasis;- Prevention of pyelonephritis.- Modern approaches to BPH. - Tuberculosis of the genitourinary system.- Benign tumors of urinary tract.

Evaluation criteria:

"Excellent" (90-100 points) – comprehensively understands the essence of the question, gives an accurate definition and an exhaustive interpretation of the basic concepts, builds an answer according to his own plan, accompanies the answer with new examples, freely applies knowledge in a new situation, is fluent in scientific terminology. "Good" (80-89 points) – correctly understands the essence of the question, gives an accurate definition and interpretation of basic concepts, builds an answer without his own plan, accompanies the answer with new examples, freely applies knowledge in a new situation, is fluent in scientific terminology. "Satisfactory" (70-79 points) – understands the essence of the question correctly, but there are certain gaps in the answer, gives an inaccurate definition and interpretation of basic concepts, builds an answer without his own plan, knows scientific terminology. "Unsatisfactory" (0-69 points) – misunderstands the essence of the issue, gives an inaccurate definition and interpretation. He builds an answer without his own plan, does not accompany the answer with new examples, does not know scientific terminology.

#### **Level 2 – assessment of skills**

The following types of control are used to evaluate learning outcomes in the form of skills:

##### — **analytical work with documents;**

Examples of tasks:

Writing case histories.

Evaluation parameters:

- 1.Objective description of the passport part of the medical history;
- 2.Objective assessment of the interrogation data, completeness of the collected anamnesis;
- 3.Completeness of the objective examination of the patient;
- 4.Description of the urological status;
- 5.Clear interpretation laboratory and instrumental examination methods;
6. Substantiation of the clinical diagnosis.

Evaluation criteria:

"Excellent" (90-100 points) – has excellent knowledge of the main symptoms and syndromes of the disease, the algorithm of diagnosis, the main diagnostic measures. "Good" (80-89 points) – has good knowledge about the main symptoms and syndromes of the disease, the algorithm of diagnosis, the main diagnostic measures. "Satisfactory" (70-79 points) – has an idea of the main symptoms and syndromes of the disease, the algorithm of diagnosis, the main diagnostic measures. "Unsatisfactory" (0-69 points) – he does not know the main symptoms and syndromes of the disease, the algorithm of diagnosis, the main diagnostic measures.

##### — **oral interview;**

Examples of tasks:

1. Methods of examination of urological patients.
2. ICD, clinic diagnostics, modern methods of treatment.
3. Specific inflammatory diseases of MPS.

4. Nonspecific inflammatory diseases of MPS.
5. Prostate adenoma.
6. Tumors of the MPS.
7. Urgent conditions in urology.

Assessment criteria:

"Excellent" (90-100 points) – comprehensively understands the essence of the issue, gives an accurate definition and an exhaustive interpretation of the basic concepts, builds an answer according to his own plan, accompanies the answer with new examples, freely applies knowledge in a new situation, is fluent in scientific terminology. "Good" (80-89 points) – understands the essence of the question correctly, gives an accurate definition and interpretation of the basic concepts, builds an answer without his own plan, accompanies the answer with new examples, freely applies knowledge in a new situation, is fluent in scientific terminology. "Satisfactory" (70-79 points) – correctly understands the essence of the question, but in there are certain gaps in the answer, gives an inaccurate definition and interpretation of basic concepts, builds an answer without his own plan, knows scientific terminology. "Unsatisfactory" (0-69 points) – misunderstands the essence of the question, gives an inaccurate definition and interpretation of basic concepts, builds an answer without his own plan, does not accompany the answer with new examples, does not know scientific terminology.

### **Level 3 – assessment of skills**

The following types of control are used to evaluate learning outcomes in the form of skills:  
— **situational task;**

Examples of tasks:

The patient is 28 years old, complained of pain in the right lumbar region, which increases with physical exertion. The pain goes away when you take a horizontal position. Objectively: asthenic physique, the lower pole of the right kidney is determined. What is the preliminary diagnosis? An algorithm for substantiating the diagnosis.

Evaluation criteria:

"Excellent" (90-100 points) – the task is completely solved, the diagnosis is correct. "Good" (80-89 points) – the task is completely solved, the diagnosis is incorrect. "Satisfactory" (70-79 points) – the problem has not been completely solved, the diagnosis has not been made. "Unsatisfactory" (0-69 points) – the problem has not been solved, the diagnosis has not been made.

## **PSYCHIATRY**

**Teachers: Prof. Svetlana V. Kuzmina, Prof. Leyla K. Shaidukova**

**Building, Department, classroom #** Volkova, 80, Department of Psychiatry and medical psychology, 2d floor

### **Contact details:**

- Telephone number: +78432643273 (prof. assistance Ellina Vladimirovna Kozlova)
- E-mail address: psykgmu@mail.ru
- Working hours: (9-15)

**Total hours — 108:**

Lectures 18 hours;  
Practical classes 45 hours;  
Independent work 18 hours;  
Control 27 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the professor. It is usually held for the course of students according to scheduler.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher. Contain activities with psychiatry patients on their mental status examination. To be held in the world of psychiatry hospital.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=2168> )

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the Psychiatry are development and formation of systematic knowledge and skills of diagnosing (recognition techniques), the basic methods of treatment and prevention of mental diseases and disorders of mental development, as well as socialization and rehabilitation of the mentally ill, alcohol and drug addictions. Necessary for the study of other academic disciplines and the acquisition of professional medical qualities (hereinafter - discipline).

### **Tasks of the discipline:**

To form knowledge in the field of:

- understanding the meaning the principles of the modern world and national classification of mental disorders;
- Know the legal order a psychiatric examination and involuntary hospitalization in a psychiatric hospital;
- Know the organization of mental health services in Russia;
- To know the basic psychotropic drugs, the principles of selection, contraindications to their destination, potential side effects;
- Know the research methods used in psychiatry, their diagnostic capabilities, indications for;
- Know the basic symptoms and syndromes of mental disorders and their diagnostic value, the role of these syndromes in the development of medical tactics;
- studying the details of the etiology and pathogenesis, prevalence, aspects of the most important manifestations, during, treatment, prognosis of major mental illness, the possibility of social adaptation and rehabilitation of these diseases;
- forming systematic knowledge of students on the main types of character pathology and the impact that may have on the eyes for mental and physical illnesses, on psychotherapeutic methods of communication with the patient;
- Know medical manipulations, environmental and social factors, which may be the cause of a person of mental disorders;
- Know the principles of prevention of mental illness;
- To be able to collect subjective and objective medical history information about the mentally ill and to conduct a preliminary analysis;
- To be able to promptly identify the most serious mental disorders that represent an immediate danger to life and health of the patient and those around him;
- To be able to formulate a preliminary opinion on the mentally ill and competently the direction of a psychiatric or substance abuse facility;

- To be able to provide emergency psychiatric care;
- Possess literacy skills and psychotherapeutic building a conversation with patients of different profiles and their families based on their personal characteristics, knowledge and leading motives.
- development of the student's professional self-awareness, his ability to use the acquired knowledge in the psychiatry and in the research activity of the future specialist

### **Course topics:**

#### **Calendar plan of lectures**

1. The object and purpose of Psychiatry The main stages of development of psychiatry.
2. The concept of mental disorders and diseases. Social and biological risk factors. Environmental psychiatry
3. General Semiotics of mental disorders I.
4. General Semiotics of mental disorders II.
5. Psychosomatics.
6. Anxiety and phobic disorders.
7. Mental disorders in organic brain lesions.
8. Schizophrenia.
9. Basic substance abuse syndromes. Drug addiction, substance abuse.

#### **Calendar plan of practical classes**

1. Structure of psychiatric aid. Mental patients examination methods. Treatment modes in psychiatry Safety rules in psychiatry worlds. Case problem solution.
2. Elements mental functions. Perception disorders. The associative process disorders (of form, speed, content, etc.). Clinical and prognostic difference between fixed and delusion ideas. Associations, concepts, judgments, conclusions as basic thought elements. Directly-efficient, specifically-creative, abstract-logical thinking formation in person's evolvement. Case study discussion.
3. Consciousness disorders. Motor field disorders. Detecting the kinds of orientation damaged in every single case (delirium, oneiroid, amnesia, twilight state, etc.), distinctive features of patients' behavior in every single case, possibility of socially dangerous behavior of patients with consciousness disorders. Case study discussion.
4. Affective and volitional disorders. The emotions formation. Concept of strong positive and negative emotions as signs of psychic production. Emotional poverty as negative symptomatology (defect). Physiological and pathological. Case study discussion.
5. Intellect and intellectual disorders. Derangement of memory and attention. Connection between attention and consciousness. Memory as reflection of previous experience, its connection with other psychic functions. Special attention is drawn to kinds of intellectual disorders: mental retardation and acquired dementia. Case study discussion.
- a. Module on topics 1-5.
6. Mental problem of non-psychotic register: anxious disorders, posttraumatic stress disorders, neuroses. The correlation between mentality and somatic processes. Anxious and stress-related disorders. Somatoform disorders. Pharmacological and psychological treatment. Case study discussion.
7. Personality disorders. Ontogenetic disorder, characterized by disharmony of psychical turn of mind and not undergoing any changes over the life. Psychotherapy technics. Case study discussion.
8. Schizophrenia. Schizophreniform disorder. Affective mood disorders. Psychopathologic, genetic, dynamic factors. Patients' social disadaptation, behavioral changes during different periods of disease. Pharmacological and psychological treatment. Case study discussion.
9. Alcoholism, alcoholic psychosis. Drug abuse. Acute alcohol intoxication. Stages of alcoholic inebriation. Acute alcohol intoxication therapy. Pathologic alcoholic inebriation, diagnostics



and psychiatric-legal assessment. Epidemiology. Pharmacological and psychological treatment. Case study discussion. Module on topics 6-9. Outcoming testing. Final test.

**Text books and required supplies:**

1. Oxford Textbook of Psychiatry. Edited by Michael Gelder, Nancy Andreasen, Juan Lopez-Ibor, Jr., and John R. Geddes. Oxford University Press, Oxford;
2. Burton N. Psychiatry. Acheron Press
3. E-textbooks provided by teachers during classes
4. LECTURIO platform.

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/mental status assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – «poor», 7 – «satisfactory», 8 – «good», 9 – «excellent» and 10 – «splendid». Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Exams* are held in forms of knowledge and skills evaluation on the discipline including the test, problem cases, oral and written questions or their combination. Grading: 0–69 – «poor», 70–79 – «satisfactory», 80–89 – «good», 90–100 – «excellent». Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Example of module No. 1. General psychiatry**

**A.** Evaluation of individual interview (survey)

**B. Tests:**

1. What are the clinical symptoms of the following indicate psychosensory disorder?
  1. rezonance
  2. macropsia
  3. derealization
  4. amnesia
  5. senestopatias
  6. confabulation
2. What are the clinical symptoms of the following indicate the Elementary hallucinations?

1. paresthesia
2. disorders "body schema"
3. photopsias
4. distorted perception of surrounding objects
5. acousma
3. Ability to formulate concepts and their compilation called:
  1. concrete thinking
  2. abstract thinking
  3. delusional thinking
  4. intellectualization
  5. rationalization
4. The ambivalence - this ...
  1. the alienation of his own thoughts, actions
  2. loss of desire, inactivity
  3. emergence of opposing trends in mental activity
  4. kind of amnesia

### **Example of module No. 2 on the section of psychiatry disorders**

#### **A. Case Studies**

Case 1.

Psychiatric brigade «first aid» due to a man of 40 years due to the fact that he does not sleep, despite the night, knocking on walls, loud foul language, talking with absent interlocutors. From the words of the neighbors in the dorm, the patient many years of alcohol abuse, including substitutes. Drinking heavily. Was drinking bout in nearly two weeks, the past does not drink for three days, as the money ran out. During examination of the patient to draw the attention fails, the mop is trying to extract from under the bed, something invisible. A presumptive diagnosis? Your tactics as the psychiatrist ambulance?

#### **B. Tests:**

1. Schizophrenia is characterized by all of these disorders, except:
  1. neurosis-like disorders
  2. delusional disorders
  3. hallucinatory-delusional disorders
  4. seizures
2. Negative symptoms of schizophrenia include (3 replies):
  1. hallucinations
  2. emotional dullness
  3. delirious
  4. social withdrawal
  5. apathy
3. Bipolar affective disorder is characterized by:
  1. frequency currents
  2. phase in the form of depression or mania
  3. the absence of dementia
  4. All of the above
  5. none of the above
4. To express the depressive phase of bipolar disorder is characterized by:
  1. motor inhibition
  2. decreased appetite
  3. suicidal thoughts
  4. longing
  5. All of the above
  6. None of the above

Each student should present specific topic by PPT.

### **EVALUATION OF THE ANSWER**

**Present PPT**– marked in 100 score rates

the product of independent work of the student, which is a public speech on presentation of the results solve a specific teaching and practice, teaching and research or scientific theme.

Criteria for evaluation of the report:

1. Compliance Rules (5-7 min.);
2. Disclosure report topics;
3. Fluency in content;
4. Weight collected theoretical material;
5. Presentation report (using boards, diagrams, tables, etc.);
6. Ability to comply with a predetermined presentation form it;
7. Summary conclusion to address the issue;
8. Answers to questions from the audience;
9. Quality content and selection of demonstration material;
10. Making a report in the form of theses.

For each test point a maximum of 10 points.

**Case Study**– marked in 100 score rates

a problematic task, in which the learner is offered to understand the real situation of professionally-oriented, needed to solve the problem. The student independently formulates the goal, finds and collects data, analyzes it, infer, looking for solutions to the problem, draw conclusions, proves an optimal solution of the situation.

Description of the evaluation scale:

- And less than 70 points - the content job is not realized, a product of inadequate instructions;
- 70-79 points - the serious errors of logic and factual nature, attempt to draw conclusions;
- 80-89 points - the job is done, but admitted one or two minor errors of logical or factual conclusions made;
- 900-100 points - the job is done, conclusions are made.

### **Tests.**

Testing is carried out to complete the module and is evaluated according to the provisions of GBOU HPE KSMU for "Balls and rating system."

Description of the evaluation scale:

- 90-100 points - set if the student answered 90% of the test questions.
- 80-89 points - set if the student answered correctly by 80% to 90% of the test questions.
- 70-79 points - set if the student answered correctly by 70% to 80% of the test questions.
- Less than 70 points - set if the student correctly answered at least 69% of the test questions

### **Question exam card #.....**

**Topic:** Delirium

1. Definition. Diagnostic criteria.
2. Causes of delirium
3. Delirium management

**The answer:**

1. Delirium, also known as acute confessional state, is an organically caused decline from a previously baseline level of mental function. It often varies in severity over a short period of time, and includes attentional deficits, and disorganization of behavior. It typically involves other cognitive deficits, changes in arousal (hyperactive, hypoactive, or mixed), perceptual deficits, altered sleep-wake cycle, and psychotic features such as hallucinations and delusions. Delirium itself is not a disease, but rather a set of symptoms.

The core symptoms of delirium are an impairment of level of consciousness and change in cognition that develops quickly and may fluctuate throughout the day. There must also be evidence that the disturbance in mental status is caused by a medical condition or a substance. The determined cause is then used to further classify the type of delirium that the patient is experiencing.. Other symptoms can include disorientation, thought disorder, memory problems, language disorder, sleep disturbance, delusions, mood lability, psychomotor changes (changes in rate of activity/movement), and hallucinations. There are several clinical subtypes of delirium that are based on the disorder's motoric presentation.<sup>1</sup> These subtypes of delirium are hypoactive, hyperactive, and mixed. The hypoactive subtype occurs in patients who appear apathetic, lethargic, and unaware. Given the quiet and withdrawn nature of their delirium, coupled with the lack of agitation, these patients' delirious states are often overlooked. Patients presenting with "failure to thrive," for example, are often found to have hypoactive delirium on close examination in the emergency department (ED). In contrast, clinicians rarely have trouble identifying the behavioral components of the hyperactive subtype of delirium, which is associated with restlessness, hallucinations, delusions, combativeness, and wandering. Patients with the hyperactive subtype of delirium may present a danger to themselves or others if the agitation is severe. In the mixed subtype of delirium, the presentation may vary throughout the day, with alternating periods of hyperactivity and hypoactivity.

2. The most common precipitants of a delirium episode are medications, infections, end-organ dysfunction (ie, cardiopulmonary, renal, or hepatic), electrolyte/metabolic derangement, and CNS disorders. Medications are commonly implicated in the development of delirium. A significant number of medications can cause a delirious state. However, certain medication classes are more notorious offenders than others. For example, narcotics, psychotropic, and medications with anticholinergic properties are common causative agents.<sup>34</sup> Some medications that are not traditionally thought of as anticholinergic, such as digoxin and histamine<sub>2</sub> receptor antagonists, possess anticholinergic activity and may contribute to the development of delirium.<sup>35</sup>

Infections as serious as sepsis or as varied as urinary tract infections, pneumonia, meningitis, and HIV infection may lead to delirium. Organ system dysfunction, such as pulmonary failure causing hypoxia, hepatic failure leading to hepatic encephalopathy, and renal failure resulting in uremia, may contribute to the occurrence of delirium as well.

Other causes of delirium are endocrinopathies, such as hypoglycemia and thyroid perturbations, and metabolic derangements, such as hyponatremia or hypocalcemia. When metabolic derangements are involved, it is often the acuity of the change in electrolyte levels, rather than absolute levels, that represents the greatest risk of development of delirium.<sup>1</sup> Seizures, cerebrovascular accidents (ischemic or hemorrhage), traumatic brain injuries, subdural hematomas, brain tumors (primary or metastases), and vasculitic insults are all examples of CNS pathology that may lead to a patient presenting to the ED secondary to a delirious state.

The environment is rarely, if ever, the only precipitant to the development of delirium. Therefore, the descriptive terms once often used to describe delirium, such as ICU psychosis, are inappropriate. Such terms imply that the environment alone is responsible for the altered mental state. This flawed assumption may lead to the opinion that no further

evaluation is required--a hazardous presumption because delirium is often the presenting syndrome for a wide variety of potentially dangerous medical conditions and therefore necessitates an appropriate medical evaluation.

3. The primary goal of symptomatic management is ensuring the safety of the patient and those around him or her. Symptomatic management of delirium consists of environmental manipulation and psychopharmacologic therapy.

**Antipsychotic medications.** Antipsychotic medications, which exhibit dopamine antagonism, are the cornerstone of symptomatic delirium treatment and often help ameliorate the symptoms of delirium even before the underlying cause of delirium is identified and corrected. Toward that end, antipsychotic medications can help calm delirious patients and improve cognition. Both hypoactive and hyperactive subtypes of delirium have been effectively managed with antipsychotics.

Antipsychotics have been shown to be superior to benzodiazepines in delirium not caused by alcohol or sedative-hypnotic withdrawal. Determination of the type and dose of antipsychotic medication to be used depends on multiple factors, including the patient's age, route of medication administration, degree of agitation, clinical setting, and risk of adverse effects. Regardless of which antipsychotic or dose is used, it is imperative to monitor patients closely for response and adverse effects. Once the delirium has cleared, a gradual tapering off of the antipsychotic medication should be initiated.

*Typical antipsychotics.* Historically, the high-potency typical antipsychotic haloperidol is the medication most often chosen for the symptomatic management of delirium. It has the desirable characteristics of being virtually devoid of anticholinergic effects, hypotensive properties, cardiotoxicity, and respiratory suppression. In addition, haloperidol may be administered orally, intramuscularly, or intravenously, although the intravenous route is not approved by the FDA.

Intravenous haloperidol is twice as potent as oral haloperidol. Despite this increased potency, intravenous haloperidol is associated with few of the extrapyramidal adverse effects that often complicate the use of oral or intramuscular haloperidol. Haloperidol's safety and effectiveness, even in very large doses, in seriously ill patients with delirium of varied causes is well represented in the literature. The low-potency typical antipsychotics, such as chlorpromazine, are associated with hypotension and anticholinergic adverse effects, which make them suboptimal in the treatment of delirium. *Atypical antipsychotics.* The atypical antipsychotics have also been used to manage the psychiatric symptoms of delirium. The improved neurological tolerability of atypical antipsychotics led to their increased use across disciplines and diagnoses. A review of the literature by Schwartz and Masand suggests that the atypical antipsychotics are effective and well tolerated in the treatment of patients with delirium. However, this conclusion was recognized by the authors to be limited by the fact that the literature to date consists mostly of case reports, small case series, and a few open-label prospective trials

**Benzodiazepines.** Management of alcohol-withdrawal and sedative-hypnotic-withdrawal delirium states requires the use of benzodiazepines. Delirium associated with seizure activity is also appropriately managed with benzodiazepines. In addition, benzodiazepines may augment the effects of high-potency typical antipsychotics in patients with severe refractory delirium, thereby reducing the total dose of antipsychotic required and improving tolerability. Lorazepam has several advantages over other benzodiazepines in the ED setting in that it has a rapid onset of action, a short duration of action, and a lack of active metabolites.

### **Criteria for evaluating the oral answer**

«Excellent» (from 90 till 100 points) - clearly formulated own position, combination of scientific argumentation with personal experience, correct use of scientific terminology, clear logical structure of the answer.

«Good» (from 80 till 89 points) - clearly formulated own position, the predominance of personal reflection on scientific argumentation (or vice versa), the correct use of scientific terminology, a clear logical structure of the answer.

«Satisfactory» (from 70 till 79 points) - implicitly formulated own position, the predominance of personal reflection on scientific argumentation (or vice versa), correct use of scientific terminology, implicit logic of the answer.

«Unsatisfactory» (less than 70 points) - implicitly formulated own position, or lack thereof, or a high share of borrowings, a complete lack of scientific reasoning and terminology, an implicit logic of work.

## DERMATOVENEROLOGY

**Teachers: Prof. Bulat Shamov, PhD Irina Khismatulina**

**Building, Department, classroom #** Republican Skin and Venerological Clinic, 4 Tolstoy str., 2nd floor, lecture hall, study room No. 2

### **Contact details:**

- Telephone number: +79503166820 PhD Irina Khismatulina, +79600544559 Prof. Bulat Shamov
- E-mail address: [xomenko-aa@mail.ru](mailto:xomenko-aa@mail.ru), shamovba@mail.ru
- Office and working hours: Department of Dermatovenerology (9:00-16:20)

### **Total hours — 108:**

Lectures 18 hours;

Practical classes 45 hours;

Independent work 45 hours;

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical classes** are aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1125>).

### **Course objectives: The purpose of mastering the discipline**

The purpose of mastering the discipline dermatovenerology is formation of systematic knowledge of general and special dermatovenerology, the principles of diagnosis, treatment and prevention of dermatoses and sexually transmitted infections, according to the requirements of the modern healthcare system to ensure high quality medical care to the population (hereinafter - discipline).

### **Tasks of the discipline:**

- The formation of skills to recognize the clinical manifestations of the most common and severe skin and venereal diseases based on knowledge of the characteristics of the dermatovenerological status.

- Forming systematic knowledge of students on methods of clinical examination of patients with skin and venereal diseases; diagnosis, identification of triggers, formation of an individual treatment plan for the patient in accordance with his diagnosis, indications and contraindications to treatment methods.
- The formation of skills to use clinical tests, samples and methods, etc., to confirm the diagnosis, the ability to interpret data from clinical and laboratory research methods, to make a clinical or preliminary diagnosis, to carry out differential diagnosis.
- Formation of systematic knowledge of students on principles of the main methods of primary and secondary prevention, with the basics of sanitary and educational work and organizational measures to reduce the incidence of infectious skin and venereal diseases.
- Teaching students to provide emergency medical care in case of emergency conditions in dermatological practice.
- Training in conducting dispensary supervision and rehabilitation of patients with chronic dermatoses;
- Formation of skills in studying scientific literature and official statistical reviews, information about modern information technologies in medicine and healthcare; to study the principles of storing, searching, processing and analyzing biomedical information, including using computer technology; to master the methods of mathematical statistics necessary for studying other academic disciplines and acquiring professional medical qualities as well as their further application in practical healthcare.

### **Course topics:**

#### **Calendar plan of lectures**

- 1 Methods of examination of a dermatological patient. Morphological elements of the rash.
- 2 Eczema. Dermatitis. Toxicoderma.
- 3 Fungal diseases. Microsporia. Trichophytosis. Favus.
- 4 Viral and bullous dermatoses
- 5 Skin collagenoses.
- 6 Tuberculosis of the skin. Leprosy
- 7 Introduction to venereology. Syphilis the primary and secondary periods.
- 8 Syphilis tertiary and congenital. Laboratory diagnosis of syphilis
- 9 Gonorrhea and non-gonorrheal urethritis.

#### **Calendar plan of practical classes**

- 1 . Methods of examination of a dermatological patient. Morphological elements of the rash.
- 2 . Patient curation
- 3 . Psoriasis. Lichen planus.
- 4 . Eczema.Dermatitis. Toxicoderma.
- 5 . Fungal diseases. Microsporia. Trichophytosis. Favus.
- 6 . Fungal diseases. Pityriasis.vesicolor. Epidermophytia. Rubrophytia. Candidiasis.
- 7 . Introduction to venereology. Syphilis the primary and secondary periods.
- 8 . Syphilis tertiary and congenital. Laboratory diagnosis of syphilis.
- 9 . Gonorrhea and non-gonorrheal urethritis. Analysis and submission of medical history and independent work. Practical skills in the discipline of dermatovenerology.

### **Text books and required supplies:**

1. Fayzullina. E.V., Abdrakhmanov A.R. Dermatology. Manual. Part 1. / Kazan: KSMU, 2015. — 64 p.

2. Fayzullina. E.V., Abdrakhmanov A.R. Venerology (STD). Manual. Part 1. / Kazan: KSMU, 2015. — 70 p
3. Koshkin, S. V. Clinical Manifestations of Early Stages of Syphilis. Atlas / S. V. Koshkin, T. V. Chermnykh. - Москва : ГЭОТАР-Медиа, 2023. - 240 с. - ISBN 978-5-9704-7395-5, DOI: 10.33029/9704-7395-5-CMESS-2023-1-240. - ЭБС "Консультант студента" : [сайт]. URL: <https://www.studentlibrary.ru/book/ISBN9785970473955.html>

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (written papers/oral examination/test/assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, oral examination, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “unsatisfactory”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “perfect”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Standard control materials for the assessment of knowledge, skills, and (or) work experience characterizing the stages of competence formation in the process of program development**

1. Level 1 – assessment of knowledge

The following types of control are used to evaluate learning outcomes in the form of knowledge: – tests;

Choose one correct answer

Test examples

001 PRIMARY ELEMENTS FOUND IN TERTIARY SYPHILIS

A bump

B spot

C vesicle

D blister



002 SYPHILITIC TUBERCLES ARE CHARACTERIZED BY

- A possibility of recurrence of scars
- B positive symptom of Benier–Meshchersky
- C dense consistency, painless on palpation
- D positive Auspitz sign

003 SCARS IN TUBERCULAR SYPHILIS ARE

- A bridge - like
- B stamped
- C hypertrophic
- D mosaic

Answers: 001 – A, 002 – B, 003 –G

Evaluation criteria:

The score on the test is set in proportion to the proportion of correct answers:

90-100% - the score is "excellent"

80-89% - the score is "good"

70-79% - the score is "satisfactory"

Less than 70% of correct answers – the score is "unsatisfactory".

– oral answer;

Example of the topics of the reports

1. Infectious erythema of the skin.
2. Genodermatoses. (Ichthyosis)
3. Genodermatoses. (Daria's disease. Deverji disease).
4. Skin lymphomas
5. Skin angiitis

Evaluation criteria:

"Excellent" – the report fully reveals the topic, the student answers all additional questions; tells, practically without looking into the text.

"Good" – the report reveals the topic, but requires additions, the student answers all additional questions; tells, based on the text, but not reading it.

"Satisfactory" – the report reveals the topic, but requires additions, the student cannot answer most of the additional questions, partially reads the text during the story.

"Unsatisfactory" – the report does not disclose the topic, the student cannot answer most of the additional questions, reads out the text.

–interview;

Example of questions.

1. Viral skin diseases.
2. Clinical picture of herpes simplex.
3. With what diseases is it necessary to differentiate rashes with herpes simplex? Make a differential diagnosis of herpes simplex with streptococcal impetigo.

Evaluation criteria:

- the assessment is "excellent" – the resident demonstrates knowledge of the material in the section, based on familiarization with mandatory literature and modern publications; actively participates in the discussion; gives logical, reasoned answers to the questions posed.

- the assessment is "good" – the resident demonstrates knowledge of the material in the section based on familiarization with the mandatory literature; participates in the discussion with

additional questions from the teacher; does not always give logical and reasoned answers to the questions posed.

- the assessment is "satisfactory" – the resident demonstrates insufficient knowledge of the material in the section, based on familiarization only with mandatory literature; does not participate in the discussion; finds it difficult to answer clarifying questions.

- the rating is "unsatisfactory" – lack of knowledge on the studied section; low activity in the discussion.

#### Level 2 – assessment of skills

The following types of control are used to evaluate learning outcomes in the form of skills:

- cases;

An example of a case.

A worker from the finished product coloring shop came to the reception with complaints about the phenomenon of redness on the skin of the face, neck, and hands. He is ill with periodic improvements throughout the year.

Objectively: the skin of the face, neck, hands and forearms is hyperemic, swollen, there are papules, microvesicles, weeping, serous crusts.

The boundaries of the foci are blurred.

What kind of disease can you think about?

Which studies will help to confirm the diagnosis?

The standard of the answer:

Professional eczema. It is necessary to conduct provocative tests outside the exacerbation of dermatosis.

#### Evaluation criteria

- excellent assessment – correct assessment of the proposed clinical situation; knowledge of theoretical material, a complete answer to the questions posed;

- rating "good" – correct assessment of the proposed situation, minor difficulties in answering questions;

- assessment "satisfactory" – difficulties in assessing the proposed situation; incomplete answer requiring leading questions from the teacher;

- the rating "unsatisfactory" is given to the resident if the work is not completed; incorrect assessment of the situation; incorrect answer to questions.

#### Level 3 – assessment of skills

The following types of controls are used to evaluate learning outcomes in the form of skills:

- cases for decision-making in a non-standard situation (a situation of choice, multiple alternatives, a problematic situation);

Example.

A 48-year-old patient, a calf calf, was referred from the FAP, with a diagnosis of trichophytia of the scalp. The woman was in contact with sick animals (young cattle), however, according to the words, the animals were vaccinated by the veterinary service of the state farm.

On the occipital surface of the scalp on the right there is a focus of infiltration with clear boundaries the size of a 5 kopeck coin, sharply delimited hemispherical nodes of a bluish-red color, with purulent discharge from each hair follicle.

1. Draw up and justify the patient's examination plan

2. Suggest the most likely diagnoses based on the survey data

3. Make a differential diagnosis of diseases in which there is a similar hair lesion?

4. Which systemic drug group would you recommend to the patient, with positive microscopic examination results for *Trichophyton verrucosum*, *Trichophyton mentagrophytes* var. *Gypseum*. in case of the absence of a greenish glow in the luminescent diagnosis?
5. What preventive measures are carried out when a contagious fungal disease is detected?

The standard of the answer

1. The patient is recommended to carry out:

- 1) Fluorescent diagnostics under a Wood lamp – with infiltrative suppurative trichophytia, there is no greenish glow of the affected hair, in the presence of this glow, it is assumed that a fungus of the genus *Microsporum* is affected.
- 2) Microscopic examination: scraping from the affected area, hair examination to identify fungi of the genus *Trichophyton verrucosum*, *Trichophyton mentagrophytes* var. *Gypseum*.
- 3) Bacteriological examination for fungi
- 4) Definition of the triad of psoriatic phenomena to exclude psoriasis

2. Infiltrative suppurative trichophytia of the scalp, psoriasis, microsporia of the scalp and smooth skin.

Due to the presence of a number of diseases, the clinic of which is similar to the clinic observed in the patient, differential diagnosis is carried out with:

1. Microsporia (infiltrative form) of the scalp
2. Psoriasis
3. Folliculitis of the deep scalp

3. Microsporia of the scalp are characterized by rounded, sharply delimited large ones (up to 2-3 cm or more) foci, the surface of which is covered with a layer of tightly seated bran-like scales of grayish-white color against a background of weakly expressed erythema, hair breakage at a height of 6-8 mm above the skin; a green glow is noted in the rays of Wood's lamp.

For psoriasis, when the scalp is affected, diffuse peeling or sharply delimited layers of scales are characteristic, often capturing the surrounding, smooth skin; the hair itself is never affected; the lesion has a focal character, located on the back of the head, temples, crown, in the form of clearly towering plaques; at the same time, a symptom of the psoriatic triad, an isomorphic reaction; in There is no green glow in the rays of Wood's lamp.

Folliculitis of the scalp is characterized by the presence of cone-shaped pustules of large size (0.5-0.7 in diameter), completely engulfing the hair follicle, permeated with hair, opening with the release of pus; green glow is not observed in the rays of the Wood lamp.

4. The positive results of microscopic examination make it possible to assume that the hair is affected by fungi of the genus *Trichophyton verrucosum*, *Trichophyton mentagrophytes* var. *Gypseum*.

Systemic therapy with antifungal drugs is required. In infiltrative suppurative trichophytia, griseofulvin is used, which is prescribed at a dose of 12 mg / kg per day.

5. If mycosis is detected in a patient, it is necessary to carefully examine all family members, the work collective in which he was, and all persons who were in contact with him. Vaccination of young animals is carried out by the veterinary service of the organization.

Clothes and bed linen are boiled for 15-20 minutes and ironed. The current and final disinfection of the room is carried out.

In the institution where the case of infiltrative trichophytia occurred, quarantine is imposed: for trichophytia – for 3 weeks, with mandatory weekly clinical examination by a dermatologist.

Evaluation criteria:

"Excellent" – the answer is correct, scientifically reasoned, with links to the topics covered.

"Good" – the answer is correct, scientifically reasoned, but without references to the topics covered.

"Satisfactory" – the answer is correct, but not scientifically reasoned, or the answer is incorrect, but an attempt is made to justify it from alternative scientific positions covered in the course.

"Unsatisfactory" – the answer is incorrect and not scientifically reasoned.

## **PEDIATRIC SURGERY**

**Teachers: Prof. Ildar Nurmeev, PhD Aydar Zakirov**

**Building, Department, classroom #** DRKB, Terminal 7, Department of Pediatric Surgery, 1.01, 1.08

**Contact details:**

- Telephone number: 89178783450 (Prof. Ildar Nurmeev)
- E-mail address: nurmeev@gmail.com
- Office and working hours: 1.02 (9-14)

**Class hours:**

**Total 108 h:**

Lectures - 18 hours;

Practical classes – 45 hours;

Independent work – 45 hours.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://kazangmu.ru/departments/it/edu-portal>).

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **pediatric surgery** discipline are formation of systematic knowledge and skills in the field of clinical manifestations of surgical diseases in children, principles of diagnosis and treatment in children of different ages of surgical and orthopedic pathology, traumatic injuries, malformations, emergency conditions.

**Tasks of the discipline:**

To form knowledge in the field of:

- -Acquisition of knowledge in the field of the most common surgical diseases in children and their clinical manifestations; Study of methods of physical, laboratory and instrumental diagnostics in children, allowing to verify the diagnosis of a surgical disease in children;
- -Knowledge of the choice of optimal methods of treatment, prevention, rehabilitation for surgical diseases in children, based on knowledge of modern concepts of the pathogenesis of diseases and tactical principles;

- -Training in providing assistance in the event of emergency conditions resulting from traumatic injuries or complications of surgical pathology;
- -Formation of communication skills with patients and their parents, taking into account ethics and deontology, depending on the identified pathology and age characteristics of patients.

### **Course topics:**

#### **Calendar plan of lectures**

- 1.Surgical infectious diseases
- 2.Features of fractures in children
- 3.Features of pediatric orthopedics
- 4.Torticollis
- 5.Scoliosis
- 6.Congenital hip dislocation
- 7.Talipes
- 8.Inflammatory disease of lung
- 9.Osteomyelitis in children

#### **Calendar plan of classes**

- 1.Acute appendicitis in children.
- 2.Peritonitis in children.
- 3.Congenital ileus
- 4.Acquired ileus
- 5.Malformations of esophagus
- 6.Chemical burns of esophagus. Cicatricial stenoses of esophagus in children.
- 7.Supplicative inflammations of soft issues at newborns and infants.
- 8.Acute hematogenous osteomyelitis.
- 9.Gastrointestinal bleeding in children.
- 10.Semiotics of urological diseases in children. Cryptorchism. Varicocele. Inflammatory diseases of scrotum.
- 11.Outcoming testing. Final test

### **Text books and required supplies:**

1. 1.Pediatric Surgery, 2-Volume Set (Handcover) by James A. O'Neil, Arnold G. Coran, Eric Fonkalsrud, Jay L. Grosfeld (Editor) 6 edition (May 25, 2006), Mosby.
2. 2.Holcomb and Ashcraft's Pediatric Surgery. 7th Edition - May 29, 2019. Authors: George W. Holcomb, J. Patrick Murphy
3. 3.Operative Pediatric Surgery, 2e. Moritz M. Ziegler, MD, Richard G. Azizkhan, MD, PhD (Hon), Daniel von Allmen, MD, Thomas R. Weber, MD

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, class work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1.**

1. Describe the basic principles of diagnosis and surgical treatment of acute appendicitis in children.

### **Example of module No. 2.**

6. Features of urological diseases in children: etiological prerequisites and clinical picture.

## **EVALUATION OF THE MODULE ANSWER**

The question card of the module consists of 5 tasks.

Questions 1 - 5 on pediatric surgery are evaluated by 20 points (with the step of 5 points)

\* The teacher has the right to remove from 1 to 3 points for incorrect writing of reactions, formulas, and equations

Total:  $5 \times 20 = 100$  points

## **MEDICAL PSYCHOLOGY**

**Teachers:** Sofja Urjevna Osokina, Anna Alexandrovna Akberova,

**Building, Department, classroom** NUK, 3<sup>rd</sup> floor, medical and general psychology and pedagogy department - room 334

### **Contact details:**

- Telephone number: +78432369669
- E-mail address: med.psychologyKSMU@yandex.ru
- Office and working hours: Monday – Friday from 9 a.m. to 18 p.m.

### **Total: 72 h**

Lectures – 10 h;

Practical classes – 35 h;

Self-study – 27 h;

### **Course description:**

The course is dedicated to medical psychology and its sections such as: psychodiagnostics, psychopathology, psychosomatics, psychotherapy.

The course addresses the following issues: basic principles and laws of mind work, cognitive disturbances, mental and personality disorders, the perspective of treatment through the main psychotherapy approaches (psychodynamic, behavioral, humanistic) and one of the main parts of the treatment – doctor-patient communication.

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher, involving experimental scientific research activities. It requires the use of special psychological methods (tests, questionnaires etc.).

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material)

### **Course objectives:**

The objectives of the discipline "Medical Psychology" are the forming of complete view to the health of the person including both – medical and psychological knowledge, understanding the role of emotions and stress in the development of somatic diseases (psychosomatics), development of doctors' communicative skills.

### **Tasks of the discipline:**

To form knowledge in the field of:

- be familiar with psychology of the patient and the concept "subjective" and "objective" perception of the illness and understand the difference between doctor's and patient's perspective (disease and illness)
- be familiar with and able to discuss several different psychotherapeutic approaches
- be able to apply these approaches in reviewing each of the cases covered in the course.
- be familiar with and able to discuss the DSM-V multi-axial classification of mental disorders and the criteria for diagnosing these disorders.
- be able to apply the DSM-V classification system in determining the appropriate diagnosis of clinical cases.
- be familiar with deontology
- And during professional training should
- be able to apply professional ethical norms and
- demonstrate professional communicative skills (Calgary-Cambridge model of communication) for effective interaction with patients (clinical interview)

### **Course topics:**

#### **Calendar plan of lectures:**

1. Introduction to clinical psychology. Research methods and psychodiagnostics
2. Mental disorders (depression and anxiety)
3. Personality: temperament, character, accentuations
4. Personality disorders
5. Stress and coping strategies
6. Defense mechanisms
7. Psychology of a patient. Reaction to the disease

8. Psychosomatics
9. Communication between doctor and patient
10. Psychotherapy and its modern approaches (psychodynamic, cognitive, humanistic)

**Calendar plan of laboratory classes:**

1. Introduction to medical psychology. Psychodiagnostics. Clinical Interview
2. Personality: temperament, character and personality disorders (DSM-V)
3. Psychology of the patient: different types of the patients and their reaction to the disease. Subjective and objective perception of the illness. Understanding the patient's perspective
4. Seminar
5. Psychology of stress: emotions, feelings, alexithymia. Coping strategies and defense mechanisms. Psychosomatics.
6. Depression, anxiety: diagnostics and treatment
7. Communication between doctor and patient. Calgary-Cambridge model of communication. Training: clinical interview
8. Final trials: test and applying knowledge of the clinical interview to write a psychological conclusion about the patient (according to the tests results)

**Text books and required supplies:**

1. Introduction to Psychology, 8th edition. James W. Kalat. North Carolina State University. 2008
2. Biological Psychology 10<sup>th</sup> edition. James W. Kalat. North Carolina State University. 2009
3. The Psychology of Verbal Communication. Robert M. Krauss Columbia University *International Encyclopedia of the Social and Behavioral Sciences* 2002.
4. Psychology, 11th Edition 11th Edition by David G. Myers, C. Nathan DeWall Publisher: Worth Publishers; 11th edition (January 12, 2015)
5. Psychology Miles Hewstone, Frank D. Fincham and Jonathan Foster Blackwell Publishing (2005)

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment



- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

**Requirements:**

- A personal copybook is required for every practical class and lecture
- Make notes during the lecture (you should use your notes for the monitoring progress preparation)
- Be prepared for the control work after each lecture
- All the psychological test results should be kept in a personal copybook during the whole semester

**Examples of the final test questions**

1. Debra is very unsure of herself and does not like making her own decisions. As a teenager, she relied on her parents to arrange social events for her and even married her husband based on their suggestion that he would be a good match rather than her own romantic feelings. In her marriage, she goes along with whatever her husband wants, even when it is not to her liking. Which of the following best describes Debra's personality disorder?

- A – narcissistic
- B - self-defeating
- C - dependent
- D – histrionic

2. Concentration on subjective painful and other unpleasant sensations. The desire to talk constantly about them to others. On their basis, the exaggeration of the real and the search for non-existent diseases and suffering. Exaggeration of side effects of drugs. Combination of desire to be treated and disbelief in success, requirements of careful inspection and fear of harm and pain of procedures. A patient with this type of response is prone to self-centeredness.

- A – sensitive
- B – egocentric
- C - paranoiac
- D – hypochondriac

3. Unwillingness to become an adult is the unconscious reason of this psychosomatic disorder:

- A – Bulimia
- B – Asthma
- C - Anorexia
- D – Depression

4. This psychological trait is regarded as one the reasons of psychosomatic disorders?

- A – Primary alexithymia
- B – Cognitive empathy
- C – Hypochondria
- D – Internal locus of control

5. Chose the option with the terms in proper order according to Hans Selye's theory of Stress:
- A – Anxiety, Resistance, Exhaustion
  - B – Exhaustion, Anxiety, Resistance
  - C – Anxiety, Exhaustion, Resistance
  - D – Exhaustion, Resistance, Anxiety
6. A series of behavioral responses that lead us to attempt to reduce drives and to attain goals by comparing our current state with a desired end state conceptualized as:
- A – passion
  - B – mood
  - C – motivation
  - D – emotion
7. Karen decides to go out and party the whole week before her midterm instead of study. She fails her midterm, and tells her parents that she failed it due to being sick and not getting enough sleep. This is an example of what defense mechanism?
- A – Repression
  - B – Denial
  - C – Sublimation
  - D – Projection
8. The difference between basic and secondary emotions is that:
- A – Basic emotions always have cognitive interpretation in comparison with secondary emotions
  - B – Basic emotions are running through fast brain pathway when secondary emotions are running through slow pathway
  - C – Secondary emotions mostly related to limbic system: thalamus and amygdala
  - D – Pathway of basic emotion goes from thalamus to the frontal lobes then to amygdala
9. The concept of collective unconscious belongs to:
- A – Jung
  - B – Freud
  - C – Maslow
  - D – Rogers
10. Match the somatotype with its description according to Sheldon: active, adventurous, desire for power and dominance, courageous, indifference to what others think or want, zest for physical activity, competitive, love of risk
- A – Endomorph
  - B – Cyclomorph
  - C – Mesomorph
  - D – Ectomorph
  - E – Antimorph

## ANESTHESIOLOGY AND INTENSIVE CARE

**Teachers: PhD Veronika Davydova, Shamil Gardanov**

**Building, Department, classroom #** GUK, center of practical skills, block C, Republican Clinical Hospital (RCH)

**Contact details:**

- Telephone number: +79196326211 (PhD Veronika Davydova)
- E-mail address: airmk@mail.ru
- Office and working hours: PCH (8-16)

**Total hours —108:**

Lectures 18 hours;

Practical classes 45 hours;

Independent work 45 hours.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=2241>).

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **Anesthesiology and Intensive Care** discipline are formation of the professional competencies (PC) for the diagnosis and differential diagnosis of emergency conditions which are based on the knowledge of propedeutical and laboratory-instrumental tests in adults and adolescents; to study of the modern capabilities of the anesthesiology and intensive care services used in the medical diagnostic process; issues of assessing the quality of emergency care and anesthetic management;

**Tasks of the discipline:**

To form knowledge in the field of:

- refining of universal cultural and professional competencies acquired during training in other academic disciplines, for the aim of formation of an algorithm for diagnosis and emergency care in life-threatening conditions and performance of, if necessary, cardio-pulmonary resuscitation;
- the formation of the professional competencies (PC) for the diagnosis and differential diagnosis of emergency conditions which are based on the knowledge of propedeutical and laboratory-instrumental tests in adults and adolescents;
- the study of the modern capabilities of the anesthesiology and intensive care services used in the medical diagnostic process; issues of assessing the quality of emergency care and anesthetic management;

**Course topics:**

**Calendar plan of lectures**

1. Introduction to the specialty. Tasks of the service of anesthesiology and intensive care. Types of intensive care, the main syndromes and service organization of organ support. Kazan scientists' role in the formation of the specialty of anesthesiology and critical care medicine.

- Specialty's ethics and deontology. Issues of communication with critical patient's family.
2. Cardiopulmonary resuscitation. Features of CPR in children and newborns. Advanced cardiopulmonary resuscitation methods. Training course. Monitoring vital functions during anesthesia and intensive care. Blood gas and acid-base analysis
  3. Introduction to anesthesiology. General anesthesia, types, indications. Regional anesthesia, classification, technique, indications and contraindications. Malignant hyperthermia.
  4. Intensive care for acute circulatory disorders. Shock, types. ECMO
  5. Intensive care for acute respiratory failure. Mechanical ventilation, types, modes, basics
  6. Intensive care in stroke, coma of varying etiology, traumatic brain injury, subarachnoid hemorrhage. Brain death diagnostics
  7. Sepsis, septic shock. Multiple organ failure in sepsis. Hemodialysis. Fundamentals of efferent therapy.
  8. Acute poisonings and general toxicology issues.
  9. Fluid therapy. Parenteral and enteral nutrition. Basics, indications, contraindications. Calculation of nutrition for underweight in intensive care

### **Calendar plan of laboratory classes**

#### **Module 1**

1. Introduction to the specialty. Tasks of the service of anesthesiology and intensive care. Types of intensive care, the main syndromes and service organization of organ support. Kazan scientists' role in the formation of the specialty of anesthesiology and critical care medicine. Specialty's ethics and deontology. Issues of communication with critical patient's family. Sanitary and anti-epidemic rules for medical personnel in the anesthesiology and intensive care department. Electrical safety rules when using equipment in the intensive care unit and in the operating room. Ethics and deontology in the department of anesthesiology and intensive care during communication with colleagues, patients, patients' families. Rules for working with a robot when performing medical manipulations and refining cardiopulmonary resuscitation skills.
2. Cardiopulmonary resuscitation. Features of CPR in children and newborns. Advanced cardiopulmonary resuscitation methods. Training course. Work out cardiopulmonary resuscitation on a mannequin according to the checklist provided by the Methodological Accreditation Center. To familiarize the student with the legal component of CPR. Work out basic and advanced cardiopulmonary resuscitation in adults, children and newborns. To refine monitoring skills and to interpret variables of vital functions on a mannequin, such as ECG, blood pressure, pulse oximetry, capnography, blood gas and acid-base analysis, indicators of invasive hemodynamics, temperature.
3. Monitoring vital functions during anesthesia and intensive care. Blood gas and acid-base analysis. To refine monitoring skills and to interpret variables of vital functions on a mannequin, such as ECG, blood pressure, pulse oximetry, capnography, blood gas and acid-base analysis, indicators of invasive hemodynamics, temperature.
4. Introduction to anesthesiology. General anesthesia, types, indications. Regional anesthesia, classification, technique, indications and contraindications. Malignant hyperthermia. Work out the technique of spinal puncture. To familiarize the student with the features of epidural puncture. Develop the skill of calculating anesthetic agents. Work out the skill of intraoperative anesthesia. Work out the technique of spinal puncture. To familiarize the student with the features of epidural puncture. Develop the skill of calculating anesthetic agents. Work out the skill of intraoperative anesthesia.

#### **Module 2**

1. Intensive care for acute circulatory disorders. Shock, types. ECMO. To familiarize the student with the skill of calculating infusion solutions (Volume, speed). To familiarize the student with the skill of infusing solutions (intravenous dropper, administering infusion through a pump).

2. Intensive care for acute respiratory failure. Mechanical ventilation, types, modes, basics. To develop the ability to assess breathing in a patient in severe condition on a mannequin and in the intensive care unit. Master the skill of orotracheal intubation on a mannequin. To familiarize with the skill of invasive and non-invasive mechanical ventilation in the intensive care unit.
3. Intensive care in stroke, coma of varying etiology, traumatic brain injury, subarachnoid hemorrhage. Brain death diagnostics. Master the skills of neurological monitoring in intensive care. Conduct differential diagnosis between different forms of stroke. To be able to differentiate the coma of toxic origin. Master the monitoring of vital functions of the unconscious patient. Master the basics of intensive care and general care in unconscious patient.
4. Sepsis, septic shock. Multiple organ failure in sepsis. Hemodialysis. Fundamentals of efferent therapy. Master the skill of diagnosing sepsis in the intensive care unit patient. Master the skill of providing intensive care for multiple organ failure. To acquaint with the skill of the hemodialysis technique.
5. Acute poisonings and general toxicology issues. Work out detoxification skills on a mannequin (gastric lavage). Introduce the skills of efferent therapy. To master the skill of removing poison from the surface of the skin after being bitten by poisonous snakes and insects.
6. Fluid therapy. Parenteral and enteral nutrition. Basics, indications, contraindications. Calculation of nutrition for underweight in intensive care. To master the calculation of parenteral nutrition skills for a critically ill patient in the intensive care unit.

#### **Text books and required supplies:**

1. Marino's The ICU Book 4<sup>th</sup> Edition. Keith Donnellan, Nicole Dernoski, Bridgett Dougherty, Beth Welsh, Dan Dressler, Doug Smock. —2014—1059 p.
2. Yatin Mehta, Jeetendra Sharma. Textbook of critical care/ Jaypee Brothers Medical Publishers. — 2016. — 1070 p.
3. Davydova V.R/, Bayalieva A.Zh. Anesthesiology and intensive care : an educational and methodical guide for students of the specialty 31.05.01 General medicine/ Kazan: KSMU, 2022. — 77 p.
4. Advanced cardiovascular life support. Michael W.Donnino, Kenneft Navarro, Katherine Berg and etc. —2015—206 p.
5. Miller. Anesthesia, 7<sup>th</sup> edition, 2015. — 1020 p.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other). Program consist of two modules and final test/

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Module* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass module.

*Final Test* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given 1 attempt to pass.

Overall student rating is build up from class attendance, module and routine test results, final test assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Example of module Assessment methods**

1. Evaluation of theoretical knowledge:

- a) modules (multiple-choice questions);
- b) quiz;
- c) report;
- d) presentation;
- e) group work.

2. Evaluation of competence: a clinical task, a case study

3. Evaluation of manual skills with use of mannequins.

Criteria of evaluation (% of the overall mark)

- a) 90-100% of the points are set if the student correctly answered 90% of the questions of the task,
- b) 80-89% of the points are awarded if the student answered correctly from 80-90%,
- c) 70-79% of the points are awarded if the student answered correctly from 70-80%,
- d) Less than 70% is set if the student correctly answered less than 69% of the questions of the task.

**MCQ 1 CPR**

1. What is compressions/breaths ratio for CPR in infants and toddlers?

- (a) 30:2
- (b) 15:2
- (c) 10:2
- (d) 5:2

2. The preferable chest compressions depth in adult CPR is

- (a) 1 in
- (b) 3 in
- (c) 4-5 cm
- (d) 5-7 cm

3. What shock energy is indicated in a cause of asystole?

- (a) 360 J monophasic
- (b) 150 J monophasic
- (c) 150 J biphasic
- (d) No shock is indicated

4. What maximum energy should be used for monophasic defibrillation?

- (a) 150 J
- (b) 220 J
- (c) 360 J
- (d) 300 J

5. Which of the following is an indication for cardioversion?

- (a) Ventricular tachycardia with pulse
- (b) Asystole
- (c) Pulseless electrical activity
- (d) Ventricular fibrillation

6. Which cause of cardiac arrest is considered as reversible?

- (a) Hypermagnemia
- (b) Hyperventilation
- (c) Hypercalcaemia
- (d) Hyponatraemia

7. What chest compression rate should be maintained?

- (a) 60 compressions per minute
- (b) 90 compressions per minute
- (c) 100 compressions per minute
- (d) 150 compressions per minute

8. What antiarrhythmic is recommended for use during CPR?

- (a) Lignocaine
- (b) Lidocaine
- (c) Amiodarone
- (d) Cordarone

9. Is atropine sulfate recommended for conventional CPR in cardiac arrest?

- (a) Yes
- (b) No

10. What technique is used in Extracorporeal CPR?

- (a) Advanced airway management
- (b) EC Membrane Oxygenation
- (c) Cardiopulmonary Bypass
- (d) Haemodialysis

Topics for reports and presentations

1. Multimodal analgesia - as the main principle of postoperative analgesia. Characterization of drugs used in pain relief after surgery
2. Malignant hyperthermia. Etiology, pathogenesis, emergency care
3. Extracorporeal membrane oxygenation. Directions, technique.
4. Pulmonary thromboembolism
5. First aid for drowning, aspiration by foreign bodies, pneumothorax.
6. Principles for diagnosing brain death
7. DIC syndrome

Clinical task for group work

You are called to a ward by a nurse. A patient is lying on the floor. His conscious is confused, complaints of weakness, dizziness, shortness of breath. Skin is pale, with cold sweat. ABC

assessment: breath rate = 13/min, cyanosis of lips. BP = 70/40 mm Hg, Pulse = 122/min. According to data collected from nurse, patient's condition became worse immediately after ceftriaxone injection. Your immediate actions:

- (a) Call Anesthesiologist
- (b) Start CPR
- (c) IV epinephrine 50-100 mcg, Ringer lactate infusion 1000 ml
- (d) IV Chlorphenamine 10 mg, IV hydrocortisone 200 mg

**Attendance:** (% of the overall mark)

- a) 90-100% of the points are set if the student correctly answered 90% of the questions of the task,
- b) 80-89% of the points are awarded if the student answered correctly from 80-90%,
- c) 70-79% of the points are awarded if the student answered correctly from 70-80%,
- d) Less than 70% is set if the student correctly answered less than 69% of the questions of the task.

## OBSTETRICS AND GYNECOLOGY

**Teachers: Ass.Prof. Albina Ganeeva, Ass.Prof. Yuri Orlov, Ass.Prof. Alina Ibragimova, Ass. Elvira Galimyanova, Ass. Polina Kapelyushnik**

**Building, Department, classroom #** The Maternity Hospital of the State Autonomous Healthcare Institution "City Clinical Hospital No. 7 named after M.N. Sadykov", The Maternity Hospital of State autonomous healthcare Institution "Clinic of the Medical University", Department of Obstetrics and gynecology named after prof. V.S. Gruzdev

**Contact details:**

- Telephone number: 89172531578 (Ass.Prof. Albina Ganeeva)
- E-mail address: a.v.ganeeva@gmail.com
- Office and working hours: 08.00 am-05.00 pm (Monday-Saturday)

**Total hours: 504 h.**

Lectures – 84 h;

Practical classes – 200 h;

Independent work: 184 h;

Control: 36 h.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=315>)

**Course objectives:** The purpose of mastering the discipline



Training of a highly qualified doctor with knowledge in the discipline “Obstetrics and gynecology” taking into account further training and professional activity in the specialty «General medicine».

**Tasks of the discipline:**

Mastering the theoretical foundations of obstetrics and gynecology, learning the standards of diagnosis and treatment, mastering the skills to solve clinical cases, writing case histories, improving skills.

**Course topics:**

**Calendar plan of lectures**

1. Obstetrical heritage and organizational aspects of the women's health care system
2. Ovarian - menstrual function and its regulation. Fertilization, stages of the intrauterine growth of fetus. Placenta, its anatomy and functions.
3. The assessment of antenatal fetal condition.
4. Perinatal care.
5. Hypertensive disorders in pregnancy. Preeclampsia and eclampsia.
6. Contracted pelvis.
7. Contracted pelvis (Part 2).
8. Abnormal labour.
9. Obstetric septic complications.
10. Obstetric surgery.
11. Obstetric trauma.
12. Obstetric trauma (part 2)
13. Placental insufficiency.
14. Obstetric hemorrhage.
15. Obstetric hemorrhage (part 2).
16. Cardiac-vascular pathology in pregnancy.
17. Kidney and liver disorders in pregnancy.
18. Endocrinological disorders in pregnancy.
19. Miscarriages.
20. Postterm pregnancy.
21. Acute abdomen in obstetrics.
22. Multiple pregnancy.
23. Antepartum infectious diseases of the fetus (part 1).
24. Antepartum infectious diseases of the fetus (part 2).
25. Modern principles of the menstrual function regulation. Links between neurohumoral glands.
26. The diagnosis and treatment of menstrual function disorders.
27. Amenorrhea.
28. PCOS. Premenstrual syndrome.
29. Climacteric syndrome
30. Endometriosis.
31. Uterine fibroid.
32. Trophoblastic disease.
33. Ectopic pregnancy.
34. Acute abdomen in gynecology.
35. Artificial abortion. Its nearest and long-term complications.
36. Sexually transmitted infections.
37. Family planning. Contraception.
38. Infertility.
39. Background and precancerous diseases of the uterine cervix. Cervical cancer.
40. Endometrial cancer.

41. Ovarian tumors and cysts.
42. Ovarian cancer.

### **Calendar plan of practical classes**

#### **Module 1. Physiological obstetrics**

1. Topic 1.1. Introductory lesson. Principles of obstetric care organization: out- and inpatient clinics. The structure of delivery unit.  
Topic 1.2. Anatomy and physiology of female reproductive system.
2. Topic 1.3. Female pelvis as an object of labour. Fetus as an object of labour.
3. Topic 1.4. Physiology of pregnancy (fertilization, placenta, fetus). Changes in the female organism during pregnancy.
4. Topic 1.5. Methods of examination in obstetric practice. Fetal monitoring. Calculation of the gestational age and the expected date of labour.
5. Topic 1.6. Mechanisms of labour. The influence of the mechanism of labour on the shape of the head of a newborn. Anomalies of head engagement.
6. Topic 1.7. Physiology and management of labor in the I, II and III stages. Postpartum period.
7. Module on topics 1.1-1.7.

#### **Module 2. Introduction to pathological obstetrics. Obstetric surgery.**

8. Topic 2.1. Breech presentation.
9. Topic 2.2. Contracted pelvis.
10. Topic 2.3. Multiple pregnancy.  
Topic 2.4. Postterm pregnancy.
11. Topic 2.5. Obstetric surgery: amniotomy, episiotomy, application of obstetric forceps, vacuum extraction, destructive labour. Indications, contraindications, technique.
12. Topic 2.6. Caesarean section: indications, contraindications, surgery technique, complications.  
Topic 2.7. Obstetric anesthesia.
13. Module on topics 2.1-2.7.

#### **Module 3. Obstetric pathology.**

14. Topic 3.1. Abnormal labour: classification, diagnosis, treatment, complications.
15. Topic 3.2. Hypertensive disorders in pregnancy. Preeclampsia. Eclampsia. Classification, pathogenesis, diagnosis, treatment, prevention.  
Topic 3.3. Placental insufficiency. Fetal growth retardation.
16. Topic 3.4. Hemorrhages in the first half of pregnancy (spontaneous abortion, ectopic pregnancy, trophoblastic disease). Hemorrhages in the second half of pregnancy (placenta previa, placental abruption).
17. Topic 3.5. Hemorrhages in the third stage of labour and postpartum period. DIC and hemorrhagic shock in obstetrics.  
Topic 3.6. Obstetric trauma.
18. Topic 3.7. Preterm birth. Miscarriage.  
Topic 3.8. Intrauterine infections.
19. Topic 3.9. Obstetric septic complications.
20. Topic 3.10. Early toxicosis: vomiting of pregnancy (hyperemesis gravidarum).
21. Topic 3.11. Pregnancy and labor in women with extragenital diseases.
22. Final test (Obstetrics).

#### **Module 4. Gynecological endocrinology.**

23. Topic 4.1. Methods of examination of gynecological patients.
24. Topic 4.2. Principles of regulation of menstrual cycle. Menstrual dysfunction. Classification. Abnormal uterine bleeding.

25. Topic 4.3. Climacteric syndrome.
26. Topic 4.4. PCOS: pathogenesis, hormonal homeostasis, diagnostic criteria, management.
27. Topic 4.5. Premenstrual syndrome.
28. Topic 4.6. Amenorrhea: classification, diagnosis, principles of treatment.
29. Module on topics 4.1-4.6.

#### **Module 5. Pelvic inflammatory diseases. Female Genital Tract Congenital Malformations.**

30. Topic 5.1. Pelvic inflammatory diseases (PID) of non-specific and specific etiology.
31. Topic 5.2. Female Genital Tract Congenital Malformations.
32. Module on topics 5.1-5.2.

#### **Module 6. Operative gynecology. Family planning.**

33. Topic 6.1. Endometriosis. Etiology, pathogenesis, classification, clinical signs, diagnosis. The principles of conservative and surgical treatment of endometriosis.
34. Topic 6.2. Uterine fibroids. Etiology, pathogenesis, symptoms, diagnosis, complications. Conservative and surgical methods of treatment.
35. Topic 6.3. Precancerous diseases of uterine cervix: classification, diagnosis, management. Cervical cancer: etiology, symptoms, diagnosis, treatment, prevention.
36. Topic 6.4. Hyperplasia of endometrium. Endometrial cancer. Etiology, pathogenesis, classification. Symptoms. Treatment.
37. Topic 6.5. Ovarian cysts and tumors: etiology, pathogenesis, classification, symptoms, treatment. Ovarian cancer: etiology, pathogenesis, classification, symptoms, differential diagnosis, treatment.
38. Topic 6.6. Acute abdomen in gynecology: causes. Ectopic pregnancy: classification, diagnosis, differential diagnosis, management.
39. Topic 6.7. Chronic pelvic pain in gynecology.
40. Topic 6.8. Family planning. Contraception. Infertility. Induced abortion.
41. Module on topics 6.1-6.8.

#### **Text books and required supplies:**

1. Obstetrics : textbook / ed. by V.E. Radzinskiy, A.M. Fuks, Ch.G. Gagaev. — M.: GEOTAR-Media, 2019. - 880 p.
2. Gynecology : textbook / ed. by Radzinskiy V. E. , Fuks A. M. - M.: GEOTAR-Media, 2020. - 896 p.
3. Klyucharov I.V. Obstetrics. Manual. Part 1. Kazan: KGMU, 2017. - 59 p.
4. Klyucharov I.V. Gynecology. Manual. Part 2. Kazan: KGMU, 2017. - 47 p.
5. Dewhurst's textbook of obstetrics and gynecology. – 7th ed. / edited by D. Keith Edmonds. – 7th ed. 2007. - 717 p.
6. Obstetrics and gynecology.—6th ed. Charles R.B. Beckmann, Frank W.Ling, Darbara M.Barzansky et al. 2010. - 497 p.
7. Johns Hopkins Handbook of Obstetrics and Gynecology. Linda M. Szymansky, Jessica L. Bienstock. 2016. - 242 p.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (written papers, oral examination, demonstration of practical skills).

Routine performance assessment (homework, practical skills, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified

in advance) or to do the rework in the way determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

Midterm assessment (exam) is a form of knowledge and skills evaluation on the discipline. It is held in the oral form and include answering the theoretical question, solving the clinical case and demonstration of the practical skill. Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful.
- Be careful with equipment.
- Be disciplined.
- Be prepared for the classes.
- Be involved, do not hesitate to ask questions.
- Look professional: you have to wear clean white coat and change shoes.
- Eating is allowed only during brakes.
- Using phone is allowed only during brakes.

## **INFECTIOUS DISEASES**

### **Teachers:**

Irina Nikolaeva, Dr.Med.Sci, professor, MD – chair of the department

Alfiya Fazulzyanova, MD, PhD, associate professor

Fairuza Gilmullina, MD, PhD, associate professor

Elvira Khairutdinova, MD, PhD

Gulnara Shaikhieva, MD, PhD

Liliya Gainatullina, MD

### **Building, Department, classroom**

Republican Clinical Infectious Diseases Hospital, Department of Infectious Diseases

### **Contact details:**

- Telephone number: 89600377017 (Prof. Irina Nikolaeva)
- E-mail address: irinanicolaeva@mail.ru, zolotova.alfiya@mail.ru
- Office and working hours: 8-17

Course: V

Semester: 9, 10

### **Total 324 hours.**

Lectures: 52 hours.

Practical classes: 130 hours.

Independent work: 106 hours.

Exam: 10th semester, 36 hours

Credit units of labor intensity (ZET) - 9

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**A practical class** is a form of academic work that is conducted in each academic group separately under the guidance of a teacher and involves the active participation and interaction of students. This type of lesson requires preliminary preparation on the part of the student, it is necessary to deepen the theoretical knowledge of students, convert it into practical skills and abilities.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/enrol/index.php?id=1731>).

### **Course objectives:**

#### **The purpose of mastering the discipline**

The purpose of mastering the discipline: to use in treatment and diagnostic activities knowledge about the main pathogens of infectious diseases and methods of their identification; about the etiology, pathogenesis and clinical manifestations of infectious diseases; to diagnose them and carry out prevention; to participate in treatment and prescribe rational etiotropic and pathogenetic therapy; to provide emergency medical care in critical conditions of infectious genesis.

#### **Objectives of mastering the discipline:**

- to teach students to correctly collect and evaluate the medical history, highlighting diagnostically significant information characteristic of an infectious disease;
- to identify epidemiological medical history data and use them when constructing a diagnosis;
- to identify clinical syndromes during an objective examination of the patient that suggest an infectious disease;
- to determine the course options, severity, outcomes, possible complications;
- to draw up an algorithm for diagnostic search, a plan for laboratory and instrumental examination of the patient, to interpret the results;
- to carry out a set of therapeutic and preventive measures at the pre-hospital stage, during treatment at home and in hospital;
- to carry out a system of preventive and anti-epidemic measures;
- follow-up observation and medical examination after an infectious disease.

### **Course topics:**

#### ***Calendar plan of lectures***

1. Infectious diseases: General Principles. Introduction
2. Botulism
3. Acute intestinal infections
4. Cholera
5. Dysentery
6. Salmonellosis /Escherichiosis
7. Typhoid fever.
8. Helminthiases and protozoal invasions, part 1
9. Helminthiases and protozoal invasions, part 2
10. Acute viral hepatitis, part I
11. Acute viral hepatitis, part 2
12. Chronic viral hepatitis
13. Hemorrhagic fever with renal syndrome
14. Influenza
15. Tick-borne encephalitis
16. Anthrax
17. Brucellosis

18. Plague
19. Tonsillitis. Peculiarities of diphtheria in adults
20. Meningococcal infection. Toxic shock
21. Lyme disease
22. Malaria
23. Erysipelas
24. Tetanus
25. HIV infection: basic principles I
26. HIV infection: basic principles II

### ***Calendar plan of Practical classes***

1. Introductory lesson. The structure of the infectious disease service, the requirements of the anti-epidemic regime in the structural units of the infectious disease service (hospital and outpatient clinic). The structure of the clinical hospital (a tour of the hospital). Organizational issues of students' stay in the infectious disease hospital during the educational process (special clothing, changeable footwear, compliance with hygiene skills, behavior in emergency situations); familiarization with the requirements of the department (class schedule, familiarization with the rating system). Methodology for examining of an infectious patient (using a specific patient as an example).
2. Dysentery. Clinical classification of the disease. Principles of diagnosis, treatment of patients with dysentery. Clinical analysis of thematic patients. Independent supervision of patients.
3. Salmonellosis. Food-borne diseases. Botulism. Clinical analysis of thematic patients. Principles of diagnostics, treatment of patients with localized and generalized forms of salmonellosis, food-borne diseases, botulism. Specific therapy of botulism (the concept of the therapeutic dose of antitoxin serum, methods of serum administration). Rules for discharge, dispensary observation. Self-curation of patients.
4. Cholera. Etiological and epidemiological features of modern cholera as a quarantine infection. Pathogenesis of diarrheal syndrome in cholera. Principles of diagnostics, treatment of patients with cholera. Diagnostics and treatment of patients with hypovolemic shock. Anti-epidemic measures in the cholera outbreak. Discharge rules, dispensary observation.
5. Typhoid fever. Epidemiological features. Pathogenetic mechanism and pathomorphological changes by periods of diseases with characteristics of leading clinical syndromes. Differential diagnostics (typhus, etc.), specific laboratory diagnostics. Modern etiotropic therapy. Specific complications, their diagnostics, treatment measures. Basic therapy for typhoid fever (bed rest, diet).
6. Helminthiases. Protozoan invasions. Classification of helminths and helminthiases. Epidemiological features. Clinical and pathogenetic characteristics of current helminths, considering the biology of the parasite (round, tape, flukes). Principles of diagnosis and treatment. Prevention. Discussion of short abstract reports on current helminthiases. Demonstration of macro- and micropreparations. Basic principles of treatment.
7. Viral hepatitis A and E. Normal bilirubin metabolism, bilirubin metabolism in hepatic jaundice. Principles of diagnosis and treatment of patients with enteral hepatitis. Discharge rules, outpatient observation. Self-curation of patients.
8. Viral hepatitis B, C, D. Principles of diagnosis and treatment of patients with parenteral hepatitis. Specific diagnosis. Discharge rules, outpatient observation. Self-curation of patients.
9. Differential diagnosis of jaundice. Acute hepatic encephalopathy. Principles of diagnosis, treatment of patients with OSEP. Bilirubin metabolism in prehepatic and posthepatic jaundice. Differential diagnosis of viral hepatitis with jaundice of other etiologies.
10. Chronic viral hepatitis. Natural course of chronic hepatitis B and C. Features of the clinical course, approaches to diagnosis. Modern diagnostic methods. Principles of treatment.

- Antiviral therapy. Liver cirrhosis as outcome of chronic viral hepatitis. Curation of thematic patients. Analysis of case histories.
11. Malaria. Etiology. Life cycle of malaria plasmodium. Epidemiology. Clinical and pathogenetic characteristics of malaria. Parasitological diagnostics. Principles of etiotropic therapy and prevention of relapses.
  12. Influenza and other ARVI. Etiological structure of ARVI. Epidemiological features. Clinical characteristics of intoxication, respiratory and hemorrhagic syndromes. Principles of diagnostics, treatment of patients with influenza and ARVI, their complications. Specific prevention of influenza. Self-curation of patients.
  13. Meningococcal infection. Etiological features of the pathogen that have pathogenetic significance. Epidemiology. Pathogenesis of generalized forms. Clinical characteristics of cerebral edema syndrome, infectious toxic shock. Principles of diagnostics, differential diagnostics and treatment. Clinical analysis of case histories (situational tasks) of patients with various forms of meningococcal infection.
  14. Tonsillopharyngitis. Diphtheria in adults. Clinical classification. Leading syndromes. Differential diagnostics of tonsillopharyngitis of various etiologies. Principles of etiotropic and pathogenetic therapy. Diphtheria, relevance of the problem, its features in adults. Clinical classification. Leading clinical syndromes. Principles of etiotropic, pathogenetic and specific therapy.
  15. Erysipelas. Etioepidemiological features. Pathogenesis of primary and recurrent forms. Features of formation of specific immune response. Clinical classification. Characteristics of leading clinical syndromes. Differential diagnostics. Modern evolution of erysipelas. Principles of etiotropic and pathogenetic therapy. Prevention of formation of recurrent forms. Indications for bicillin therapy. Self-curation of patients.
  16. HFRS. Epidemiological features. Pathogenetic mechanisms of development of acute renal failure. Periods of disease with allocation of leading clinical syndromes. Specific, clinical and biochemical laboratory diagnostics with interpretation of results by periods of disease. Principles of etiotropic and pathogenetic therapy. Indications for transfer to hemodialysis. Features of infusion therapy. Self-curation of patients.
  17. Tick-borne encephalitis (TBE). Etiological and epidemiological features. Clinical classification. Leading clinical syndromes. Differential diagnostics. Principles of specific diagnostics, treatment and prevention.
  18. Brucellosis. Etiological structure of brucellae. Pathogenesis. Clinical classification. Leading clinical syndromes. Differential diagnostics. Principles of specific diagnostics, treatment and prevention. Clinical analysis of case histories (situational tasks) of patients with various forms of brucellosis.
  19. Quarantine Infections (COVID-19). Definition of the concepts of "quarantine" ("conventional") infections. Relevance of the problem, epidemiological situation at the present stage. Personal protective equipment when working with especially dangerous infections. Plague as a quarantine infection. Etiological, epidemiological and clinical-pathogenetic characteristics, differential diagnostics with other quarantine infections (tularemia, anthrax). Complications. Specific laboratory diagnostics. Requirements for material collection. Principles of etiotropic and pathogenetic therapy. Prevention: planned and emergency (in foci).
  20. Coronavirus infection Covid-19. Definition, etiological and epidemiological features. Etiopathogenesis. Clinical classification. Leading clinical syndromes by clinical forms, complications and outcomes. Differential diagnostics. Principles of specific diagnostics, treatment and prevention.
  21. HIV infection. Epidemiological features. Etiopathogenesis. Clinical classification. Principles of diagnostics and treatment. AIDS-indicating diseases. Opportunistic infections of skin and mucous membrane in HIV infection. Opportunistic infections of gastrointestinal tract in HIV

infection. Opportunistic infections of respiratory system in HIV infection. Opportunistic infections of CNS in HIV infection. Analysis of clinical cases and situational tasks.

22. Final test.

### **Textbooks and required supplies:**

1. Infectious diseases: national guidelines / [M. G. Avdeeva et al.]; chief editors: N. D. Yushchuk, Yu. Ya. Vengerov. - 2nd ed., reprint. and add. - Moscow: GEOTAR-Media, 2023. - 1104, [3] p.
2. Acute viral hepatitis: an educational and methodological guide for students / Kazan State Medical University. The University of Public Health grew. Federation, Office of Infection. diseases; [comp.: V. H. Fazylov, D. S. Enaleeva, A. I. Fazulzyanova]. - Kazan: MeDDoK, 2015. - 33 p.
3. Educational portal of KSMU. <https://e.kazangmu.ru/course/view.php?id=1731>

### **Evaluation and grading**

#### **Rating assessment criteria for the discipline "Infectious diseases"**

The rating assessment is calculated on a 100-point system, which includes:

1. The auditory rating for the discipline is calculated based on attendance at lectures and practical classes.
2. The certification rating for the discipline includes points (100-point system) for 4 modules (2 modules for semesters 9 and 10) and the final test.
3. Current assessment. Average assessment (10-point system) for semesters 9 and 10.

The certification rating score with which the student goes to the exam includes the average grade for the cycle (on a 10-point scale), rating by modules (on a 100-point system), the level of acquisition of knowledge, practical skills and abilities obtained by the student during training in practical classes in the discipline. This score is an integral value characterizing the level of acquisition of specific theoretical knowledge about the etiology, pathogenesis, clinical picture, diagnostics and principles of treatment of infectious diseases studied within the framework of the discipline, as well as practical aspects of patient diagnostics in all sections from complaints to treatment planning, prevention. Within the framework of this rating-point assessment, the classroom load in the form of attendance of lectures (missed/worked) is considered.

4. Interim assessment in the discipline: "Infectious diseases" is an assessment of the development of competencies or part of them, acquired knowledge, skills and abilities and is held in the form of an exam at the end of the 10th semester.

Criteria for assessing exam answers

The exam score (100 points) is formed in 3 stages:

Patient exam - 50 points;

Answer on practical skills (laboratory diagnostics) - 20 points;

Answer to a situational task - 30 points;

Practical skills (laboratory diagnostics)

The student receives a ticket with two questions, 10 points for each task.

*Example of exam ticket «Practical skills (laboratory diagnostics) »*

1. Specific markers of intestinal amebiasis?
2. Specific markers of chronic hepatitis B

A situational task is a problematic task in which the student is asked to comprehend



a real professionally oriented situation necessary to solve a given problem. The student receives one situational task. After analyzing the task, answers the following questions:

1. Formulating a clinical diagnosis in accordance with the classification (5 points)
2. Justifying the clinical diagnosis (5 points)
3. Formulation of an examination plan (5 points)
4. Carrying out differential diagnostics with other (at least 2) diseases (10 points)
5. Formulation of a treatment plan (5 points)

*Example of a situational task*

Patient S., 20 years old. He has been ill for 3 years. He was admitted to the hospital with complaints of severe weakness, progressive weight loss by 13 kg (from 65 kg to 52 kg) over the past 2 years, frequent acute respiratory infections (5 episodes over the past year), diarrhea, fever up to 38.3 C, night sweats, cough with viscous sputum, purple nodules on the arms.

From the anamnesis: single; has promiscuous sexual relations without protection.

Objectively: the condition is of moderate severity. The temperature is 38.3 C. The skin is pale, increased sweating, on both hands there are single purple nodules, up to 1 cm in diameter, clearly demarcated from the surrounding skin. Anterior cervical, axillary, inguinal lymph nodes up to 1.5 cm in diameter, painless, without periadenitis, are palpated. On the tongue - hairy leukoplakia. In the area of the apices of both lungs there is weakened vesicular respiration, fine-bubble wet crackles. Heart rate is 20 per minute. Heart sounds are muffled, rhythmic, there are no murmurs. Pulse = heart rate = 90 in min. BP 100/70 mm Hg. The tongue is dry, surrounded by a whitish plaque. The abdomen is soft and painless. The liver is +1 cm from under the edge of the costal arch along the right middle-clavicular line. The lower pole of the spleen is palpated.

Pasternatsky's sign is negative on both sides, there is no edema. The stool is liquid. Urine is not changed.

X-ray Examination of the lungs: infiltrative changes in the upper lobes of both lungs.

The exam grade is calculated as follows:

points for the patient exam + points for practical skills (laboratory diagnostics) + points for the answer to the situational task.

5. The final grade (discipline rating) is given, which is the arithmetic mean of the sum of points received at all stages of certification and calculated in the 1C system.

When calculating the discipline rating, the following system of conversion to a 5-point assessment system should be used:

"satisfactory" - 70-79 points.

"good" - 80-89 points.

"excellent" - 90-100 points.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you must wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

## PEDIATRICS

**Teachers: Assoc. Prof., PhD Farida Rizvanova, Assoc. Prof. PhD Elena Generalova, Senior Lecturer, PhD Alsu Shakirova**

**Building, Department, classroom:** Children Hospital №2, Safiullina str., building 14 (Department of Introduction in childhood diseases and Faculty pediatrics)

### **Contact details:**

- Telephone number: +79510643089 (Assoc. Prof. Elena Generalova)
- E-mail address: [elena\\_generalova@rambler.ru](mailto:elena_generalova@rambler.ru)
- Office and working hours: Children Hospital №2, Safiullina str., building 14 (Department of Introduction in childhood diseases and Faculty pediatrics) (9-17)

### **Total – 360 hours.**

Lectures 54 h

Practica classes (clinical) 150 h

Independent work: 120 hours

Control: 36 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Seminars** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. They are aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher. The seminars involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Independent work:** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1780>).

### **Course objectives:**

#### **The purpose of mastering the discipline**

The purpose of discipline **Pediatrics** is to teach the students of the medical faculty of the collection and analysis of information on the health status of the child, to teach the professional algorithm of the decision of practical problems of diagnostics, principles of treatment and prevention of most common diseases in children. Master the skills of professional medical behavior with sick children. The doctor (family doctor) in practice faced with the need to address issues of children's diseases, so he should know the clinical symptoms and syndromes of diseases of infectious origin, modern medical diagnostic effects, methods of emergency care, advanced prevention methods. In this regard, this programme defines the scope of knowledge in Pediatrics necessary for doctors graduating from the medical faculty of medical University.

#### **Tasks of the discipline:**

- To study the anatomical and physiological peculiarities of children in different age periods.
- Oversee a harmonious development of the child.
- To master manual examination techniques of a child.
- To carry out independent work with sick and healthy children, to comply with the ethical standards and principles when dealing with the child and parents.

- Based on the knowledge of breastfeeding to use the methods of stimulation of lactation and to give recommendations on nutrition of healthy children in different age periods.
- Follow the rules of care and care of newborns and premature babies.
- To diagnose the most common diseases of newborns, infants, and older children and condition threatening the patient's life.
- Learn the techniques for treatment and prevention of most common diseases in children and be able to provide emergency assistance.
- To carry out dispensary observation of children with the purpose of prevention of exacerbations and the formation of the corresponding disease in adults.
- 10. Lead medical records.

### **Course topics:**

#### **Calendar plan of lectures**

##### **Semester VIII**

1. History of Pediatrics. Periods of childhood.
2. Modern concept of breastfeeding.
3. Features of mineral metabolism in children. Rickets in children.
4. Iron deficiency anemia in children.
5. Metabolism in children. Chronic nutrition disorders in children.
6. Atopic dermatitis in children.
7. Pneumonia in children.
8. Neonatology and neonatal mortality.
9. Birth injuries of the newborn

##### **Semester IX**

1. Intrauterine infections.
2. Bronchial asthma in children.
3. Acute rheumatic fever in children.
4. Chronic diseases of the gastrointestinal tract in children.
5. Pyelonephritis in children.
6. Glomerulonephritis in children.
7. Diffused diseases of connective tissue in children.
8. Hemorrhagic diathesis in children.
9. Acute leukemia in children.

#### **Calendar plan of seminars**

##### **Semester VIII**

1. Periods of childhood. Physical and psychomotor development of children.
2. Anatomical and physiological features of the skin, subcutaneous fat, lymph nodes, musculoskeletal system in children.
3. Anatomical and physiological features of hematopoiesis, respiratory system, cardiovascular system in children.
4. Anatomical and physiological features, digestive organs, urinary system, nervous and immune system of children.
5. Rational feeding of children. Benefits of breastfeeding. Mixed and artificial feeding.
6. Alimentary-dependent diseases in young children (Rickets, deficiency anemias in children).
7. Features of metabolism in children, in different age periods. Chronic nutritional disorders in children. Malabsorption syndrome.
8. Anomalies of the Constitution. Atopic dermatitis in children.
9. Acute respiratory diseases in children Pneumonia in children.
10. Anatomical and physiological features of a newborn. Premature newborns.

##### **Semester IX**

1. Perinatal CNS lesion. Asphyxia of the newborns.
2. Intrauterine infection. Local forms of purulent-septic diseases of newborns.
3. Pneumonia in newborns.
4. Hemolytic disease of newborns. Differential diagnosis of jaundice.
5. Diseases of the respiratory system in older children: asthma, allergic rhinitis, COPD.
6. Diseases of the heart and joints in children: acute rheumatic fever, rheumatoid arthritis in children.
7. Diseases of the heart and joints in children: non-rheumatic carditis, acute and chronic heart failure.
8. Diffuse diseases of connective tissue in children (systemic lupus erythematosus, scleroderma, juvenile dermatomyositis)
9. Chronic diseases of the gastrointestinal tract in children: chronic gastritis, gastric ulcer and duodenal ulcer.
10. Biliary pathology in children: biliary dyskinesia, chronic cholelithiasis.
11. Kidney diseases in children: pyelonephritis, dysmetabolic nephropathy.
12. Kidney diseases in children: nephrotic syndrome, glomerulonephritis, acute and chronic renal failure.
13. Blood diseases in children: hemophilia, idiopathic thrombocytopenic purpura, hemorrhagic vasculitis.
14. Blood diseases in children: leukemia.
15. Vaccination. Calendar of preventive vaccinations. Postvaccinal reactions and complications.
16. Clinical examination of pregnant women, newborns, infants and children in outpatient department. Health groups.

#### **Text books and required supplies:**

1. Nelson Essentials of Pediatrics / ed. by Karen Marcdante, Robert Kliegman, Abigail Schuh / 7th Edition. – Elsevier, 2014.
2. Hutchison's Clinical Methods. An integrated approach to clinical practice / ed. by Glynn M, Drake W / 23rd edition. – Saunders; 2012.
3. Guidelines for the management of common childhood illnesses / Second edition. – WHO; 2013.
4. Integrated Management of Pregnancy and Childbirth. Pregnancy, childbirth, Postpartum and Newborn Care: A guide for essential practice. – WHO; 2015.
5. Learning instructions in pediatrics for the english speaking students of the foreign medical faculty / I. G. Hmelevskaya, M. M. Gurova, V. A. Afanas'ev, I. G. Meteleva. - Kursk, 2004. - 40 p.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (written papers/oral examination/test/ case report or other).

*Routine performance assessment* (homework, transcript analyses, feeding task, cases, oral examination and tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given

not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exam* is held in forms of combination: test (MCQs), problem case, laboratory analysis (CBC, clinical urinalysis etc.). Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Example of module No. 1. (semester VIII)**

**MCQs**

Choose 1 correct answer:

1. Eosinophilia is the symptom of such diseases as:
  - A. areactivity of organism
  - B. helminthiasis
  - C. infectious mononucleosis
  - D. tuberculosis
2. Anatomico-physiological special features of subcutaneous fat:
  - A. a lot of solid fatty acids
  - B. few of solid fatty acids
  - C. growth of subcutaneous fat at the expense of fat deposits
  - D. adipocytes are large
  - E. adipocytes are average
3. Pulse rate on child of 2 years old:
  - A. 100 per minute
  - B. 110 per minute
  - C. 115 per minute
  - D. 120 per minute
4. Functional features of respiratory apparatus of children:
  - A. great respiratory rate
  - B. episodes of apnoea till 1 year of life
  - C. puerile breathing till 10 years of life
5. Physical growth and development of children include such characteristics as:
  - A. sexual formula
  - B. height and weight of body
  - C. circle of thigh
  - D. dentition (teething) time
6. Zaytsev's formula:
  - A.  $70 \times n$
  - B.  $2\% \times n \times m$

- C.  $80 \times n$
  - D.  $10,5 + 2 n$
7. In newborns till 5 day of life:
    - A. neutrophils number is the same as lymphocytes number
    - B. lymphocytes number is more than neutrophils number
    - C. neutrophils number is more than lymphocytes number
  8. Biliary symptoms are all apart from:
    - A. Ker's symptom
    - B. Orthner's symptom
    - C. Mendel's symptom
    - D. Mussy's symptom
  9. Respiratory rate in newborns is:
    - A. 20-40 per minute
    - B. 40-60 per minute
    - C. 30-40 per minute
    - D. more than 60 per minute
  10. In normal you may palpate groups of lymph nodes:
    - A. axillary
    - B. cubital
    - C. thoracal
    - D. subclavicular

**Feeding task:**

Patient is boy, age – 6 month. Birth weight was 3100 g. Breast feeding.  
Calculate and prescribe diet for 1 day.

**Example of module No. 2. (semester IX)**

**MCQs**

Choose 1 correct answer:

1. The diagnosis of rheumatic fever is best confirmed by:
  - A. throat swab culture
  - B. raised ESR
  - C. ASLO titer
  - D. ECG changes
2. At hypertonic form of biliary dyskinesia are prescribed:
  - A. antibiotics
  - B. cholelasmolytics
  - C. cholekinetics
3. Attack rate at moderately severe bronchial asthma:
  - A. 1-2 times at month
  - B. 2-3 times at month
  - C. 3-4 times at month
  - D. 5-6 once at month
4. In therapy of acute glomerulonephritis with nephrotic syndrome is used:
  - A. hydrocortisone
  - B. chloroquine
  - C. prednisolone
  - D. vitamin D
5. What complication is the most severe at icteric form of HDN:
  - A. anemia;
  - B. lesion of liver;
  - C. lesion of CNS;

D. cardiac insufficiency.

6. A child comes with migratory polyarthritis, the investigation of choice to confirm the diagnosis would be:
- pharyngeal swab for culture and sensitivity
  - ASLO titer
  - ESR
  - ECG
7. To methods of morphological diagnostics of chronic gastritis pertain all, except:
- esophagogastroduodenoscopy
  - mucous biopsy
  - chromogastroscopy
  - Urease tests
8. What type of fever is typical for pneumonia?
- Above 38°C more than 3 days
  - 37-38°C more than 3 days
  - Above 38°C less than 3- days
  - 40°C more than 3 days
  - Long low grade fever
9. For differentiation of primary and secondary pyelonephritis informative is such method as:
- type of leukocyturia
  - anatomical anomalies of urinary system development
  - inoculation of urine on sterility
  - biochemical blood test
10. Prednisolone is the treatment of choice in a hemophiliac with:
- spontaneous haematuria
  - gingival bleeding
  - nasal bleeding
  - none of the above

### **Case**

Patient is girl, 14 years old. She was admitted with complains on pains in abdomen, which intensify on an empty stomach, terminate after food intake, belch with sour taste, vomiting.

Patient's history. Attacks of disease have seasonal prevalence – springtime and autumn.

Examination. Skin is pale. White fur on the tongue. At palpation abdomen is soft, painful in mesogastrium, Mendel's symptom is positive. Liver is not enlarged.

Questions:

- Diagnosis
- Prescribe plan of the examination.
- Prescribe plan of treatment.

## **ENDOCRINOLOGY**

**Teachers: Assoc. Prof., PhD Tatiana Kiseleva, Assoc. Prof., PhD Tatiana Yilmaz**

### **Contact details:**

- Telephone number: 89173908899 (Assoc. Prof. Tatiana Kiseleva)
- E-mail address: tattiana@mail.ru

### **Class hours:**

**Total 108 hours**

Lectures 10 hours  
Practical classes 45 hours  
Independent work 53 hours

### **Course objectives:**

The purpose of mastering the module “endocrinology” is to train a qualified doctor of medicine, the formation of a qualified specialist doctor of medicine and organizer of medical care for patients with acute and chronic endocrinological diseases, possessing a system of knowledge and competencies, capable and ready for independent professional activity.

### **Tasks of mastering the discipline (modules):**

- to give knowledge of etiology and pathogenesis, clinical manifestations and diagnostic methods of the main diseases of internal organs;
- to consolidate and improve the ability to examine endocrinologic patient;
- to form clinical thinking (ability to make a detailed clinical diagnosis on the basis of the collected information about the patient);
- to teach how to use the method of differential diagnosis within the limits of nosologic forms;
- to teach the basic principles of prevention and treatment of diseases of the endocrine system.

### **Module 1 “Endocrinology”**

The total labor intensity (volume) of the discipline (module) is 108 academic hours.

### **Course topics:**

<i><b>Calendar</b></i>	<i><b>plan</b></i>	<i><b>of</b></i>	<i><b>lectures</b></i>
Lecture 1.	Diabetes mellitus. Classification. Epidemiology. Etiology and pathogenesis. Differential diagnosis. Diagnostic methods		
Lecture 2.	Diabetes mellitus: treatment. Pregnancy and diabetes. Gestational diabetes.		
Lecture 3.	Biological effects of thyroid hormones. Diffuse toxic goiter, differential diagnosis. Autoimmune ophthalmopathy.		
Lecture 4.	Hypothyroidism syndrome. Classification. Etiology. Pathogenesis.		
Lecture 5.	Biological effects of hormones of the adrenal cortex. Arterial hypertension of endocrine origin.		

### **Calendar plan of practical classes**

1. Diabetes mellitus. Definition, diagnosis, classification, etiopathogenesis, signs and symptoms.
2. Treatment of diabetes. Gestational diabetes. Metabolic syndrome. Obesity.
3. Chronic complications of diabetes mellitus
4. Acute complications of diabetes mellitus
5. Hyperthyroidism
6. Hypothyroidism. Iodine deficiency. Hypo- and hyperparathyroidism
7. Physiology of suprarenal glands. Adenomas of the suprarenal glands. Hypercorticism
8. Adrenal insufficiency.
9. Disorders of the hypothalamus and the pituitary gland. MCQ

### **Text books and required supplies:**

1. Endocrinology [Electronic resource]: textbook / I. I. Dedov, G. A. Melnichenko, V. V. Fadeev - M. : Litterra, 2015. - <http://www.studmedlib.ru/book/ISBN9785423501594.html>

### **Evaluation and grading:**

Current certification of students is conducted by the teacher in the following forms:

**1. Questioning** - a dialogue between a teacher and a student, the purpose of which is to systematize and clarify the student's knowledge, check his/her individual capabilities of mastering the material



**2. Abstract** - a product of the student's independent work, which is a brief written summary of the results of theoretical analysis of a certain scientific (educational and research) topic, where the author reveals the essence of the issue under study, provides different points of view, as well as his own understanding of the problem.

**Description of the evaluation scale**

**9-10 points** are given if all the requirements for writing and defense of the abstract are met: the problem under consideration is outlined and the own position is logically stated, conclusions are formulated, the topic is fully disclosed, the volume is maintained, the requirements for external design are met, correct answers to additional questions are given.

**8 points** - the basic requirements for the abstract and its defense are met, but there are flaws. In particular, there are inaccuracies in the presentation of the material; there is no logical consistency in the judgments; the volume of the abstract is not maintained; there are omissions in the design; incomplete answers to additional questions in the defense.

**7 points** - there are significant deviations from the requirements for abstracting. In particular: the topic is covered only partially; there are factual errors in the content of the abstract or in answering additional questions; there is no conclusion during the defense.

**6 points** - the topic of the abstract is not disclosed, there is a significant misunderstanding of the problem.

**3. Report**- a product of the student's independent work, which is a public presentation of the obtained results of solving a certain educational-practical, educational-research or scientific topic.

**Criteria for evaluating a report**

1. Compliance with the time limit (5-7 minutes).
2. Disclosure of the topic of the report.
3. Free mastery of the content.
4. Completeness of the collected theoretical material.
5. Presentation of the report (use of blackboard, charts, tables, etc.).
6. Ability to observe the given form of presentation, speech.
7. Brief conclusion on the considered issue.
8. Answers to questions from the audience.
9. Quality content and selection of demonstration material.
10. Formalization of the report in the form of abstracts.

**Description of the evaluation scale**

For each point of the criterion maximum 1 point.

**4. Case-task** - a problem task in which the student is offered to comprehend a real professional-oriented situation necessary to solve the problem. The student independently formulates the goal, finds and collects information, analyzes it, puts forward hypotheses, looks for options to solve the problem, formulates conclusions, justifies the optimal solution to the situation.

**Description of the evaluation scale**

- **6 points or less** - the content of the task is not realized, the product is inadequate to the task;
- **7 points** - serious logical and factual errors are made, an attempt is made to formulate conclusions;
- **8 points** - the task is completed, but one or two minor logical or factual errors are made, conclusions are drawn;
- **9-10 points** - the task is completed, conclusions are made.

**5. Testing** is a tool with the help of which a teacher assesses the degree to which a student has achieved the required knowledge, skills and abilities. Test preparation includes the creation of a verified system of questions, the actual procedure of testing and the method of measuring the results obtained. The test consists of tasks with the choice of one answer out of 4 suggested answers. The type of tasks is closed, the number of tasks in the test-ticket is 20, the number of test-ticket variants is 3.

**Description of the evaluation scale**

**90-100 points** - given if the student answers 90% of the test questions correctly.

**80-89 points** - given if the student answers 80% to 90% of the test questions correctly.

**70-79 points** - given if the student answers 70% to 80% of the test questions correctly.

Less than 70 points - if the student answers less than 70% of the test questions correctly.

### Examples of tests

1. Which of the following hormones is the most important at birth for proper brain development?
  - A. T3
  - B. Growth hormone
  - C. Androgens/Estrogens
  - D. Vasopressin
2. Which of the following is not the symptom of acromegaly?
  - A. Excessive sweating
  - B. Deepening voice
  - C. Widespread rash
  - D. Paresthesia and weakness in the hands
3. Which of the following is not the cause of Addison's disease?
  - A. Kidney failure
  - B. Autoimmune destruction of the adrenal cortex
  - C. Tuberculosis
  - D. Adrenoleukodystrophy
4. Which of the following is not the symptom of thyrotoxicosis?
  - A. Urinary frequency
  - B. Heat intolerance
  - C. Diarrhoea
  - D. Weight loss
5. Which of the following is the most common presentation of posterior pituitary pathology?
  - A. Hypertension
  - B. Hyperpigmentation
  - C. Polyphagia
  - D. Polyuria
6. When comparing Grave's disease and Hashimoto thyroiditis, which of the following is more indicative of Grave's?
  - A. Lymphoid cell infiltrates
  - B. Women are more affected than men
  - C. Thyroid enlargement
  - D. Increased diffuse radioactive iodine uptake
7. Which of the following does the adrenal cortex produce?
  - A. Noradrenaline
  - B. Renin
  - C. Adrenaline
  - D. Aldosterone
8. What of the following statements best describes a toxic thyroid adenoma?
  - A. A benign tumour of the thyroid gland which produces excessive amounts of thyroid hormones. These arise from the follicular cells of the thyroid.
  - B. Inflammation of the thyroid gland due to lymphocytic infiltration causing stored thyroid hormones to be released into the circulation leading to hyperthyroidism.
  - C. A malignant tumour of the thyroid gland which produces excessive amounts of thyroid hormones. These arise from the follicular cells of the thyroid gland.
  - D. An autoimmune disease directed against thyroid stimulating hormone (TSH) receptors. The autoantibodies stimulate the TSH receptors causing increased T3 and T4 production
9. Which of the following investigations is the gold standard for diagnosing acromegaly?
  - A. Growth hormone measurement

- B. Oral glucose tolerance test + Growth hormone measurement
- C. Serum IGF1 measurement
- D. Growth hormone releasing hormone measurement

10. A 50 year old man is admitted to the endocrinologist. The OGTT results are as follows:

Fasting – 98 mg/dl

2 hour – 225 mg/dl

The most likely diagnosis in this patient is:

- A. Normal glucose tolerance
- B. Type 1 diabetes
- C. Type 2 diabetes
- D. Impaired fasting glucose

### **Example of case-task**

Patient K., 28 years old. Complaints about changes in appearance (rounded face, increased body weight, growth of facial hair), menstrual disorders, headaches.

Medical history: She has been ill for about 2 years. She connects the disease with severe influenza.

Objectively: General condition is satisfactory. Consciousness is clear. Height 172 cm, weight 105 kg. Fat deposition of dysplastic type. The face is rounded, hyperemic. Hair growth on the upper lip, chin. On the skin of the abdomen there are scarlet-red broad bands of stretching (striae). In the lungs - vesicular respiration, respiratory rate - 18 per min. Pulse 76 beats/min, BP 165/105 mm Hg. The left border of the relative bluntness of the heart was shifted to the left 2 cm from the left midclavicular line. Heart tones are weakened, rhythmic. Accent of the II tone over the aorta. No edema. The abdomen is soft, painless. Liver, spleen are not enlarged.

Urinalysis: Diuresis 1.4 liters. Glucose in the urine 0.5%.

BAC: Fasting blood sugar 7.28 mmol/l. Plasma sodium - 155 mmol/l. Potassium - 3.2 mmol/l.

### **Questions:**

1. What is the most appropriate principal diagnosis at this stage?
2. Which test is the “gold standard” for making the diagnosis?
3. What additional investigations are most likely to be prescribed to clarify the diagnosis?
4. Between which diseases is the first differential diagnosis made?
5. What would be your primary treatment tactic?

### **Methodological guidelines for students to master the discipline (module)**

- focus on mastering the definitions of basic concepts and categories, as well as the content of the main problems;
- not to be limited to using only lectures or textbook and use additional literature from the recommended list (especially popular science publications, in which many issues are considered in a more easy-to-understand form);
- understand the information rather than just memorize it - understanding saves time and effort and allows you to use the knowledge gained productively;
- use professional terminology in oral answers, reports, essays and written work - this develops the necessary skill of dealing with concepts and categories, facilitates their assimilation and allows demonstrating the depth of knowledge on the course;
- argue their point of view - everyone has the right to his/her own opinion, but this opinion becomes a point of view only if it is correctly and convincingly substantiated;
- when preparing for practical classes, in oral answers, reports and written works, to emphasize necessary and sufficient information - to present detailed and extensive information does not mean to present its substance;
- to correlate the acquired knowledge with the existing knowledge from other fields of science, first of all, from the fields related to the future professional activity.

- for better mastering of the material on the discipline, it is necessary to constantly review the materials of lectures

## **HOSPITAL SURGERY**

**Teachers: Prof. Oleg Karpukhin, PhD Arsen Kurbangaleev, PhD Anna Zaharova, PhD Aidar Shakurov, PhD Kirill Sakulin, PhD Yulia Pankratova.**

**Building, Department, classroom** # Orenburgskiy trakt Street, building 138, 6 floor

### **Contact details:**

- Telephone number: +79046601139 (PhD Aidar Shakurov)
- E-mail address: aydarsha@gmail.com
- Office and working hours: 8-16

### **Total hours – 252:**

- Lectures 40 hours
- Practice classes 105 hours
- Independent work 71 hours
- Control 36 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practice classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Indendent work** is working with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/>).

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the **hospital surgery** discipline are formation of systematic knowledge and skills of surgical treatment of patients with surgical diseases related to abdominal and thoracic cavities, vascular system, burns and purulent pathology of soft tissues of abdominal viscera, acquaintance to clinical presentation of surgical diseases, laboratory and instrumental diagnostic studies, conservative treatment and surgical interventions of most common surgical pathology.

### **Tasks of the discipline:**

- to form knowledge of etiology, pathophysiology and clinical presentation of surgical diseases, laboratory and instrumental diagnostic studies, conservative treatment and surgical interventions of most common surgical pathology
- to form skills of physical examination of patients and using laboratory and instrumental studies
- to form skills of making diagnosis with establishing of treatment plan including indications for surgery
- to form knowledge of steps of most common surgical interventions for acute surgical abdominal pathology
- to form knowledge of possible complications after different surgical interventions

- to form knowledge of most common urgent conditions related to abdominal pathology

### **Course topics:**

#### **Calendar plan of lectures**

1. Thoracic trauma.
2. Purulent lung and pleura diseases.
3. Benign diseases of the esophagus and esophageal damage.
4. Ischemic heart disease. Surgical correction.
5. Acute and chronic arterial insufficiency.
6. Acute and chronic venous insufficiency.
7. Obstructive jaundice.
8. Portal hypertension.
9. Complications after gastric and duodenal surgery.
10. Chronic pancreatitis and pancreatic cysts.
11. Acute abdomen. Differential diagnosis.
12. Surgical sepsis.
13. Diabetic foot syndrome.
14. Burns.
15. Inflammatory bowel diseases.
16. Chronic constipation.
17. Colonic injuries.

#### **Calendar plan of practice classes**

1. Classification of thoracic trauma. Hemothorax, pneumothorax, subcutaneous emphysema. Complications. Damage to internal organs. Diagnostics (X-ray diagnosis, esophagoscopy, bronchoscopy). Pleural puncture. Pericardial puncture. Fractures of the ribs and sternum. Damage to lung, heart, diaphragm. Thoraco-abdominal wounds.
2. Acute abscess and lung gangrene. Classification. Diagnostics (X-ray, RCT, ultrasound). Complications (pleura empyema, pulmonary bleeding). Classification of the empyema of the pleura. Etiology, pathogenesis of acute and chronic empyema. Pathogen of pleural empyema. Ways of spreading the infection into the pleura. Pathological anatomy of pleural empiemas. Pathophysiology of empyemia. Symptomatology of acute pleural empyema. Symptoms in general. Local symptoms. Data from special research methods. X-ray. Laboratory data. Pleural puncture. Complications of acute pleural empyema. Treatment of acute pleural empyema. Factors causing the treatment plan. Basic principles of treatment. The basic methods of treatment. Closed surgical treatment. Opened Surgical Treatment. Shortcomings of the open method. Early decortication. Indications. Peculiarities of the treatment of acute postoperative empyema associated with a lack of stump bronchus. Reasons for transition of acute empyema into chronic one. Additional special methods of research. The basic methods of treatment of chronic pleura empyema. Preparation of patients for surgery and conducting the postoperative period. Postoperative complications. The results of the operation. Rehabilitation of patients. Screening of patients.
3. The concept of diaphragmatic hernia (congenital, acquired, post-traumatic). Anatomical features of hernia: paraesophageal, sliding, foundation, total, antral hernia. Pathogenesis. Clinic. Auxiliary methods of investigation: esophagoscopy, X-ray investigations. Diaphragmatic hernia complications. Management. Contraindications for surgery. Minimally invasive surgical interventions. Neuro-muscular diseases of the esophagus (achalasia, cardiospasm). Diverticulum of the esophagus. Esophageal injuries. Foreign bodies of the esophagus. Esophageal varices.
4. Ischemic heart disease. The concept of pathology. Diagnostics (non-invasive and invasive methods). Scintigraphy. Coronarography. Surgical correction. Myocardial revascularization (balloon dilatation, stenting, bypass surgery).

5. Acute arterial insufficiency. Diagnosis. Determination of the degree of ischemia (ultrasound, angiography). Thrombosis. Embolism. Etiology. Pathogenesis. Direct embolectomy. Indirect embolectomy. Thrombectomy. Reconstructive surgery. Traumatic injuries of the arteries of the limbs. Chronic arterial insufficiency. Obliterating atherosclerosis, endarteritis, conditions after acute arterial insufficiency. The concept of occlusion and stenosis. The clinical course of chronic arterial insufficiency. Raynaud disease. Stages of ischemia. Angiography. Treatment. Indications for surgical treatment. Indications and contraindications for reconstructive surgeries. Types of reconstructive operations.
6. Thrombophlebitis of varicose veins. Postoperative thrombophlebitis. Signs of deep veins thrombophlebitis of lower extremities. Thrombophlebitis of pelvic veins. Indications for surgical treatment. Postthrombophlebitic syndrome. Pathogenesis. Symptoms. Complications. Treatment. Indications and contraindications for surgical treatment. Pathology of venous valves. Etiology, pathogenesis. Clinical presentation. Diagnosis. Phlebography (retrograde, ascending, vertical). Treatment. Conservative. Sclerosing therapy. Indications. Surgical treatment. Trophic ulcers. Treatment of trophic ulcers.
7. Obstructive jaundice. Etiology, classification, clinical presentation. Differential diagnosis. Instrumental methods of investigation (ERCP, PTHC, endoscopic ultrasound., etc.). Small-invasive methods of biliary tract decompression. Two-stage treatment of patients with obstructive jaundice. Direct surgical interventions on biliary tract. Types of drainage of the biliary tract.
8. Portal hypertension. Definition. Etiological factors. Pathogenesis. Clinical presentation. Diagnosis. Conservative treatment. Surgical treatment. Small-invasive endoscopic interventions. Prevention of variceal bleeding and prognosis.
9. Classification of benign liver tumors. Presentation. Diagnosis. Treatment. Small-invasive interventions. Epidemiology and clinical presentation of echinococcosis of the liver. Diagnostics. Modern methods of treatment.
10. Postgastrectomy syndromes. Classification. Etiology and pathogenesis. Clinical presentation. Diagnosis. Conservative management. Indications for surgical treatment. Types of surgery.
11. Chronic pancreatitis and pancreatic cysts. Classification. Clinical presentation. Diagnosis. Conservative treatment. Indications and types of operations for chronic pancreatitis. Minimally invasive treatment of chronic pancreatitis.
12. Acute abdomen. Clinical presentation. Differential diagnosis. Management.
13. Benign tumors of the pancreas. Classification. Clinical presentation. Diagnosis and management.
14. Surgical sepsis. Etiology. Classification. Diagnosis. Management.
15. Diabetic foot syndrome. Pathogenesis and clinical presentation. Classification, diagnosis and treatment. Modern approaches to surgical treatment. Rehabilitation of patients.
16. Burns. Classification. Determination of burn depth and area. Clinical presentation. Systemic effects of burn injuries. Management. Topical and systemic treatment. Prevention and treatment of contractures.
17. Acute mastitis. Classification. Clinical presentation. Diagnosis. Management. Surgical treatment.
18. Hand infections. Superficial paronychia infections. Infections of intermediate-depth spaces. Deep infections: palmar space infections, pyogenic flexor tenosynovitis. Clinical presentation. Diagnosis. Management. Principles of surgical treatment.
19. Hemorrhoidal diseases. Anatomy. Etiology, pathogenesis. Clinical presentation. Diagnosis. Treatment. Minimally invasive treatment. Surgical treatment.
20. Anorectal abscess. Etiology. Classification. Clinical presentation. Diagnosis. Management. Fistula-in-ano. Etiology. Classification. Clinical presentation. Diagnosis. Role of US and MRI in diagnosis. Management. Minimally invasive treatment. Surgical treatment.
21. Rectal prolapse. Etiology. Clinical presentation. Diagnosis. Management. Types of surgical treatment. Choice of surgical intervention. Anal fissure. Etiology. Clinical presentation.

- Diagnosis. Management. Pilonidal disease. Etiology. Clinical presentation. Diagnosis. Management.
22. Inflammatory bowel diseases. Classification. Clinical presentation. Complications. Diagnosis. Conservative therapy. Indications for surgery. Choice of the type of intervention. Results of surgical treatment. Rehabilitation of patients.
  23. Chronic constipation. Classification. Clinical presentation. Diagnosis and differential diagnosis. Conservative therapy. Role of surgery in treatment of chronic constipation. Results of surgical treatment. Biofeedback therapy.
  24. Colorectal injuries. Classification. Clinical presentation. Diagnostis. Management. Surgical treatment.

#### **Text books and required supplies:**

1. Textbook of Emergency General Surgery. Federico Coccolini, Fausto Catena. 2023. <https://doi.org/10.1007/978-3-031-22599-4>
2. Chassin's Operative Strategy in General Surgery. An Expositive Atlas. Carol E. H. Scott-Conner, Andreas M. Kaiser, Ninh T. Nguyen, Umut Sarpel, Sonia L. Sugg. 2022. <https://doi.org/10.1007/978-3-030-81415-1>
3. Surgery. An Introductory Guide for Medical Students. Umut Sarpel. 2021. <https://doi.org/10.1007/978-3-030-65074-2>
4. Operative Strategy in General Surgery. An Expositive Atlas Volume I. Jameson L. Chassin. 2012. <https://doi.org/10.1007/978-1-4612-6042-4>
5. Operative Strategy in General Surgery. An Expositive Atlas. Volume 2. Jameson L. Chassin. 2013. <https://doi.org/10.1007/978-1-4757-4172-8>
6. Thoracic Surgery Clerkship. A Guide for Senior Medical Students. Thomas Ng, Travis Geraci. 2024. <https://doi.org/10.1007/978-3-031-44645-0>
7. The ASCRS Textbook of Colon and Rectal Surgery. Scott R. Steele, Tracy L. Hull, Neil Hyman, Justin A. Maykel, Thomas E. Read, Charles B. Whitlow. 2022. <https://doi.org/10.1007/978-3-030-66049-9>.
8. Vascular Surgery. Cases, Questions and Commentaries. George Geroulakos, Hero Urk, Robert W. Hobson, Keith D. Calligaro. 2023. <https://doi.org/10.1007/978-1-4471-3870-9>

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (mcq's).

*Routine performance assessment* (homework, tests during classes, case studies etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

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*Exams* are held in forms of oral answering for questions and cases. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

**Example of MCQ**

What is the location of internal hemorrhoidal plexus:

7. Below dentate line
8. Above dentate line
9. Under the skin around anus
10. At the level of dentate line
11. At the level of anocutaneous line

**Example of case study**

29 y.o. male patient admitted to the clinic on the 3rd day from the beginning of the disease in extremely serious condition. He had episodes of epigastric pain in the past for several years. He is motionless, consciousness is impaired. BP 80/40 mmHg. Pulse rate is 130 per minute, weak. Shallow breathing, 36 per minute. Body temperature is 39.2. Tongue is dry, with brown coating. Abdomen is distended, slightly tense and painful in all parts. The rebound tenderness sign is slightly positive. On percussion liver dullness is absent, intraabdominal fluid is found. Bowel sounds are absent. Per rectum – without abnormalities. CBC - leukocytes  $2.1 \times 10^9/l$  with left shift. Your diagnosis and your management.

**EVALUATION OF THE MODULE ANSWER**

The grade for the test is set in proportion of correct answers:

90-100% - excellent.

80-89% - good.

70-79% - satisfactory.

Less than 70% of correct answers is "failing grade".

Evaluation criteria for case study.

"excellent" - the student freely, with deep knowledge of the material, correctly and fully solved the case study (all tasks are completed, all questions are correctly answered).

"good" - the student is quite convincing, with minor theoretical mistakes correctly answered the questions or made minor mistakes in the answer;

"satisfactory" - if the student is not confident enough, answered to the questions of a case study with significant theoretical errors and poorly mastered skills;

"failing grade" - the student has very little understanding of the subject and made significant mistakes in answering to most of the questions of the case study, incorrectly answered to additional questions.

**Example of exam ticket**

Exam is presented by oral answer for exam ticket which includes 2 theoretical questions and 1 case study.



1. Goiter. Classification. Etiology. Clinical signs, diagnosis, treatment and prevention. Indications for the surgery, types of surgery. Intra and postoperative complications, treatment and prevention.
2. Chest damage. Classification. Clinical signs. Diagnostis. Management. Traumatic asphyxia. Damage of the lungs, heart, and diaphragm. Indications for surgery.
3. The patient has been admitted to the clinic on the third day after the onset of severe pain in his left leg. Clear signs of gangrene of shin and foot. No pulsation of the femoral artery. Your diagnosis and management.

### **EVALUATION OF THE EXAM ANSWER**

Evaluation criteria for theoretical questions:

"excellent" (90-100 points) - the answer is correct, scientifically argued, with references to the learned material.

"good" (80-89 points) - the answer is correct, scientifically argued, but without references to the learned material.

"satisfactory" (70-79 points) - the answer is correct, but not scientifically argued, or the answer is wrong.

"failing grade" (0-69 points) - the answer is incorrect and not scientifically argued.

Evaluation criteria for case study:

"excellent" (90-100 points) - the student freely, with deep knowledge of the material, correctly and fully solved the case study (all tasks are completed, all questions are correctly answered).

"good" (80-89 points) - the student is quite convincing, with minor theoretical mistakes correctly answered the questions or made minor mistakes in the answer;

"satisfactory" (70-79 points) - if the student is not confident enough, answered to the questions of a case study with significant theoretical errors and poorly mastered skills;

"failing grade" (0-69 points) - the student has very little understanding of the subject and made significant mistakes in answering to most of the questions of the case study, incorrectly answered to additional questions.

Maximum rating is presented by the average of marks for answers for theoretical questions and case study.

## **PHTHISIOLOGY**

**Teachers: Prof. Marat Yaushev, PhD Rustem Shaimuratov**

**Building, Department, classroom:** Republic TB Hospital; Pribolnichnaya str. 1; Department of Phthisiology, Room # 1,2,

### **Contact details:**

- Telephone number: 89274370820 (Prof. Marat Yaushev)
- E-mail address: marat.yaushev@kazangmu.ru
- Office and working hours: 1 (9-17)

### **Class hours:**

### **Total hours — 180:**

- Lectures 26 hours;
- Practical classes 75 hours;
- Independent work 43 hours;

- Control 36 hours

### **Course description:**

**Lecture** is an online (MTS-Link, <https://e.kazangmu.ru/course/view.php?id=2253>) real-time presentation, dedicated to most actual aspects of Tuberculosis management.

**Practical (clinical) training** is aimed at developing clinical competencies and skills for carrying out activities related to the prevention, diagnosis, and treatment of tuberculosis.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the KSMU (<https://e.kazangmu.ru/course/view.php?id=2253>).

### **Course objectives:**

**The purpose of «Phthisiology»** mastering is to get the knowledge and practical skills which is necessary for the diagnosis, treatment and prevention of Tuberculosis (TB). Students will master the theoretical basis of etiology, pathogenesis, ways of transmission of TB, the methods of prevention, diagnosis and treatment of this disease. You will learn the ideas about the role, aims and tasks as a physician in the system of struggle against TB, carrying out anti-tuberculosis activities, medical, social and other types of help.

### **Tasks of the discipline:**

- to gain knowledge about the role of general physician in the control and prevention of TB;
- to teach students to use modern clinical, laboratory and instrumental method of detection and diagnosis of pulmonary TB;
- to teach students how to provide primary care in case of emergency (pulmonary hemorrhage, spontaneous pneumothorax) of TB patients;
- to teach students how to prevent of TB, to restore and improvement patient's quality of life;
- to master the basis of prevention and early identification of high risk groups for TB

### **Course topics:**

#### **Calendar plan of lectures**

1. Epidemiology of tuberculosis. Incidence rate, mortality of TB, annual risk of infection in Russia and other countries. High-risk groups for TB. Tuberculosis control. Ways, factors of TB infection transmission. Prevention of TB infection transmission.
2. Pathogenesis of TB. TB as an infection and disease. Stages of TB development from transmission of TB infection to development of clinical forms of TB. TB as a manifestation of primary and secondary infection. Features of innate and acquired immunity in TB. Tuberculous granuloma.
3. Diagnosis of tuberculosis, methods of active case finding of TB. Algorithms of actions in case of suspected TB. Examination of patients with tuberculosis. Features of of TB patient's anamnesis. Clinical masks of TB.
4. Microbiological diagnostics of TB – sputum microscopy, culture on culture media (classical, BACTEC), PCR diagnostics. Physical basis, comparative characteristics. Role in diagnostics of resistance to anti-tuberculosis drugs. Features of microbiological diagnostics in various clinical forms of TB. Etiology of TB, types of *M.tuberculosis* (MBT).
5. X-rays diagnosis of TB. Chest X-ray (CXR) syndromes of tuberculosis and other respiratory diseases. The Order of description of pathological changes in the lungs and mediastinum due to TB. Features of the X-ray picture of different clinical forms of TB. Basis of differential diagnostics.
6. Immunodiagnostics of TB. Delayed-type hypersensitivity, manifestations, stages, clinical significance. Tests: Tuberculin skin test, Diaskintest, T-SPOT, QuantiferonTB-Gold. Forms of tuberculin. The concept of post-vaccination (PVA), infectious allergy, conversion, latent tuberculosis infection (LTBI). Criteria for LTBI diagnostics. Features of estimation,

interpretation of skin tests. Specific prevention of TB – BCG vaccination. Indications and contraindications. Complications of BCG vaccination.

7. Primary TB. Pathogenesis. Clinical forms: Primary tuberculosis complex, TB of intrathoracic lymph nodes. Complications of primary TB.
8. Secondary TB. Classification. Pathogenesis, pathomorphology, features in general, methods of diagnosis, clinical presentation, course, outcomes, prognosis, differential diagnostics. Infiltrative TB, Caseous pneumonia: classification, pathogenesis, features in general, chest X-ray features., differential diagnostics. Prognosis of clinical course.
9. Focal TB. Tuberculomas of lung. Disseminated TB (acute, subacute, chronic). Miliary TB of the lungs. Classification, pathogenesis, features of different radiological forms, differential diagnostics. Clinical forms of acute Miliary TB.
10. Tuberculous pleurisy. Pathogenesis, pathomorphology, features of diagnosis, clinical presentation, course of disease, outcomes, prognosis, differential diagnostics.
11. Tuberculous meningitis. Pathogenesis, pathomorphology, features of detection, clinical picture, MRI-diagnostics, course, outcomes, prognosis, differential diagnostics.
12. Pathogenesis, diagnostics and principles of treatment of lung bleeding, spontaneous pneumothorax, right ventricular failure. Emergency care for acute complications.
13. Treatment of TB (chemotherapy, surgery, collapse therapy). General principles. Anti-tuberculous chemotherapy. History. Principles. Evaluation of treatment outcomes. Treatment regimens. Indications for chemotherapy regimens. Management of the chemotherapy.

#### **Calendar plan of practical classes**

1. The epidemic process of TB and the factors determining its development. Interaction between infection source, transmission mechanisms and susceptibility of the population to TB. The main epidemiological indicators used in the epidemiology of TB. Sources and ways of transmission of TB infection. The main factors of TB infection transmission. Prevention of TB infection transmission. Mechanisms of the airborne route of infection. Gates of infection. The importance of contact with TB ill patients. Focus of TB infection. High risk groups for TB. Infection with *M. tuberculosis*. Annual risk of infection (ARI) as an assessment of epidemic situation for TB in country. Morbidity of TB in different countries. Chronological aspects.
2. Diagnostics of respiratory TB in a polyclinic, other general medical institutions and in anti-TB facilities. The role of fluorography, plain chest radiography, microscopy of sputum, culture investigation for *M.tuberculosis* and PCR diagnostics. Mantoux test, Diaskintest, IGRA as active case finding of TB in children, adolescents and adults. Methods of verification of TB - bacteriological, morphological, molecular-genetic, clinical. The concept of early, timely and late diagnosis of TB. Assessment of the epidemiological danger of the patient, severity of the disease, prognosis and effectiveness of treatment. Examination of individuals with high risk for TB. Microbiological diagnostics of TB. Physical basis of methods, comparative characteristics, interpretation of obtained results.
3. Clinical diagnosis of TB. Features of anamnesis of TB patient. Estimation of TB symptoms, features of TB patient's case, physical examination. Early diagnosis of TB. Features of TB diagnosis at different stages – in outpatient clinics, in hospitals. Clinical masks of TB. Differential diagnostics on the basis of clinical investigation. Features of diagnosis of different clinical forms of TB. Ideas of TB cases: active TB, relapse, chronic case of TB. Modern Clinical classification of TB. Stages of TB process.
4. Methods of chest X-ray examination of respiratory TB and TB with other localizations. Chest X-ray, plane tomography, indications for different types of radiography and tomography. Computed tomography in the diagnosis of TB and other lung diseases, mediastinum and pleura. Indications for radiological examination in various forms of TB, at preparation of patients for surgery. Fluorography and digital fluorography of the chest. X-ray and computed tomographic picture of the normal lungs. X-ray syndromes of TB and other diseases of the

respiratory system. Algorithms for description of pathological changes in lungs and mediastinum, clinical interpretation, goals and possibilities of detecting various diseases.

5. Infection with *M.tuberculosis*. The concept of primary infection, infection in past, LTBI, reinfection. Connection to age and morbidity in different countries. Immunodiagnostics methods. Mantoux test, Diaskintest, IGRA (Gamma Interferon release assay) tests: role in early diagnosis of TB, procedure performance, indications, contraindications, interpretation of the results. The concept of conversion of TST, LTBI, post-vaccination allergy, paraallergy: criteria for diagnosis and differential diagnosis. Tactics for detection, dispensary observation and examination of individuals with suspected LTBI and for the purpose of early diagnosis of TB. Preventive treatment of LTBI: regimens, duration.
6. Specific prevention of TB in children and adolescents. BCG vaccination, indications and contraindications. BCG revaccination: indications, contraindications. Technique of intraskin vaccination and BCG revaccination, schedule of vaccinations, indications and contraindications, assessment and recording of local vaccination reactions. Indicators of the quality of anti-tuberculosis vaccinations, their protective effect. The importance of post-vaccination signs in the diagnosis of primary tuberculosis. Specific and non-specific complications of BCG vaccination and revaccination. Types of complications, their causes and treatment.
7. Classification of TB. Concept of primary TB. Pathogenesis of primary TB in children and adolescents. Importance of infection massiveness, virulence of *M.tuberculosis* for development of primary TB. Factors of TB development. Importance of BCG vaccination in prevention of TB. Primary infection with *M.tuberculosis*. Importance of TST (IGRA) for the diagnosis of TB infection. TB of intrathoracic lymph nodes (TITLN). Pathomorphology and pathogenesis of TB of intrathoracic lymph nodes. Clinical and radiological diagnostics of TB of intrathoracic lymph nodes. X-ray forms, complications. Features of diagnosis, differential diagnosis, clinical course and treatment. Primary tuberculosis complex (PTC). Pathomorphology and pathogenesis of PTC. Clinical signs, diagnosis, course and treatment. Outcomes of the primary complex. Complications of PTC and TITLN (bronchial tuberculosis, bronchopulmonary lesions, hematogenous and lymphogenous dissemination, pleurisy, atelectasis), their prevention, diagnosis and treatment. Chronic primary tuberculosis. The importance of residual changes in the lungs and mediastinal lymph nodes after cure of primary TB for the occurrence of secondary forms of this disease Characteristics of the course of tuberculosis in children of different age groups. TB of peripheral lymph nodes. Clinical presentations. Pathogenesis. Stages. Features of diagnostics. Histopathological, microbiological methods of diagnostics.
8. Infiltrative TB. Pathogenesis, clinical presentation, differential diagnostics. Pathogenesis and pathomorphology of infiltrative Tb. Clinical and radiological variants (broncho-lobular, rounded, cloudy infiltrate, lobitis, periscissuritis), Chest X-ray forms, clinical features, clinical course. Treatment and outcomes. Prognosis. Differential diagnostics with CAP (community acquired pneumonia), cancer of lung, atelectasis. Caseous pneumonia Pathogenesis and pathological anatomy of lobular and lobar caseous pneumonia. Features of clinical picture, radiological characteristics. Treatment and outcomes of caseous pneumonia. Differential diagnostics with pneumonias occurring with cavitation (lung abscess and septic pneumonia, gangrene of the lung). Clinical features. Methods of X-ray, microbiological and instrumental diagnostics. Focal TB. Pathogenesis and pathomorphology of active and chronic focal TB. Methods of detection, clinical picture and course. Importance of fluorographic and radiographic methods for detection and diagnosis of focal TB. Criteria of activity of focal TB.. Treatment and outcomes of focal TB. Differential diagnostics with CAP, lung cancer, mycoses, limited disseminated tuberculosis.
9. Tuberculomas of lung. Pathogenesis, diagnostics, clinical picture, treatment. Differential diagnostics of round shape mass in the lungs Pathogenesis and pathomorphology of tuberculomas. Peculiarities of the clinical picture, classification. The importance of

radiological methods in the detection and diagnostics of tuberculomas. Treatment and outcomes depending on the size and phase of the course, the importance of the surgical method. Differential diagnostics: malignant and benign tumors, tumor metastases, aspergilloma. Methods of radiation, microbiological and instrumental diagnostics. Disseminated TB. Pathogenesis, clinical picture. Acute, subacute, chronic disseminated TB. Differential diagnostics of disseminations. Miliary tuberculosis of the lungs. Pathogenesis. Clinical forms of acute miliary tuberculosis of the lungs, chest X-ray and clinical features. Diagnostics, clinical picture and treatment of miliary Tb. Subacute and chronic disseminated tuberculosis. Hematogenous, lymphogenous and bronchogenic dissemination, pathogenesis, pathological and radiological signs. Diagnostics, clinical picture and treatment of disseminated tuberculosis of the lungs. Differential diagnosis with focal pneumonia, granulomatosis, carcinomatosis, alveolitis, silicosis, toxoplasmosis, tumor metastases, systemic connective tissue diseases, congestive lung. X-ray, microbiological and instrumental methods of diagnostics. Complications of disseminated tuberculosis (pleurisy, laryngitis, meningitis etc.).

10. TB Pleurisy. Diagnostics. Differential diagnostics of pleurisy. Pathogenesis and pathomorphology of TB pleurisy. Fibrinous (dry) and exudative TB pleurisy. Clinical, radiological, instrumental and cytological diagnostics. Treatment of patients with TB pleurisy, outcomes. TB of pleura. Tuberculous empyema. Pleurisy due to CAP, lung and pleural tumors, of connective tissue systemic diseases, cardiovascular pathology. Clinical signs. Differential diagnosis. Videothoracoscopy in diagnostics and treatment of TB pleurisy.
11. Cavitory (cavernous) TB of lung. Pathogenesis of lung cavern. Morphological structure of caverns, early and chronic cavern. Clinical and radiographic signs of a cavity in the lung. Clinical characteristics of cavitory TB. Course. Treatment. Types of cavity healing. Fibro-cavitory (chronic) TB. Causes of fibro-cavitory TB. Morphological signs. Features of percussion and auscultation. Clinical and radiographic characteristics of fibro-cavitory TB, clinical variants. Complications of fibro-cavernous tuberculosis. Treatment of patients with fibro-cavernous pulmonary tuberculosis, outcomes. Differential diagnostics with diseases manifested by solitary and multiple cavities in lungs. Clinical features of cysts, bullous emphysema, cavitory forms of cancer, destructive pneumonia, acute lung abscess. X-ray, radiological, microbiological and instrumental methods of diagnostics.
12. Complications of pulmonary Tb; clinical features, diagnostics. Pathogenesis, diagnostics and principles of treatment of pulmonary hemorrhage, hemoptysis, spontaneous pneumothorax. First aid to TB patients in emergency and life-threatening conditions.
13. Anti-tuberculosis (antiTB) chemotherapy. General principles. AntiTB antibiotics and chemotherapy drugs, doses, methods of administration, regimens. Interactions with other chemotherapy drugs and antibiotics. Basic principles of antiTB chemotherapy. Stages of intensive chemotherapy and follow-up chemotherapy. Controllability of chemotherapy. Pathogenetic and symptomatic therapy. Adverse reactions of antibacterial drugs, their prevention and elimination. Features of treatment of patients with drug-sensitive and drug-resistant M. tuberculosis. Standard and individualized chemotherapy regimens. Organization of chemotherapy for patients with pulmonary TB. Indications for inpatient and outpatient therapy. Organization and practice of outpatient chemotherapy. Collapse therapy: therapeutic pneumothorax and pneumoperitoneum. Indications and efficacy. Surgical treatment of patients with pulmonary TB. Types of surgical interventions for pulmonary TB. Indications for the use of surgical methods of treatment and their effectiveness. Cure of patients with tuberculosis.

#### **Manuals and required supplies:**

1. Кошечкин, Владимир Анатольевич. Tuberculosis : textbook : учеб. пособие на англ. яз. / В. А. Кошечкин, З. А. Иванова. - М. : ГЭОТАР – Медиа. – 2008. – 271 с.

2. Перельман М.И. Фтизиатрия: учебник / Перельман М.И., Богадельникова И.В. // М. ГЭОТАР – Медиа. – 2013. – 448 с.
3. Зимина В.Н. Туберкулез и ВИЧ-инфекция у взрослых / В.Н. Зимина, А.В. Кравченко, И.Б. Викторова, В.А. Кошечкин. // М.: ГЭОТАР – Медиа. – 2020. – 256 с.
4. Мишин В.Ю. Фтизиопульмонология. Учебник / Мишин В.Ю., Григорьев Ю.Г., Митронин А.В. и др. // М.: ГЭОТАР – Медиа. – 2010. – 504 с.

### **Evaluation and grading:**

*Evaluation of modules* (in written form) in grades: "Excellent" (90-100 points) - the test answers the question in full, the terms are correctly interpreted, the key issues are covered; "Good" (80-89 points) - the test answers the question in full, the terms are correctly interpreted, the key issues of the topic are covered partially; "Satisfactory" (70-79 points) - the test answers the question, but not in full, the terms are correctly interpreted, the key issues of the topic are covered partially, "Bad" (less than 70 points) - the test does not answer the question, the terms are incorrectly interpreted, the key issues of the topic are not covered

*Exams* are conducted in the form of MCQ. Grade: 0–69 – “bad”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, exam assessment results.

### **Classroom rules:**

- Look professional: you have to wear clean white coat and change of shoes
- Be disciplined, don't be late for classes
- Be prepared for the classes
- Be active
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

#### **Example of module No. 1. Epidemiology and Diagnosis of TB**

1. Features of anamnesis of TB patients. Clinical mascs of TB
2. Factors and ways of transmission of TB infection.
3. Prevention of transmission of TB infection.
4. Main epidemiologic parameters of TB.
5. PCR diagnosis, BACTEC: procedure, diagnostic features, comparison, clinical value for the diagnosis of TB.

#### **Example of module No. 2. Immunodiagnostics of TB**

1. Targets for TST, IGRA tests.
2. Diagnostic criteria of postvaccinational allergy.
3. Diagnostic criteria of conversion of TST.
4. Diagnostic algorithm in case of finding of TST “conversion”
5. Interpretation of TST results.
6. LTBI (latent TB infection). Definition. Diagnosis. Prophylaxis

### **Examples of MCQ test on exam**

1. Identification of *M.tuberculosis* under microscope related to capability...
  - 1) to maintain it's color after processing with acid \*
  - 2) to stain with carbol-fuchsine
  - 3) to stain with methylene blue

- 4) all mentioned
2. The name of lipid on external membrane of *M.tuberculosis*, which gives a virulence is ...
- 1) CFP-10
  - 2) ESAT-6
  - 3) tuberculin
  - 4) cord-factor\*
3. More frequent localization of TB in adults is ...
- 1) gastro intestinal tract
  - 2) bones
  - 3) lung tissue\*
  - 4) lymph nodes
4. Air-borne way of TB infection is more typical for following group of high risk ..
- 1) prison TB
  - 2) HIV-infection
  - 3) contact with SSP \*
  - 4) diabetes mellitus
5. Specific morphological reaction for tuberculosis inflammation is the accumulation in the focus of damage:
- 1) T-lymphoid cells
  - 2) neutrophil cells
  - 3) epithelioid cells and multinuclear giant cells of Pirogov–Langhance \*
  - 4) fibrous tissue

## CLINICAL PHARMACOLOGY

**Teachers: MD, PhD Nailya Shamsutdinova**

**Building, Department, classroom** Hospital Therapy department GAUZ RKB MH RT Kazan, (Orenburg tract, 138), building A, 6 floor

**Contact details:**

- Telephone number: 237-32-61 (MD, PhD Nailya Shamsutdinova)
- E-mail address: med.laborant@mail.ru
- Office and working hours: (8-16)

**Total hours: 108 hours**

Lectures 14

Practical classes 50

Independent work 44

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgm.kcn.ru:40404/moodle/login/index.php>).\_\_

**Course objectives: The purpose of mastering the discipline**

The goals of mastering **clinical pharmacology** discipline - to teach students the choice of effective, safe, affordable medicines and their dosage regimens for conducting modern individualized pharmacotherapy using basic data on pharmacokinetics, pharmacodynamics, pharmacogenetics, pharmacoeconomics, pharmacoepidemiology, interaction, adverse reactions, as well as the provisions of evidence-based medicine

**Tasks of the discipline:**

To form knowledge in the field of:

- the clinical and pharmacological characteristics of the main groups of drugs, modern methods of drug treatment and the rational choice of specific drugs in the treatment of various diseases from the standpoint of evidence-based medicine;
- the mechanism of the therapeutic effect of physiotherapy and physiotherapy, indications and contraindications to their purpose, especially their implementation; modern classification of diseases; diagnostic methods, diagnostic capabilities of methods of direct examination of a patient with a therapeutic profile, modern methods of clinical, laboratory, instrumental examination of patients (including endoscopic, radiological methods, ultrasound diagnostics); diagnosis criteria for various diseases; modern diagnostic capabilities of outpatient services;
- the basic principles, concepts and rules of evidence-based medicine. Types of research. Methods of critical analysis and evaluation of modern scientific achievements. The main methods of collecting and analyzing information. The main positions are GCP, GMP and GLP.
- development a treatment plan for the patient, taking into account the course of the disease, select and prescribe drug therapy in accordance with the principles of evidence-based medicine, prescribe medications based on the characteristics of their pharmacodynamics and pharmacokinetics;
- determination the status of the patient: collect an anamnesis, conduct a survey of the patient and / or his relatives, conduct a physical examination of the patient (examination, palpation, auscultation, measurement of blood pressure, determination of the properties of arterial pulse, etc.); assess the condition of the patient to decide on the need for medical care; conduct an initial examination of systems and organs: respiratory, cardiovascular, blood and blood-forming organs, digestive, urinary, musculoskeletal and joints; fill out a medical history, write a prescription; plan, analyze and evaluate the quality of medical care, the health status of the population and the influence of environmental and industrial factors on it; to participate in the organization and provision of medical, preventive and sanitary-anti-epidemic assistance to the population, taking into account its social and professional (including professional sports) and age and gender structure; to carry out preventive, hygienic and anti-epidemic measures; use the methods of primary and secondary prevention (on the basis of evidence-based medicine) in medical activities, establish causal relationships of changes in the state of health from the influence of environmental factors;
- analyzes the main statistical indicators characterizing the health of the population, diagnostic characteristics of tests, etc.
- standards for the provision of medical care for various diseases, prescribing skills in the treatment, prevention and rehabilitation of drugs;
- proper medical records; public health assessments; proper maintenance of medical records; general clinical examination methods; interpretation of the results of laboratory, instrumental diagnostic methods;



- methods for the public presentation of medical information based on evidence-based medicine.

### **Course topics:**

#### **Calendar plan of lectures**

1. General Issues of Clinical Pharmacology: Part 1
2. General Issues of Clinical Pharmacology: Part 2
3. Clinical pharmacology of steroidal and non-steroidal anti-inflammatory drugs Part 1
4. Clinical pharmacology of steroidal and non-steroidal anti-inflammatory drugs Part 2
5. Clinical pharmacology of antihypertensive drugs
6. Clinical pharmacology of drugs for the treatment of CHF
7. Clinical pharmacology of antimicrobials

#### **Calendar plan of Practical classes**

1. General Issues of Clinical Pharmacology.
2. Clinical pharmacology of steroidal and non-steroidal anti-inflammatory drugs Part 1.
3. Clinical pharmacology of steroidal and non-steroidal anti-inflammatory drugs Part 2.
4. Clinical pharmacology of antihypertensive drugs
5. Clinical Pharmacology of Drugs for CHF treatment
6. Clinical pharmacology of antianginal drugs
7. Clinical pharmacology of antimicrobials
8. Clinical Pharmacology of Immunosuppressants
9. Clinical Pharmacology of Bronchodilators
10. Module on topics 1-9. Outcoming testing. Final test.

### **Text books and required supplies:**

#### **Main literature**

1. Graiham-Smith D.G., Aronson G.K. Oxford manual on clinical pharmacology and pharmacotherapy – M.: Medicine, 2000. – 774 p.
2. Kykes V.G. Clinical pharmacology: Manual for medical schools. – GEOTAR-Med, 2004.
3. Mihailov I. B. Clinical pharmacology: Manual for students. – 2 nd edition., – SPb: Foliant, 2000. – 526 p.
4. Katzung & Trevor's Pharmacology Examination & Board Review a LANGE medical book Twelfth Edition
5. Chris J. van Boxtel, Budiono Santoso, I. Ralph Edwards. Drug Benefits and Risks: International Textbook of Clinical Pharmacology. - 2001 – 734 p.p.

#### **Additional literature**

1. Basic and clinical pharmacology. Manual in 2 books/Editor B.G. Katzung/. – M.: Binom: SPb: Nevskii dialekt, 1998. - V.1 – 1998. – 624 p.p., V.2 – 1998. – 672 p.p
2. Lourens D.R., Benitt P.N. Clinical Pharmacology in 2 volumes. – M.: Medicine, 1993.
3. Pharmacotherapy of cardiovascular diseases: Manual for doctors (Edit. E.I. Chasov). – M.: Medicine, 2000. – 416 p.p.

#### **Manuals**

1. Clinical features of internal disease in alcohol abuse: Manual (Edit. I. G. Salikhov). Kazan, 2003. - 157 p.p.
2. Shamsutdinova N.G., Abdulganieva D.I., Yakupova S.P., Clinical pharmacology. Manual. Part I – Kazan, KSMU, 2009. – 58 p.p.
3. Shamsutdinova N.G., Abdulganieva D.I., Yakupova S.P., Clinical pharmacology. Manual. Part II – Kazan, KSMU, 2010. – 46 p.p.

4. Shamsutdinova N.G., Abdulganieva D.I., Yakupova S.P., Clinical pharmacology of glucocorticosteroids. Manual.– Kazan, KSMU, 2011. – 58 p.p.

#### Internet resources

1. Electronic catalog of the scientific library of Kazan State Medical University. [http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=521&lang=en](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=521&lang=en)
2. Electronic library system of KSMU <https://lib-kazangmu.ru/english>
3. Student electronic library Student's Konsultant, Books in English [https://www.studentlibrary.ru/ru/catalogue/switch\\_kit/x2018-207.html](https://www.studentlibrary.ru/ru/catalogue/switch_kit/x2018-207.html)
4. Electronic medical library Doctor's Konsultant <http://www.rosmedlib.ru>
5. Scientific Electronic Library Elibrary.ru <http://elibrary.ru>

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other). results, midterm assessment results.

Ongoing performance monitoring:

Level 1 - assessment of knowledge

The following types of control are used to evaluate learning outcomes in the form of knowledge:

- tests;
- oral communications;
- individual interview

Options for test tasks in the discipline "clinical pharmacology"

Criteria for evaluation: The test score is set in proportion to the proportion of correct answers:

90-100% - excellent rating

80-89% - good rating

70-79% - "satisfactory" rating

Less than 70% of the correct answers are rated "unsatisfactory".

Level 2 - skill assessment

The following types of control are used to evaluate learning outcomes in the form of skills:

- essay;

Essay Topics:

1. The rational choice of an antimicrobial drug for the treatment of upper respiratory tract infections.
2. The rational choice of an antimicrobial drug for the treatment of lower respiratory tract infections.
3. The rational choice of an antimicrobial drug for the treatment of urinary tract infections.

Criteria for evaluation:

- "Excellent" (90-100 points) - clearly formulated own position, a combination of scientific argumentation with personal experience, the correct use of scientific terminology, a clear logical structure of the work.
- "Good" (80-89 points) - clearly formulated own position, the prevalence of personal reflection over scientific argumentation (or vice versa), the correct use of scientific terminology, a clear logical structure of the work.
- "Satisfactory" (70-79 points) - implicitly formulated own position, prevalence of personal reflection over scientific argumentation (or vice versa), correct use of scientific terminology, implicit logic of work.
- "Unsatisfactory" (0-69 points) - implicitly formulated own position, or lack thereof, or a high share of borrowings, complete absence of scientific argumentation and terminology, implicit logic of work.

### Level 3 - skill assessment

The following types of control are used to evaluate learning outcomes in the form of skills:

- tasks for making decisions in a non-standard situation (situations of choice, multi-alternative decisions, problem situations);

Types of situational tasks and analysis of specific situations:

1. tasks for establishing the correct sequence, interconnectedness of actions, clarification of the influence of various factors on the results of the task;
2. establishing a sequence (describe the algorithm for performing the action),
3. finding errors in the sequence (determine the correct version of the sequence of actions);
4. indicate the possible influence of factors on the consequences of the implementation of skills, etc.
5. tasks for making decisions in non-standard situations (situations of choice, multi-alternative decisions, problem situations);
6. tasks for assessing the consequences of decisions made;
7. tasks to assess the effectiveness of the action.

Evaluation criteria for all types of tasks:

“Excellent” (90-100 points) - the answer is correct, scientifically reasoned, with links to topics covered.

“Good” (80-89 points) - the answer is correct, scientifically reasoned, but without links to topics covered.

“Satisfactory” (70-79 points) - the answer is correct, but not scientifically substantiated, or the answer is incorrect, but an attempt is made to substantiate it from alternative scientific positions passed in the course.

“Unsatisfactory” (0-69 points) - the answer is incorrect and not scientifically reasoned.

Attendance: The procedure for evaluating learning outcomes is carried out on the basis of the Regulation of the Kazan State Medical University on the forms, frequency and procedure for monitoring student performance and intermediate certification of students. The following types of educational activities of students in the discipline " Clinical Pharmacology " are subject to the current control of academic performance: attendance at lectures, work in seminars, independent work results, including on the educational portal. Control is carried out by the teacher attached to the implementation of the educational program in a specific academic group or by the teacher responsible for the types of educational activities of students. Control for the discipline "Clinical Pharmacology" is carried out in the form of an assessment of the fulfillment of tasks for independent work in workbooks or on an educational portal, the execution of control written work, oral interviews, test control, as well as by assessing the implementation of abstracts, reports, presentations. Current control of the results of independent work is carried out at each lesson selectively for 30-50% of students. At the end of each section of the thematic plan (module). At seminars, the teacher evaluates any, especially successful action (for example, participation in a discussion), only the solution to a full-fledged task is recorded with a mark. Teachers will strive to determine the assessment in the dialogue (external assessment of the teacher + external assessment of students + self-esteem).

Assessment of student performance on a particular topic is expressed on a 10-point scale, on the section (module) in a 100-point scale. Assessment must be reflected in the training journal.

During the intermediate certification (set-off), the results of the control during the semester are taken into account and a point-rating system approved by the Regulation of the Kazan State Medical University on the forms, frequency and procedure of current monitoring of performance and intermediate certification of students is applied. The test is carried out within the classroom hours allocated for the development of the discipline "Clinical Pharmacology" at the last seminar.

The final (rating) score is composed of the ratings by module (maximum 100 points per module), the current grade (maximum 10 points), the grade obtained on the standings (maximum 100 points).

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
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- Using phone is allowed only during breaks

**Example of Level 1. Tests**

1. The manifestation of drug allergy is not:

- 1) Leukemia
- 2) Bronchial obstruction
- 3) Fever
- 4) Cholestatic jaundice

2. The amount of bioavailability is important for determining:

- 1) Multiplicity of reception
- 2) Routes of administration of drugs
- 3) Withdrawal rates
- 4) the effectiveness of the drug

3. Indicate where the majority of drugs are absorbed:

- 1) In the large intestine
- 2) In the small intestine
- 3) in the stomach
- 4) In the oral cavity

4. How many phases of clinical trials do drugs undergo before entering the drug market?

- 1) Two
- 2) Four
- 3) One
- 4) Three

5. Medicinal substances, administered intramuscularly or subcutaneously, can be poorly absorbed during shocks, as:

- 1) Toxic proteins formed in shock bind drugs
- 2) Induction of cytochrome P-450 occurs in shock
- 3) In shock, peripheral capillary blood flow is reduced
- 4) Increased porosity of capillaries promotes back diffusion of drugs in the tissue

6. What is "bioavailability"?

- 1) The amount of drug in plasma, not associated with protein
- 2) The amount of drug absorbed in the digestive tract
- 3) The amount of drug entering the systemic circulation in relation to the administered dose
- 4) The destruction of the drug in the liver

7. Bioavailability of drugs with an increase in presystemic metabolism in the liver:

- 1) Increases
- 2) Decreases

3) Does not change

8. An absolute contraindication for the appointment of glucocorticoids is:

- 1) diabetes
- 2) hypertension
- 3) tuberculosis
- 4) severe swelling
- 5) there are no absolute contraindications

### **Examples of situational tasks**

#### **Task 1**

A 52-year-old patient suffering from iron deficiency anemia and taking iron (II) preparations for this disease. In connection with the exacerbation of chronic pyelonephritis, the patient was prescribed ciprofloxacin 250 mg 2 times a day. The patient took both drugs at the same time. After 5 days from the start of ciprofloxacin, subfebrile fever, pollakiuria persists. According to bacteriological analysis of urine, *Escherichia coli* sensitive to ciprofloxacin was isolated. What is the reason for the ineffectiveness of antibiotic therapy?

Answer: Iron sulfate reduces the absorption of ciprofloxacin, thereby reducing its bioavailability.

#### **Task 2**

A 48-year-old patient suffers from coronary heart disease in the form of stable angina of exertion FC II. Atorvastatin is taken for a long time at a dose of 20 mg / day. After watching a TV show about the benefits of fruits, I began to drink a glass of grapefruit juice three times a day. How will this affect statin therapy?

Answer: The use of grapefruit juice, which inhibits CYP3A4 with drugs that are substrates of this isoenzyme, increases their bioavailability and, therefore, increases the risk of undesirable drug reactions

#### **Task 3.**

The patient is 48 years old, a constant form of atrial fibrillation (more than 48 hours). For a long time, anticoagulant therapy with warfarin at a dose of 5 mg / day has been carried out for several years. The patient's MHO during the entire period of taking the anticoagulant is 2.5. Recently, he independently started taking furosemide 40 mg once in the morning in connection with the resulting edema. This morning, the MHO was 1.5. What is the reason for reducing the effect of warfarin?

Answer: Diuretics weaken the anticoagulant effect of warfarin due to an increase in the concentration of coagulation factors.

#### **Task 4.**

In the past 2 weeks, the deterioration has been disturbing: weakness, sweating, aching pain in the lumbar region, fever up to 37.8 C in the evening, slight paresthesias of the eyelids and faces in the morning.

Over the past 2 months, taking piroxicam at a dose of 20 mg per day.

Blood test: ESR - 30 mm / h, leukocytes - 6500, HB - 112 g / l.

An. urine: s / f, tanning, 1003, acid, white - 0.33 %, erythro - 5-6 in n. sp., leukocytes - 10 in n. sp.

Your recommendations for treatment correction.

Answer: Cancel NSAIDs (piroxicam), additionally prescribe a urine analysis according to Nechiporenko for daily proteinuria, this may be due to the nephrotoxic effect of NSAIDs.

### **Examples of Final evaluation**

Final evaluation: MCQ

1. A dose of medication can be defined as the:

- A. effect that the medication has
  - B. amount of medication that is given
  - C. route of administration of the medication
  - D. amount of side effects that the medication causes.
2. Which of the following statements about routes of administration is FALSE?
    - A. Intravenous means into the vein.
    - B. Intramuscular means into the muscle.
    - C. Transdermal means through the skin.
    - D. Subcutaneous means on the skin.
  3. A patient generally should NOT be given a tablet to swallow in an emergency because
    - A. most patients can not swallow in an emergency.
    - B. most patients are unconscious in an emergency.
    - C. medication taken by mouth takes longer to be absorbed.
    - D. the digestive system might not work properly in an emergency.
  4. Which of the following medications may be carried in the ambulance?
    - A. Aspirin
    - B. Oxygen
    - C. Epinephrine
    - D. Bicarbonat
  5. Development of hepatic centrilobular necrosis secondary to acetaminophen overdose can be prevented effectively by which of the following if given within a few hours after ingestion
    - A. N-acetylcysteine
    - B. Dimercaprol
    - C. Sodium nitrite
    - D. Amyl nitrite

## EPIDEMIOLOGY

**Teachers: Prof. Gulshat Khasanova, PhD Niyaz Khakimov, PhD Saida Agliullina**

**Building, Department, classroom #** 2<sup>nd</sup> Building, Department of Epidemiology and Evidence-based Medicine, 118, 214, 318

**Contact details:**

- Telephone number: +79871893294 (Prof. Gulshat Khasanova)
- E-mail address: gulshatra@mail.ru
- Office and working hours: 317 (9-17)

**Total – 108 h.**

Lectures - 18 h;

Practical classes – 45 h;

Independent work (self-study) – 45h.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the **epidemiology** discipline are formation of systematic knowledge and skills for the prevention of infectious, parasitic and non-infectious diseases in medical institutions, among various population groups at the individual, group and population levels, as well as in emergency situations, necessary for the acquisition of professional medical qualities (hereinafter - discipline).

### **Tasks of the discipline:**

To develop knowledge in the field of:

- descriptive, analytical and experimental-epidemiological studies to identify risk factors for the occurrence of infectious and non-infectious diseases with an assessment of the effectiveness of preventive and therapeutic measures within the framework of randomized controlled trials;
- prevention among various population groups at the individual, group and population levels within the framework of primary, secondary and tertiary prevention;
- primary preventive and anti-epidemic measures for infectious diseases among the population both at the level of primary health care and in the context of public health emergencies of international importance and disaster areas;
- prevention of infections associated with the provision of medical care, as well as occupational diseases in medical and preventive institutions;
- regulatory legal acts governing preventive and anti-epidemic measures and the sanitary and anti-epidemic regime in institutions;
- the formation of positive behavior in the population aimed at maintaining and strengthening health.

### **Course topics:**

#### **Calendar plan of lectures**

1. Paradigm of modern epidemiology
2. Doctrine of the epidemic process
3. Types of epidemiological studies
4. Immunoprophylaxis as a method of preventing infectious diseases
5. Organization of preventive and anti-epidemic measures for acute intestinal infections
6. Organization of preventive and anti-epidemic measures for respiratory tract infections
7. Epidemiology and prevention of HAI
8. Sanitary protection of the country's territory from the importation and spread of infectious diseases.
9. Epidemiology of non-communicable diseases.

#### **Calendar plan of lessons**

1. Epidemiological method with the basics of evidence-based medicine. Epidemiological research. Epidemiological process. Content and organization of preventive and anti-epidemic measures.
2. Disinfection, disinsection, deratization, sterilization.
3. Immunoprophylaxis of infectious diseases. Test 1.
4. Organization of preventive and anti-epidemic measures for acute intestinal infections.

5. Organization of preventive and anti-epidemic measures for respiratory tract infections.
6. Organization of preventive and anti-epidemic measures for socially significant infections. Test 2.
7. Epidemiology and prevention of infections associated with the provision of medical care.
8. Sanitary and anti-epidemic measures in emergency situations in the field of public health of international importance and disaster areas.
9. Epidemiology of non-communicable diseases. Test 3.

#### **Text books and required supplies:**

4. Infectious diseases and epidemiology: textbook / V. I. Pokrovsky [et al.]. - 3rd ed., revised and enlarged. - M.: GEOTAR-Media, 2012. - 1007 p.
5. Epidemiology [Electronic resource] / N. I. Briko, V. I. Pokrovsky - M.: GEOTAR-Media, 2015. - <http://www.studentlibrary.ru/book/ISBN9785970431832.html>
6. Epidemiology of infectious diseases: textbook / N. D. Yushchuk [et al.]. - 3rd ed., revised and enlarged. - Moscow: GEOTAR-Media, 2014. - 496 p. (
7. Epidemiology and prevention of hospital infections [Electronic resource]: method. development for practical classes for students of the medical faculty in the specialty "general medicine" / Kazan. State Medical University of the Ministry of Health of the Russian Federation, Dept. of Epidemiology; [compiled by L. M. Zorin et al.]. - Electronic text data (593 KB). - Kazan: KSMU, 2013. - 90 p.

#### **Evaluation and grading:**

Current control is used to control the following types of students' educational activities: attendance at lectures, work at seminars, results of independent work, including in the educational portal. During seminars, the teacher evaluates any, especially successful action (for example, participation in a discussion).

Routine performance assessment (homework, class work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7-7,9 – “satisfactory”, 8-8,9 – “good”, 9 and above – “excellent”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – unsatisfactory; 70-79 – satisfactory, 80-89 – good, 90 and above - excellent. Student is given not more than 3 attempts to pass midterm assessment within one academic year.

Overall student rating is build up from class attendance, everyday activity, module and test results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
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#### **Examples of control tasks for assessing knowledge, skills, abilities in the educational program**



## **Assessment of knowledge**

- Tests:

1. HIV infection belongs to the group of:

- A) parenteral or blood infections
- B) intestinal infections
- C) respiratory

2. Characteristics of the human immunodeficiency virus:

- A) not resistant in the environment, dies at a temperature of 56 degrees - after 30 minutes, at 100 degrees or in the presence of disinfectants - instantly
- B) resistant in the environment, dies only under the exposure to 5% chloramine
- C) resistant in the environment, sensitive to disinfectants

3. Ways of HIV transmission:

- A) airborne
- B) alimentary
- C) sexual, parenteral, vertical

Example of questions:

- 1. What is the epidemic and sporadic incidence?
- 2. Who introduced the term "epidemiology"?
- 3. Describe epidemiological classification of infectious diseases.
- 4. What are the epidemiological features of anthroponoses, zoonoses, sapronoses?
- 5. Describe three components of the epidemiological chain in anthroponosis.

Examples of topics for abstract work (oral reports):

Modern disinfectants.

Prevention of hospital infections.

Personal safety measures for a general practitioner, surgeon, obstetrician.

## **Assessment of skills**

– essay topics:

epidemic process; mechanisms and routes of pathogen transmission; content and organization of preventive and anti-epidemic measures.

– tasks to establish the correct sequence and relationship of actions.

Case 1: Patient K., 22 years old, was admitted to the infectious diseases department of the Central District Hospital with complaints of repeated loose stools with a small admixture of blood over the course of a week. From the anamnesis: he has been taking intravenous drugs for 3 years, HIV infection was diagnosed 2 years ago.

- 1. Identify the patient's problems; formulate goals and make a care plan for the priority problem with motivation for each intervention.
- 2. Tell about the disinfection regime in the ward for HIV-infected patients.

Case 2: When taking blood from a patient's vein for biochemical tests, a nurse punctured her gloves and finger with a contaminated needle. She wiped the gloves with a swab soaked in a 3% chloramine solution and continued working with another patient.

- 1. Identify violations in the nurse's actions.
- 2. What risk does the nurse expose herself and the patient to.
- 3. Determine the procedure for processing gloves contaminated with blood.
- 4. Give recommendations to health care workers providing care to HIV-infected patients for the purpose of preventing HAI.

## FORENSIC MEDICINE

**Teachers:** Associate professor Liliya Aleksandrova, assistant Victor Kalyanov, assistant Andrei Anisimov

**Building, Department, classroom:** Tolstogo 6, Forensic Medicine Department, 101, 116

**Contact details:**

- Telephone number: +79872967072 (Associate professor Liliya Aleksandrova)
- E-mail address: lilya-aleksandrova@yandex.ru
- Office and working hours: 101, 116 (9-17)

**Total hours: 108 h**

Lectures - 18 hours;

Practical classes – 45 hours;

Independent work – 45 hours.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1828> ).

**Course objectives:**

- training in theoretical and practical issues of forensic medicine to the extent necessary for the successful performance of specialist duties during initial investigative actions;
- familiarization with the morphological features of the course of pathological processes under various types of external influences and extreme conditions;
- familiarization with the legal regulation and organization of forensic medical examination, the responsibility of the doctor for causing harm to health in the process of providing medical care and committing professional and professional-official offenses.

**Tasks of the discipline:** acquisition by students of knowledge that provides the ability and readiness to analyze socially significant problems and processes, analyze and evaluate the quality of medical care, the health status of the population, the impact of lifestyle factors, the environment and the organization of medical care, to establish clinical and biological death, as well as to analyze and interpret the results of modern diagnostic technologies taking into account the physiological characteristics of the patient's body for successful treatment and preventive activities, participation in the implementation of an examination of working capacity and forensic medical examination.

**Course topics:**

**Calendar plan of lectures**

1. Procedural and organizational foundations of forensic medical examination
2. Forensic thanatology. Examination of a corpse at the scene of discovery
3. Forensic medical examination of victims, accused, suspects and other persons
4. Forensic medical traumatology: injuries caused by blunt objects, transport trauma and falls from a height
5. Forensic medical traumatology: injuries caused by sharp objects
6. Forensic medical traumatology: gunshot injuries
7. Mechanical asphyxia
8. Injuries and death from exposure to physical and chemical factors
9. Forensic medical examination in cases of bringing medical workers to justice for poor quality medical care and professional offenses

### **Calendar plan of laboratory classes**

1. Procedural and organizational foundations of forensic medical examination. Contents of the subject of forensic medicine. Structure of the forensic medical service of Russia, objects of research. Rights, duties of an expert. Types of examinations. Reasons and procedure for appointing examinations. Requirements for the execution of forensic medical documentation. Rules for filling out a medical death certificate.
2. The class covers the issues of regulation and procedure for examining a corpse at the place of its discovery in accordance with the criminal procedure legislation of the Russian Federation, the tasks of a specialist doctor when examining a corpse, stages of examination, familiarization with techniques for identifying and describing damage to clothing and the body of a corpse, assessing cadaveric phenomena, conducting supravital reactions in order to establish the time of death, familiarization with the rules for detecting, seizing and sending material evidence of biological origin.
3. Familiarization of students with the basic rules of forensic medical examination of corpses, diagnostics of pathological changes and correct description of bodily injuries. Documentation of the production of forensic medical examination (research) of a corpse. Rules for the removal and sending of material for laboratory research. Features of forensic medical examination of corpses of fetuses and newborns. Issues resolved during forensic medical examination of corpses of fetuses and newborns.
4. Introducing students to the types of injuries encountered when exposed to blunt hard objects, falls from great heights and on flat surfaces. Examination of injuries caused by rail, trackless and water transport.
5. Introducing students to the classification of sharp objects. Morphological characteristics of the resulting damage. Possibility of establishing the properties of the object that caused the injury. Classification of firearms, explosives, differential diagnostic signs of wounds, features of expert examination.
6. Introducing students to the diagnosis of death from asphyxia, the stages of asphyxia and its consequences. Differential diagnostics of the vitality of the strangulation groove. Features of the production of forensic medical examinations for various types of mechanical asphyxia. The importance of laboratory methods in the diagnosis of asphyxia. Correction of knowledge using tables and diagrams. Demonstration of sectional material on the topic of the lesson.
7. General and local effects of high and low temperatures; examination of corpses found in the fire and in cases of death in the cold. Electrical injury. Correction of knowledge using tables, diagrams, slides. Familiarization of students with various types of poisoning, foodborne toxic infections, potent and narcotic drugs. Pathogenesis and thanatogenesis, manifestations and causes of death in poisoning with individual groups of poisons. Establishing the fact of alcohol consumption and the degree of intoxication. Drug addiction and toxicomania. The role of laboratory tests in the diagnosis of death from poisoning.
8. Familiarization of students with the methodology and tactics of a forensic medical expert in cases of examination of living persons with the determination of the nature and mechanism of

occurrence, duration and extent of harm caused to health with the preparation of forensic medical documentation. Forensic medical examination of sexual conditions and crimes.

9. To familiarize students with medical deontology, responsibility for professional and professional-official offenses of medical workers in accordance with the Criminal Code of the Russian Federation, the fundamentals of the legislation of the Russian Federation on the protection of citizens' health, and the specifics of conducting commission forensic medical examinations.

#### **Text books and required supplies:**

1. Forensic Medicine. Textbook / Yu. I. Pigolkin, I. A. Dubrovin. — Moscow : ГЭОТАР-Медиа, 2023. — 464 p. : il.
2. Pigolkin Yu.I. Sudebnaya meditsina [Forensic medicine] / Yu.I. Pigolkin, V.L. Popov. - Rostov-on-Don. : Phoenix, 2015. - 551 p. [In Russian]
3. Beran, R.G. (2013). Legal Medicine and Medical Law. In: Beran, R. (eds) Legal and Forensic Medicine. Springer, Berlin, Heidelberg.
4. Forensic medicine. 5 th ed., Pererab. Ed. Kryukov, VN / Sudebnaya meditsina. 5-e izd., pererab. Pod red. Kryukova V.N.

**Evaluation and grading:** Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

***Routine performance assessment*** (homework, laboratory work, tests during classes, etc.) is carried out using 10point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University. ***Situation task assessment*** is a form of knowledge and skills evaluation on the discipline or on a part of it. It gives the description of one forensic scenario with questions which require the full developed answer. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

***Module assessment*** is held in forms of test, situational task, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

***Final assessment MCQ (zachet)*** is held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

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### **Example of situational task**

It is known from the resolution on the appointment of a forensic medical examination that on August 2, 1999, during a fight, citizen S., aged 18, was hit in the head with a metal object, after which S. sought medical assistance at the trauma center. The outpatient medical record submitted for examination noted that at the initial appointment, S. complained of sharp pain in the left cheek, which intensified when opening his mouth and trying to clench his teeth tightly. There was no nausea or vomiting. Objectively: the general condition is satisfactory, consciousness is clear. Oriented in space and time. Pathological neurological symptoms are not determined. A swelling of a bluish-purple color, irregularly oval in shape, measuring 7x2 cm, located in the vertical direction was found on the skin of the zygomatic region on the left. A skull X-ray in 2 projections shows a linear transverse fracture in the middle third of the left zygomatic arch without displacement of the fragments. The patient was treated as an outpatient for 24 days.

During the forensic medical examination conducted four weeks after the incident, the patient had no complaints, no facial asymmetry was found. The movements of the lower jaw are painless, in full, the bite is unchanged. No bodily injuries were found at the time of the examination.

Task 1. Determine the presence and list the bodily injuries found in the victim, their nature and localization?

Task 2. Determine the mechanism of injury and what caused them (type of tool and means).

Task 3. Determine the time since the injury was caused.

Task 4. Determine the severity of the harm caused to health and by what classification feature.

### **Example of MCQ test**

12. Crimes against the person include the following, except:

- A - failure to provide assistance to a patient;
- B - abandonment in danger;
- C - illegal issuance of prescriptions entitling to receive narcotic drugs;
- D - HIV infection;
- E - causing death by negligence.

13. Crimes against public health and public morality include:

- A - negligence;
- B - illegal placement in a psychiatric hospital;
- C - abandonment in danger;
- D - illegal trafficking of potent or poisonous substances
- E - HIV infection.

14. Skin burns with hot liquid are characterized by:

- A - significant depth of damage
- B - the presence of singed hair;
- C - the shape of the burn wound, resembling traces of drips;
- D - the presence of soot on certain parts of the body;
- E - signs of burning of clothing.

15. All of the listed signs indicate the formation of flame burns during life, except:

- A - the presence of fibrin in the fluid of burn blisters
- B - migration of leukocytes to the damage zone;
- C - the presence of arterial thrombi in the vessels of the damaged areas;
- D - charring of tissues;
- E - detection of more than 30% carboxyhemoglobin in the blood.

5. What are the leading pathogenetic mechanisms in hanging?  
A - obstruction of external respiration;  
B - cerebrovascular accidents;  
C - overstimulation of the sinocarotid zone;  
D - compression of the chest with impaired respiratory movements.

#### **Module / Final assessment questions**

1. Forensic medicine, its meaning, content and tasks.
2. Procedural foundations of forensic medical examination in the Russian Federation.
3. Definition and concept - bodily injuries. Classification of injuries
4. Abrasions, wounds and bruises as objects of examination.
5. The procedure for describing injuries.
6. Features of the autopsy technique for various injuries.
7. Types of blunt objects, mechanism of action, possibilities of examination.
8. Car injury and its types.
9. Causes of death due to mechanical injury.
10. Sharp objects, classification.
11. Mechanical asphyxia. Asphyxic signs.
12. Physical factors. Classification.
13. Forensic medical classification of poisons and poisonings. The concept of poisons.
14. Routes of entry of toxic substances and features of forensic medical examination.
15. The main stages of forensic examination in cases of poisoning.
16. The tasks of a medical specialist at the scene of the incident when examining a corpse.
17. Features of examining corpses at the scene of the incident in case of different types of death.
18. Examination of exhumed corpses.
19. Laboratory diagnostics of vitality and age of injuries.
20. Determining the age of death.
21. Forensic examination of living persons: types, reasons, organization.
22. Forensic examination of the degree of harm caused to human health.
23. Forensic examination of age.
24. Forensic examination of material evidence.
25. Forensic examination based on materials of investigative and court cases.
26. Forensic examination of professional offenses of medical workers.
27. Forensic medical examination of official violations of medical workers.
28. Criminal Code on the exclusion of criminal liability of medical workers.
29. Reasons for conducting a forensic medical examination of a corpse.
30. Mandatory forensic medical examinations.

## **DENTISTRY**

**Teachers:** PhD Associate Professor Olga Torgashova, assistant Guzel Gubadullina

**Building, Department, classroom:** Department maxillofacial surgery and dental surgery.  
Chuikova str. 54, 5 floor, Kazan, Hospital 7

#### **Contact details:**

- Telephone number: 89172922518 (Olga Torgashova)
- E-mail address: olga.torgashova @kazangmu.ru
- Telephone number: 89874032773 (Guzel Gibadullina)
- E-mail address: ggilmanova-dentist@yandex.ru

Course: 6

Semester: B

**Total hours — 72:**

Lectures 10 hours;

Practical classes 30 hours;

Independent work 32 hours;

**Discipline goals:** to obtain knowledge about the etiology, pathogenesis, clinic of dental diseases, and the principles of their treatment and prevention.

**Course description:**

Lecture is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

Workshop is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

Practical training is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

Self-study is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1331>).

**Course objectives:** The purpose of mastering the discipline

The goals of mastering the DENTISTRY discipline are to obtain knowledge about the etiology, pathogenesis, clinic of dental diseases, and the principles of their treatment and prevention.

**Objectives of discipline mastering**

- acquisition of knowledge about the etiology, pathogenesis, and clinic of diseases of the maxillofacial region;
- teaching students the most important methods of diagnosing diseases of the maxillofacial region, identifying the links of dental diseases with environmental factors, occupational hazards, bad habits;
- teaching students to choose the optimal method of examination for diseases of the maxillofacial region, mastering the basic practical skills necessary for the examination of dental patients and compiling an algorithm for differential diagnosis;
- training in planning of medical and preventive measures among patients with diseases of the maxillofacial region;
- study of emergency conditions in dentistry and training students to provide assistance in their occurrence;
- training students to choose the optimal treatment regimens for the most common diseases of the maxillofacial region;
- training students to prepare medical documentation (medical records of an inpatient or outpatient dental patient);

**Course topics:**

**Calendar plan of lectures**

1. Introduction to the specialty.
2. Local anesthetics and medications for local analgesia
3. Inflammatory diseases of the maxillofacial region
4. Traumatology of the maxillofacial region

5. Benign neoplasms of facial tissues, bones of the facial skull, the oral cavity and its organs. Malignant tumors of the oral and maxillofacial region. Malformations of the oral and maxillofacial region.

### **Calendar plan of classes**

1. Organization of dental care. Questions of therapeutic, orthopedic dentistry, children's dentistry and orthodontics. Methods of examination of a dental patient: basic and additional methods. Stages of the diagnostic process. The concept of differential diagnosis. Basic principles of making a treatment plan. Case history. Deontological aspects. Diseases of the hard tissues of the tooth. Dental caries. Non-carious lesions. Complications of caries. Pulpitis. Periodontitis. The concept of pulpitis, periodontitis. Classification, etiology, pathogenesis, clinic, diagnostics, methods of treatment and prevention.
2. Main aspects and problems of pain in dentistry. Local anesthetics used for local anesthesia. Potentiation of local analgesia, premedication. Choice of analgesia and preparation of the patient for intervention in concomitant diseases and in the elderly. Types of local anesthesia. Local and General complications. The operation of removing the tooth. Indications and contraindications. Tools.
3. Classification of inflammatory diseases of the oral and maxillofacial region. Odontogenic periostitis and osteomyelitis of the jaws. Odontogenic sinusitis. Odontogenic abscesses and phlegmons. Boils. Inflammatory diseases of the salivary glands. Complications of odontogenic inflammatory processes in MFR.
4. Classification of injuries of maxillofacial problems. Damage to soft tissues, teeth, and alveolar processes of the jaws. Fractures of the bones of the facial skeleton. Complications of maxillofacial injuries
5. Tumors of the oral and maxillofacial region. Benign neoplasms of the maxillofacial region. Tumor-like formations of MFR. Malformations of the oral and maxillofacial region. Oncological diseases of the maxillofacial region Precancerous diseases of the MFR.
6. Goals and objectives recovery facial surgery. Congenital and acquired defects and deformities of facial tissues. Indications and contraindications for aesthetic operations on the face.

### **Text books and required supplies:**

1. Oral Surgery : textbook / ed. by S. V. Tarasenko. - Москва : ГЭОТАР-Медиа, 2023. - 640 с. - ISBN 978-5-9704-7080-0, DOI: 10.33029/9704-7080-0-OST-2023-1-640. - Электронная версия доступна на сайте ЭБС "Консультант студента" : [сайт]. URL: <https://www.studentlibrary.ru/book/ISBN9785970470800.html> (дата обращения: 10.10.2024).
2. Oral and Maxillofacial Surgery: Textbook, Part 1 / V.O. Malanchuk. – Vinnytsia: Nova Knyha Publishers, 2011. – P. 172-175. [https://chirurgieomfio.usmf.md/wp-content/blogs.dir/109/files/sites/109/2017/09/Oral\\_and\\_Maxillofacial\\_Surgery\\_E-Book.pdf](https://chirurgieomfio.usmf.md/wp-content/blogs.dir/109/files/sites/109/2017/09/Oral_and_Maxillofacial_Surgery_E-Book.pdf)

### **Evaluation and grading:**

Monitoring progress is carried by everyday (written papers/oral examination /abstracts/reports/ or other).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.



*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Overall student rating midterm assessment results is build up from class attendance, module and test results.

Classroom rules:

- Be respectful
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breakes
- Using phone is allowed only during breakes

Example of topic No. 1. Organization of dental care. Questions of therapeutic, orthopedic dentistry, children's dentistry and orthodontics. Methods of examination of a dental patient: basic and additional methods. Stages of the diagnostic process. The concept of differential diagnosis. Basic principles of making a treatment plan. Case history. Deontological aspects. Diseases of the hard tissues of the tooth. Dental caries. Non-cariou lesions. Complications of caries. Pulpitis. Periodontitis. The concept of pulpitis, periodontitis. Classification, etiology, pathogenesis, clinic, diagnostics, methods of treatment and prevention.

Organization of outpatient and inpatient admission of dental patients. Types of dental care (therapeutic, surgical, orthopedic, orthodontic, children's). Features of examination and treatment of patients with dental diseases. Modern diagnostic methods. Diseases of hard tooth tissues in children and adults. Caries, pulpitis, periodontitis, periodontitis. Stages of teething in children. Prevention of carious and non-cariou lesions of the teeth. Emergency care and treatment principles.

Example of topic No. 2 Main aspects and problems of pain in dentistry. Local anesthetics used for local anesthesia. Potentiation of local analgesia, premedication. Choice of analgesia and preparation of the patient for intervention in concomitant diseases and in the elderly. Types of local anesthesia. Local and General complications. The operation of removing the tooth. Indications and contraindications. Tools.

Types of local anesthesia. Choice of analgesia and preparation of the patient for intervention in concomitant diseases and in the elderly. Analgesia for surgical interventions on the upper and lower jaw. The operation of removing the tooth. Indications and contraindications to the operation of tooth extraction. Method of removing teeth and their roots on the upper and lower jaw. Tools. Wound healing after tooth extraction.

Grading Criteria:

Evaluation Criteria Demonstrated knowledge, skills, and abilities are evaluated on a 100-point scale, and points are converted to performance grades as follows: 90-100 points - awarded if the student correctly answered 90% of the test questions. 80-89 points - awarded if the student correctly answered 80% to 90% of the test questions. 70-79 points - awarded if the student correctly answered 70% to 80% of the test questions. Less than 70 points - awarded if the student correctly answered less than 69% of the test questions. The student's knowledge, skills, and abilities are evaluated on a 100-point scale. Less than 70 points - awarded if the student correctly answered less than 69% of the test questions.

Example of test:

What is a fracture?

- a. Separation of two bones that form a joint
  - b. Tearing of cartilage that connects to a bone
  - c. A break or crack in a bone
  - d. Tearing of the tendon that attaches to a bone
2. The most common cause of injuries is
    - a. Violence
    - b. Sports injuries
    - c. Accidental falls
    - d. Motor vehicle accidents
  3. What are the common symptoms for a facial fracture?
    - a. Pain and loss of function into the upper extremities.
    - b. Pain, edema, and loss of function.
    - c. Numbness and tingling in the affected area.
    - d. Pain and a decrease in blood pressure and respiration rate.
  4. When should teeth in the fracture line be removed?
    - a. Tooth with gangrene already before the injury
    - b. Mobile tooth with a deep pocket
    - c. Non mobile teeth with periodontal disease
    - d. All of the above

#### Grading Criteria:

The grade on the test is given in proportion to the percentage of correct answers:

90-100% - grade "excellent"

80-89% - grade "good"

70-79% - grade "satisfactory"

Less than 70% of correct answers - grade "poor".

#### EVALUATION OF THE MODULE ANSWER

Total grade for the section is formed from the oral answers at the classes, and the results of the final testing on the discipline.

Absences from lectures and practical classes decrease the student's classroom rating and affect the final grade.

Evaluation of the final (rating) grade is made up of module grades (maximum 100 points per module), the current grade (maximum 10 points), and the grade obtained at the credit (maximum 100 points).

Assessment and assessment criteria:

0-69 (unsatisfactory):

- Lectures:

Failure to attend lectures or a large number of absences

Absence of lecture notes

Unsatisfactory behavior during lectures

- Practical classes:

Failure to attend practical classes or a large number of absences.

Wrong answer or refusal to answer

Lack of activity in class

Low level of mastery of the material.

- Independent work:

Self-work assignments are not completed, or there are numerous errors or a high percentage of plagiarism.

Lexical, grammatical errors in assignments.

70-79 (satisfactory):

- Lectures:

Attendance in most lectures

Partial absence of lecture notes/incomplete lecture notes

- Practical classes:

Attendance of most of the practical classes

Correct but insufficient response

Weak activity in class

Low level of mastery of the material.

- Independent work:

oSelf-work assignments are completed but with errors or average borrowings

Lexical, grammatical errors in assignments.

80-89 (Good):

- Lectures:

Attendance at all lectures, excused absences only

Availability of notes for all lectures

- Practical classes:

Attendance at all practicum sessions, absences only for valid reasons

Correct, sufficient answer.

Average activity in class

Average level of mastery of the material.

- Independent work:

Self-work assignments are completed mostly without errors and with little borrowing.

Lexical, grammatical errors are absent.

90-100 (excellent):

- Lectures:

Attendance at all lectures, absences only for valid reasons

Detailed notes of all lectures are available

- Practical classes:

Attendance of all practical classes, absences only for valid reasons

Regular correct answers, including the use of additional literature

High level of activity in the class

Fluent level of mastery of the material.

- Independent work:

Self-work assignments are completed without errors or borrowings

Lexical and grammatical errors are absent.

## HOSPITAL THERAPY

**Teachers:** Prof. Abdulganieva D.I., MD, PhD, Head of Hospital Therapy Department, Prof. Maksudova A.N., MD, PhD, Prof. Mayanskaya S.D., MD, PhD, Associate Prof. Shamsutdinova N.G., MD, PhD, Assistant Prof. Muhametova D.D., MD, PhD, Assistant Prof. Bodryagina E.S., MD, PhD, Assistant Prof. Khalfina T.N., MD, PhD, Assistant Prof. Akberova D.R., Assistant Prof. Belousova E.N., MD, PhD, Assistant Prof. Nuriahmetova T.Y., MD, PhD, Assistant Prof. Kosterina A.V., MD, Assistant prof. Myasoutova L.I., MD.

### **Building, Department, classroom**

RCH, teaching block, 6 floor, classrooms 1-9

Hospital 7, teaching block, 2 floor, classroom

**Contact details:**

- Telephone number: +7(843)2373261
- E-mail address: med.laborant@mail.ru
- Office and working hours: RCH, teaching block, 6 floor, 9-15, Hospital 5

**Total 432 hours**

Lectures 72 hours

Practical training 185 hours

Self-study 139 hours

Exam 36 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time (<https://e.kazangmu.ru/course/view.php?id=510>).

Practical training is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

Self-study is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=648>).

**Course objectives:**

**The purpose of mastering** the discipline "hospital therapy" is to prepare a qualified physician, to form a qualified specialist physician and organizer of medical care for patients with acute and chronic therapeutic diseases, possessing a system of knowledge and competencies, capable and ready for independent professional activity.

**Goals and objectives of mastering the discipline:**

- provide knowledge of the etiology and pathogenesis, clinical manifestations and diagnostic methods of the main diseases of internal organs;
- consolidate and improve the skills of examining a therapeutic patient;
- develop clinical thinking (the ability to make a detailed clinical diagnosis based on the collected information about the patient);
- teach how to use the method of differential diagnostics within the nosological forms being analyzed;
- teach the basic principles of prevention and treatment of diseases of internal organs.

Knowledge of the basics of clinical medicine, which is mainly taught in therapeutic departments, is important for the training of doctors of all specialties. When studying therapy, the basics of clinical thinking, medical deontology are formed, the skills of examining patients and making decisions on prescribing the necessary treatment are mastered.

During the course of studying the discipline, the student should know:

1. Moral and ethical standards, rules and principles of professional and medical behavior, the rights of the patient and doctor, the ethical foundations of modern medical legislation.
2. Principles of evidence-based medicine.
3. Etiology, pathogenesis, diagnosis, treatment and prevention of the most common diseases of internal organs in the adult population.
4. Clinical picture, features of the course and possible complications of the most common diseases occurring in a typical form in the adult population.
5. Modern methods of clinical, laboratory and instrumental diagnostics of the adult population of the therapeutic profile.
6. Pathological symptoms and syndromes in the most common diseases.

2. International statistical classification of diseases and related health problems (ICD). Fundamentals of diagnostic measures to identify emergency and life-threatening conditions.
3. Modern methods of drug and non-drug treatment for diseases of internal organs from the standpoint of evidence-based medicine.
4. Organization and implementation of rehabilitation activities among the adult population, the mechanism of the therapeutic and rehabilitation effects of physiotherapy, exercise therapy, reflexology, exercise therapy, reflexology, herbal medicine, massage and other non-drug methods, indications and contraindications for their use.
5. Rules for the preparation of medical documentation.
6. Fundamentals of studying, collecting scientific and medical information, methods of scientific research.

#### **Course topics:**

##### **Calendar plan of lectures 5th year**

- Topic 1.1. Chronic heart failure.
- Topic 1.2. Bacterial endocarditis, diagnostics, treatment.
- Topic 1.3. Respiratory diseases: COPD and bronchial asthma
- Topic 1.4. Differential diagnostics of pneumonia.
- Topic 1.5. Differential diagnostics of functional and organic diarrhea.
- Topic 1.6. Nephrotic syndrome
- Topic 1.7. Amyloidosis and storage diseases
- Topic 1.8. Differential diagnostics of joint syndrome.
- Topic 1.9. Spondyloarthritis. Differential diagnostics of back pain.
- Topic 1.10. Cardiomyopathies.
- Topic 1.11. Pulmonary embolism. Clinical variants of the course.
- Topic 1.12. Heart defects. Heart murmur syndrome.
- Topic 1.13. Emergencies in therapeutic practice.
- Topic 1.14. Hydropericardium. Pericarditis.
- Topic 1.15. Evaluation of renal function: 360 degrees and more.
- Topic 1.16. DIC syndrome.
- Topic 1.17. Differential diagnostics of anemic syndrome.
- Topic 1.18. Differential diagnostics of lymphoproliferative syndrome.

##### **Calendar plan of lectures 6<sup>th</sup> year**

- Topic 1.1. The role of the therapist in reducing mortality from major diseases
- Topic 1.2. Alcohol-dependent damage to internal organs
- Topic 1.3. Extragenital pathology. General issues
- Topic 1.4. Age-associated diseases
- Topic 1.5. Fever syndrome of unknown genesis
- Topic 1.6. Hypercoagulation syndrome
- Topic 1.7. Differential diagnostics of arterial hypertension
- Topic 1.8. ECG diagnostics of emergency conditions (Part 1)
- Topic 1.9. ECG diagnostics of emergency conditions (Part 2)
- Topic 1.10. Emergency conditions in the clinic of internal diseases
- Topic 1.11. Methodology of diagnosis
- Topic 1.12. Methodology of treatment
- Topic 1.13. Pleurisy
- Topic 1.14. Differential diagnostics of disseminated process in the lungs
- Topic 1.15. Differential diagnostics of hepatosplenic syndrome.
- Topic 1.16. Liver cirrhosis: edematous-ascitic syndrome, portal hypertension
- Topic 1.17. Abdominal pain syndrome: differential diagnostics
- Topic 1.18. Acute kidney injury

##### **Calendar Plan of practical training**

##### **Calendar plan of practical training 5th year**

60. Arterial hypertension syndrome.
61. Myocarditis. Pericarditis.
62. Bronchial asthma. Broncho-obstructive syndrome.
63. Bacterial endocarditis, diagnostics, treatment.
64. Abdominal pain syndrome.
65. Differential diagnostics of functional and organic diarrhea.
66. Nephrotic syndrome
67. Cardiomyopathies.
68. Pulmonary embolism. Clinical variants of the course.
69. Heart rhythm disturbances
70. Differential diagnostics of joint syndrome.
71. Spondyloarthritis. Differential diagnostics of back pain.
72. Differential diagnostics of anemic syndrome.
73. Differential diagnostics of lymphoproliferative syndrome.

#### **Calendar plan of practical training 6th year**

1. Disease-modifying therapy of RA. Standard DMARDs and genetic engineering therapy
2. Seronegative spondyloarthritides, early diagnostics. Psoriatic arthritis
3. Mixed connective tissue diseases (dermatomyositis, CREST syndrome, overlap syndrome. Erythema nodosum.
4. Systemic vasculitis. Classification, diagnostic criteria
5. Differential diagnostics of interstitial lesions. Differential diagnostics of pneumonia
6. Differential diagnostics of pleural effusion syndrome. Respiratory failure syndrome: acute and chronic
7. COPD: clinical phenotypes, differentiated therapy depending on the phenotype.
8. Liver cirrhosis. Portal hypertension syndrome. Hepatosplenic syndrome.
9. Differential diagnosis of hepatitis. NASH. Alcoholic hepatitis.
10. Differential diagnosis of jaundice: pancreatitis, biliary sludge.
11. Myelodysplastic/myeloproliferative diseases
12. Lymphoproliferative diseases. Hyperplastic syndrome
13. Hemorrhagic syndrome. Thrombophilia.
14. Acute Kidney Injury
15. Hematuria Syndrome and Nephritic Syndrome
16. CKD and Tubulointerstitial Nephritis

#### **Recommended text books and supplies:**

8. Electronic catalog of the scientific library of Kazan State Medical University. [http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=521&lang=en](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=521&lang=en)
9. Electronic library system of KSMU <https://lib-kazangmu.ru/english>
10. Student electronic library Student's Konsultant, Books in English [https://www.studentlibrary.ru/ru/catalogue/switch\\_kit/x2018-207.html](https://www.studentlibrary.ru/ru/catalogue/switch_kit/x2018-207.html)
11. Electronic medical library Doctor's Konsultant <http://www.rosmedlib.ru>
12. Scientific Electronic Library Elibrary.ru <http://elibrary.ru>
13. Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson J. eds.
14. Harrison's Principles of Internal Medicine, 21e. McGraw-Hill Education;
15. 2022. Accessed October 17, 2024.
16. David G Strauss-Douglas Schocken Marriott's Practical Electrocardiography, 2020 [http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
17. Azin Alizadehasl, Editor-Majid Haghjoo, Editor-Majid Maleki, Editor  
Practical Cardiology Review: A Self-assessment Tool, 2019  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)

18. Kollef, Marin H.-Washington University (Saint Louis, Mo.).-Isakow, Warren  
The Washington Manual of Critical Care, 2018.  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
19. Laura Willis. Professional Guide to Diseases, 2021  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
20. Maria Gonzalez. Washington Manual Rheumatology Subspecialty Consult, 2021  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
21. Jay L. Koyner-Joel Topf-Edgar Lerma. Handbook of Critical Care Nephrology, 2021  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
22. [http://education-portal.com/articles/National\\_EKG\\_Certification\\_Exam\\_Information\\_for\\_Students.html](http://education-portal.com/articles/National_EKG_Certification_Exam_Information_for_Students.html)
23. <http://work.chron.com/cardiologist-certification-2444.html>
24. <http://study.taaza.com/study/free-cardiology-mcqs-test/exam>

### **Attendance Requirements**

You are expected to attend all academic events. Attendance will be recorded in lecture and seminar logs. In case of illness or other reasons why you will not be able to attend classes, you must notify the dean's office and department, provide a medical certificate or permission from the dean's office to miss classes for a valid reason.

Missed lectures can be made up on the educational portal. Teachers will inform you of the specific dates for opening the educational portal.

Missed seminar classes will require completing all types of practical assignments according to the course program in these classes.

Students who miss more than 50% of classes will have to retake the course.

Students who believe that their work assessment was affected by extraordinary circumstances can write a reasoned explanation to the head of the department or the dean's office.

Necessary equipment for lectures and practical classes

During classes, the student must have a phonendoscope, a workbook, pens, textbooks, scientific literature, lecture materials. During a lecture: a pen, lecture materials.

### **Current control**

#### **Level 1 – knowledge assessment**

The following types of control are used to assess learning outcomes in the form of knowledge:

- testing;
- oral survey;
- individual interview;
- oral presentation (report)
- testing;

Testing is a tool with which a teacher assesses the degree to which a student has achieved the required knowledge, skills, and abilities. Test compilation includes the creation of a verified system of questions, the actual testing procedure, and a method for measuring the results obtained. The test consists of multiple-choice questions from four to five suggested answers: 1 point for the correct answer, 0 points for an incorrect or unspecified answer.

Choose 1 correct answer.

1. Which of the following is NOT a classic feature of nephrotic syndrome?

- a) Massive proteinuria
- b) Hypoalbuminemia
- c) Hypertension**
- d) Edema

2. What is the most common cause of the secondary nephrotic syndrome in adults?

- a) Hepatitis C
- b) AL-amyloidosis

- c) Arterial hypertension
  - d) Diabetic nephropathy**
3. Which of the following is a potential complication of nephrotic syndrome?
- a) Renal failure
  - b) Thromboembolism
  - c) Infection
  - d) All of the above**
4. Which of the following is a characteristic feature that distinguishes Crohn's disease from ulcerative colitis?
- a) Involvement of the entire colon
  - b) Skip lesions**
  - c) Continuous involvement of the colon
  - d) Bloody diarrhea
5. Which of the following is a common extraintestinal manifestation of both Crohn's disease and ulcerative colitis?
- a) Uveitis**
  - b) Osteoarthritis
  - c) Arthritis
  - d) Gallstones
6. Which of the following is a potential long-term complication of both Crohn's disease and ulcerative colitis?
- a) Colon cancer
  - b) Malabsorption
  - c) Osteoporosis
  - d) All of the above**
7. Which of the following is a characteristic symptom of pericarditis?
- a) Sharp, stabbing chest pain that worsens with deep inspiration or lying down
  - b) Crushing chest pain radiating to the left arm
  - c) Pain relieved by sitting up and leaning forward
  - d) Both A and C**
8. Which of the following is a common finding on echocardiogram in a patient with myocarditis?
- a) Decreased left ventricular ejection fraction**
  - b) Pericardial effusion
  - c) Hypertrophic cardiomyopathy
  - d) Mitral valve prolapse
9. Which of the following is a potential complication of myocarditis?
- a) Heart failure
  - b) Arrhythmias
  - c) Sudden cardiac death
  - d) All of the above**
10. A patient presents with back pain that radiates down the left leg. Which of the following is the most likely diagnosis?
- a) Lumbar spinal stenosis
  - b) Lumbar herniated disc**
  - c) Spinal fracture
  - d) Pyelonephritis
11. Which of the following is a characteristic symptom of spinal stenosis?
- a) Pain that worsens with standing or walking and improves with sitting or bending forward**
  - b) Pain that is worse at night and improves with movement
  - c) Pain that is sharp and stabbing and localized to the lower back



d) Pain that is accompanied by fever and chills

Description of the assessment scale.

The grade "excellent" (90–100 points) is given if the student correctly answered 90% of the test questions.

The grade "good" (80–89 points) is given if the student correctly answered 80% to 90% of the test questions.

The grade "satisfactory" (70–79 points) is given if the student correctly answered from 70% to 80% of the test questions.

The grade "unsatisfactory" (less than 70 points) is given if the student correctly answered less than 69% of the test questions.

- oral survey and individual interview are conducted on the developed questions.

1. What is the pathophysiology of myocarditis?

Acute myocarditis is an inflammatory cardiomyopathy. The inflammatory process is initiated after the entry of the virus into the myocardial cells. This entry leads to the activation of an innate immune response over the first week, followed by an adaptive immune response over the next 1–4 weeks. During the chronic stage, chronic inflammation and remodeling of the myocardium lead to myocardial dilation and cardiomyopathy.

The cell damage caused by the virus leads to the release of interleukin and damage-associated molecular patterns. These mediate the recruitment of inflammatory cells of the innate immune system. Additionally, any stress, such as pain or anxiety, triggers the medullary cells for monocytopenia. There is a release of myeloid progenitor cells. The spleen is activated to replenish the pro-inflammatory cells. These pro-inflammatory cells mobilize to the damaged myocardium, where interferon-gamma release leads to further recruitment. The exaggerated inflammatory response to the viral damage of the myocardium leads to chronic inflammation, myocardial remodeling, and ventricle dysfunction.

There is also a role of autoimmunity in inflammatory myocarditis. Autoantibodies against the cardiac myosin chain are found in more than half of cases of inflammatory myocarditis. Environmental factors further interplay with genes and contribute to inflammation.

2. What is the etiology of Back Pain?

Back pain arises from various conditions, which can be classified into the following:

- Traumatic: Back pain commonly results from direct or indirect contact with an external force. Examples are whiplash injury, strain, and traumatic fractures.
- Degenerative: Musculoskeletal structures can weaken over time due to aging, overuse, or pre-existing pathology. Conditions like intervertebral disk herniation and degenerative disk disease fall into this class.
- Oncologic: Anatomic structures of the back can develop primary or secondary malignant lesions. Pathologic fractures of the axial skeleton can arise as a complication.
- Infectious: Infections of the musculoskeletal structures in this region can arise from direct inoculation or spread from another source.
- Inflammatory: This category includes inflammatory conditions not caused by infection or malignancy. Examples are ankylosing spondylitis and sacroiliitis. Chronic inflammation can give rise to spinal arthritis.
- Metabolic: Calcium and bone metabolism can cause the symptoms. Osteoporosis and osteosclerosis are examples.
- Referred pain: Visceral organ inflammation can cause referred back pain. Examples are biliary colic, lung disease, and aortic or vertebral artery pathology.
- Postural: Spending long hours in an upright position can cause back pain. Pregnancy and certain occupations can predispose people to postural back pain.
- Congenital: Inborn conditions of the axial skeleton can cause the symptoms. Examples are kyphoscoliosis and tethered spinal cord.
- Psychiatric: Back pain may also present in patients with chronic pain syndromes and other mental health conditions. Malingering individuals may also claim to have back pain.

The problem's duration must also be considered, as acute back pain often has different sources from chronic back pain. Thorough clinical evaluation and appropriate diagnostic examination are usually enough to determine the exact cause of this symptom. Depending on the findings, referral to specialists such as orthopedic surgeons, neurologists, rheumatologists, or pain management specialists may be necessary for further evaluation and treatment planning.

Assessment criteria:

"Excellent" (9-10 points) is given if the student demonstrates knowledge of the material in the section, based on familiarization with the required literature and additional modern publications; actively participates in the discussion; gives logical, reasoned answers to the questions posed without leading questions.

"Good" (8 - 8.9 points) is given if the student demonstrates knowledge of the material in the section, based on familiarization with the required literature; participates in the discussion; gives clear answers to the teacher's leading questions.

"Satisfactory" (7-7.9 points) - the student demonstrates knowledge of more than half of the required material; low activity in the discussion; gives a positive answer to most of the teacher's leading questions.

"Unsatisfactory" (6.9 points or less) is given in the absence of knowledge of the section being studied; low activity in the discussion; gives incorrect answers to the teacher's leading questions.

Oral Questionnaire Assessment Criteria

10 points Student:

- demonstrates excellent knowledge of the section material based on familiarization with the required literature and additional modern publications;
- actively participates in the discussion;
- gives logical, reasoned answers to the questions posed without leading questions
- is fluent in scientific terminology
- demonstrates knowledge of the section material based on familiarization with the required literature and additional modern publications;
- actively participates in the discussion;
- gives logical, reasoned answers to the questions posed without leading questions
- is fluent in scientific terminology

8 points Student:

- demonstrates knowledge of the section material based on familiarization with the required literature;
- participates in the discussion;
- gives clear answers to the teacher's leading questions.

7 points Student:

- demonstrates knowledge of more than half of the required material;
- shows low activity in the discussion;
- gives a positive answer to most of the teacher's leading questions.

Less than 7 points Student:

- demonstrates a lack of knowledge in the section being studied;
- shows low activity in the discussion;
- gives incorrect answers to the teacher's leading questions.

– oral reports (report):

A report is a product of independent work of a student, which is a public presentation of the results obtained from studying a certain educational and practical, educational and research or scientific topic.

Report assessment criteria

1. Compliance with the regulations (5-7 min).
2. Disclosure of the report topic.

3. Free mastery of the content.
4. Completeness of the collected theoretical material.
5. Presentation of the report (use of a board, PowerPoint presentation, diagrams, tables, etc.).
6. Ability to comply with the given form of presentation, ability to hold the audience's attention.
7. Brief conclusion on the issue considered.
8. Answers to questions from listeners.
9. High-quality content and selection of demonstration material.
10. Design of the report in the form of theses.

Description of the assessment scale

For each criterion item - 1 point (maximum 10 points).

An example of an oral presentation on the subject "Hospital Therapy":

- 1) Comorbidity in patients with chronic obstructive pulmonary disease: difficulties in drug therapy.
- 2) Anemia of chronic diseases - tactics of a general practitioner.
- 3) Rheumatoid arthritis and spondyloarthritis: modern possibilities of biological therapy.

## **Level 2 - assessment of skills (thinking)**

The following types of control are used to assess the learning outcomes in the form of skills (thinking).

A situational task is a problem-based assignment in which the student is asked to comprehend a real clinical patient-oriented situation necessary to solve a diagnostic or treatment problem. The student independently analyzes symptoms, identifies syndromes and diagnostic hypotheses, formulates a preliminary clinical diagnosis (or several diagnoses), conducts differential diagnostics, determines treatment tactics, and, if necessary, prescribes additional examination.

Description of the assessment scale

The assessment "excellent" (9–10 points) is given if the task is completed, diagnostic and treatment tasks are solved.

The assessment "good" (8–8.9 points) – the task is completed, but one or two minor errors were made in solving diagnostic and treatment tasks.

The assessment "satisfactory" (7–7.9 points) – serious errors were made when trying to solve diagnostic and treatment tasks.

The assessment "unsatisfactory" (less than 7 points) – diagnostic and treatment tasks are not solved.

## **Level 3 – assessment of skills (actions)**

The following types of control are used to assess learning outcomes in the form of skills (actions): – writing and defending a medical history (curator's sheet).

A student's medical history is a document in which the student must independently substantiate conclusions about the patient, guided by all the knowledge and information obtained about the patient (survey, examination, outpatient card, inpatient medical card, laboratory and instrumental research data, etc.).

Description of the grading scale

The grade "pass" is given if the medical history (curator's sheet) is clearly structured, all the requirements for writing and defending the educational medical history are met; the work is written using modern medical classifications and clinical guidelines; the student interprets the data obtained with clear objectivity and logic and, during the defense of the medical history, gives reasoned answers to all questions posed about his patient.

The grade "fail" is given if the medical history (curator's sheet) does not meet the requirements, a significant misunderstanding of the task is revealed; the answer represents disjointed knowledge with significant errors on the question; there is fragmentation, unconsciousness of presentation; during the defense of the medical history, the student interprets the data

obtained in an objective and illogical way. Significant inaccuracies were allowed; the answers to additional questions are incorrect.

- Assessment of practical skills "at the patient's bedside".

After randomly receiving information about the patient's name and the department he is in, the student begins collecting information and examining in strict sequence according to the checklist. The checklist consists of 4 blocks: collecting complaints and anamnesis; objective examination skills; preliminary diagnosis and its justification; deontological skills. The result of working with the patient is written work - an essay on blocks 1, 2 and 3, which is assessed by the examiner. Block 4 is assessed by the teacher directly at the patient's bedside.

The work time is 45 minutes.

In the first block, students must demonstrate the skills of collecting complaints and anamnesis, which includes several stages:

1. Complaints upon admission:

- first indicates complaints corresponding to the leading clinical syndrome and
- characterizing the main disease or emergency condition for which the patient was forced to seek
- medical help, then additional complaints;
- detailing of complaints is necessary.

2. History of the current disease:

- from the moment of the first symptoms to the current survey;
- it is necessary to reflect for how long the patient considers himself ill, what, in the
- patient's opinion, was the cause of the disease, a clear sequence of the onset of symptoms,
- changes in the course of the disease, the frequency of exacerbations, provoking factors, clarify
- whether the patient has previously been examined for this disease and the results of the
- examination; what treatment methods were used before the current hospitalization, their
- effectiveness; what medications are taken on an outpatient basis; the purpose of the current
- hospitalization.

3. Life history:

- it is necessary to reflect in detail the work history, harmfulness at work, bad
- habits, past diseases, family and sexual history, heredity, allergy history, blood transfusion
- history, epidemiological history.
- It is important to maintain consistency in the presentation of the information received.
- The maximum score for this stage is 28 points.

The second block assesses the skills of objective examination.

Objective examination of the patient:

includes objective examination data using physical examination methods (inspection, palpation, percussion, auscultation). Conducted by systems and organs in a certain sequence.

1) General examination:

- ✓ General condition: good, satisfactory, moderate, very severe, terminal. Consciousness: clear, impaired (stupor, sopor, coma). Position: active, passive, forced (which one). Facial expression.
- ✓ Build: normosthenic type, asthenic type, hypersthenic type.
- ✓ Height (in centimeters), body weight (in kilograms). Body mass index – Quetelet index. General nutrition: good, excessive, decreased, cachexia.

2) Examination of the skin: color, moisture, turgor, condition of the scalp, presence of rashes, hemorrhages, vascular changes, scars, etc. examination of visible mucous membranes (eyes, nose, lips, oral cavity): color, rashes on the mucous membranes (localization, nature).

3) Edema: method of determination, localization, severity (from pastosity to anasarca), consistency, color of the skin above them and temperature.

4) Palpation of regional lymph nodes: localization (occipital, parotid, submandibular, cervical, supra- and subclavian, axillary, inguinal, etc.), size, shape, surface, consistency, mobility,

adhesion to the skin, to the surrounding tissue and to each other; condition of the skin above them.

- 5) Examination of the musculoskeletal system: Examination of the skeletal system: shape of bones, presence of deformations, pain when palpating and percussing; examination of joints: configuration (deflection, deformation), swelling, tenderness upon palpation and movement, range of active and passive movements, changes in the skin and subcutaneous tissue in the area of the joints; muscular system: degree of muscle development, tone, muscle strength, tenderness upon palpation, tremors, cramps.
  - 6) Examination of the chest: shape - normal (normosthenic, hypersthenic, asthenic), symmetry (on inhalation, on exhalation), pathological changes in the shape of the chest (emphysematous, kyphoscoliotic, paralytic, rachitic, funnel-shaped); assessment of respiratory movements of the chest: type of breathing, symmetry, frequency, depth, rhythm of breathing; assessment of saturation using a pulse oximeter.
  - 7) Comparative percussion of the lungs: determination of the nature of the percussion sound (clear pulmonary, dull, dull, tympanic, boxy, metallic), localization and distribution of the altered percussion sound.
  - 8) Auscultation of the lungs: listening to the main respiratory sounds: vesicular breathing (weakened, increased, hard, saccaded), bronchial breathing (amphoric, metallic), mixed (bronchovesicular breathing); detection of adverse respiratory sounds (crepitation, wheezing, pleural friction noise)
  - 9) Examination of the pulse on the radial artery: the main properties of the pulse.
  - 10) Cardiovascular system examination: Assess the neck for elevated jugular veins, indicating right-sided heart failure. Palpation: palpate for the point of maximal impulse (PMI) which is typically located at the 5th intercostal space in the midclavicular line; pulses: assess peripheral pulses (radial, brachial, femoral, popliteal, posterior tibial, dorsalis pedis) for rate, rhythm, and quality; capillary refill: check capillary refill time (should be less than 2 seconds).
  - 11) Blood Pressure Measurement. Measure blood pressure in both arms to assess for discrepancies and determine hypertension or hypotension.
  - 12) Auscultation of the heart. Heart sounds: aortic area, pulmonic area tricuspid area, mitral area. Normal Sounds: S1 (closure of mitral and tricuspid valves) and S2 (closure of aortic and pulmonic valves), additional sounds: S3 (indicate heart failure), S4 (associated with stiff ventricles), and any murmurs or rubs.
  - 13) Gastrointestinal system examination. Auscultation :bowel sounds (normal sounds are intermittent and can be described as gurgling, hyperactive sounds may indicate diarrhea or early obstruction, hypoactive sounds may indicate ileus or peritonitis); vascular sounds (listen for bruits over the aorta, renal arteries, and iliac arteries).
- Palpation: light (all four quadrants to assess for tenderness, muscle rigidity, or superficial masses); deep palpation. Symptoms of peritoneal irritation
- General Percussion: Assess for tympany (indicating gas) or dullness (indicating fluid or mass) in all quadrants. Ascites Test: Check for fluid wave or shifting dullness if ascites is suspected
- Liver: palpate under the right costal margin. Percuss to estimate liver size by measuring the span from the lower border to the upper border.
- Spleen: palpate under the left costal margin (should not normally be palpable). Percuss for splenic dullness
- Urinary tract system: costovertebral angle (CVA) tenderness

**The Hospital Therapy course ends with an interim assessment in the form of an exam.**

The exam includes an oral survey on theoretical issues, a situational task, a laboratory task, interpretation of the spirometry protocol and ECG. The final (rating) assessment is made up of assessments of current progress monitoring during the semester, attendance of lectures and seminars is taken into account, and a point-rating system is applied, approved by the "Regulations of Kazan State Medical University on the forms, frequency and procedure for current progress monitoring and interim assessment of students."

### **Example of the Exam questions and answers**

1. Differential diagnostics of fever of unknown genesis syndrome
2. Diarrhea syndrome. Etiology. Pathogenesis. Classification. Clinic. Differential diagnostics. Treatment
3. Providing emergency care for ventricular paroxysmal tachycardia

#### **Emergency case**

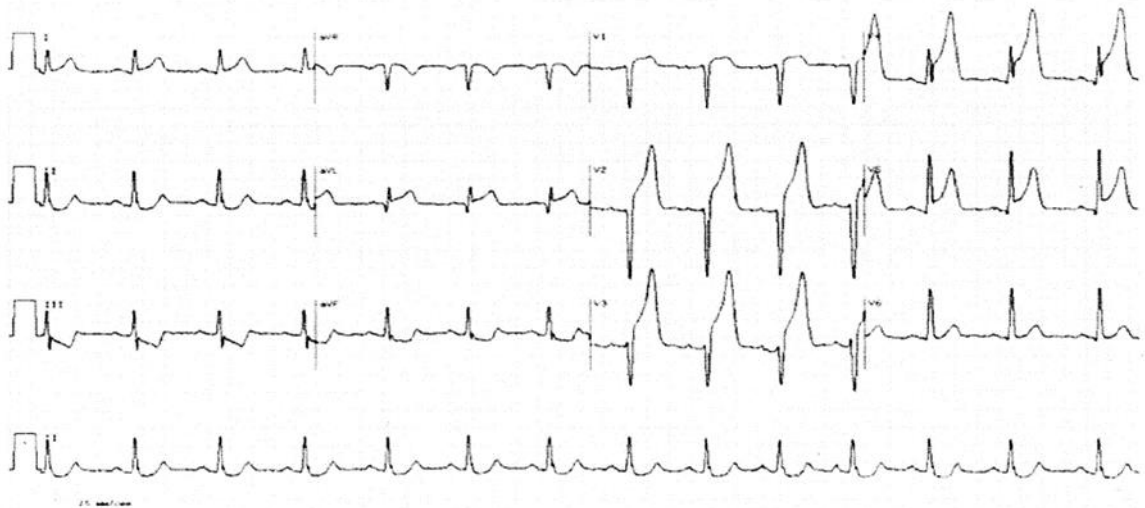
Patient L., a 75-year-old retired physician, is brought by an ambulance to the emergency department of a local hospital because she is suffering from mild upper abdominal pain for the last 2 days and feeling unsteady during walking. Patient has severe osteoarthritis and she takes 600 mg of ibuprofen three times a day for the arthritis pains. On examination, her resting pulse rate is 110/min, and her blood pressure is 140/75 mm Hg, lying flat (100/50 mm Hg, sitting). She looks pale but not jaundiced. On abdominal palpation, mild tenderness in the epigastrium is found. The liver and spleen are not palpable. Per rectum examination reveals soft black tarry stool on the gloved examining finger. The cardiovascular and respiratory examination reports are normal.

Q1. What is your diagnosis?

Q2. What is your differential diagnosis?

Q3. What are your management goals and management options?

#### **ECG**



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### **Answers**

1. Differential diagnosis of fever of unknown origin syndrome

FUO can be diagnosed if 3 criteria are met simultaneously: 1) persistent or recurrent fever  $>38.3^{\circ}\text{C}$ ; 2) fever lasts  $>3$  weeks; 3) no cause could be determined or diagnosis is unclear despite routine diagnostics for  $\approx 1$  week ( $\geq 3$  days in hospital or  $\geq 3$  outpatient visits). FOU that occurs during the patient's hospital stay (after 2 days of hospitalization), in a patient with neutropenia, or in a patient with progressive HIV infection, can be diagnosed if: 1) fever  $>38.3^{\circ}\text{C}$  persists or recurred; 2) no cause could be determined or diagnosis is unclear despite routine diagnostics for 3–5 days in hospital. Causes 1. The most important causes of classical LNG 1) infections 2) autoimmune diseases 3) malignant neoplasms 4) medications 5) others - cirrhosis and alcoholic hepatitis, recurrent pulmonary embolism (without severe clinical manifestations), inflammatory bowel disease. 2. Causes depending on the risk group 1) LNG in a patient in a hospital 2) LNG in a patient with neutropenia 3) LNG in an HIV-infected person 4) LNG in a person who returned from tropical regions 3. Fever characteristics: 1) septic fever, hectic (during the day, one rapid increase in temperature, often to  $\approx 40^{\circ}\text{C}$ , then a decrease, sometimes even to normal; the amplitude of daily fluctuations is  $> 2^{\circ}\text{C}$ ) - abscess, miliary tuberculosis, lymphomas, leukemia; 2) two peaks

of fever per day - eg, Still's disease in adults, miliary tuberculosis, malaria, visceral leishmaniasis, gonococcal endocarditis of the right heart; 3) intermittent fever (periodic; recurrent increases in fever at regular or irregular intervals after a relatively fever-free period; daily amplitude of fluctuations  $>2^{\circ}\text{C}$ ) - including malaria, lymphomas, leukemia, cyclic neutropenia; 4) continuous fever (daily amplitude of  $38^{\circ}\text{C}$  and fever-free periods), brucellosis; 6) high fever:  $>39^{\circ}\text{C}$  - abscess, lymphomas and leukemia, systemic vasculitis, HIV infection;  $>41^{\circ}\text{C}$  - drugs and other chemicals, as well as artificially induced fever (the patient's condition is disproportionately good), CNS damage (neoplasm, trauma, infection). 7) subchronic fever ( $\geq 6$  months): most often idiopathic; granulomatous hepatitis, Still's disease in adults, sarcoidosis, Crohn's disease; less often - SLE, artificially induced fever. 8) recurrent LNG - infections, tumors and systemic diseases. 9) relative bradycardia accompanying fever 10) recurrent clinically obvious chills associated with fever - bacterial infection (abscesses, bacteremia, septic thrombophlebitis, brucellosis), neoplasms (kidney cancer, lymphomas, leukemia), malaria. 4. Basic research methods: 1) laboratory tests — complete blood count with blood cell count, ESR, procalcitonin (allows to differentiate infectious from non-infectious fever, especially in patients with neutropenia), electrolytes, bilirubin, liver enzymes, urea, creatinine, uric acid, complete urine analysis, rheumatoid factor and antinuclear antibodies, microbiological tests: blood culture (3 times without antibiotics), urine culture, microbiological diagnostics of tuberculosis and mycobacteriosis, serological tests (HIV, CMV, EBV); others — performed depending on the suspected cause — direct or microscopic examination of collected tissue, cerebrospinal fluid examination, cultures, antigen detection, serological tests, molecular tests; 2) visualization studies: ultrasound of the abdominal cavity, X-ray of the chest organs, FDG-PET CT, MRI of the abdominal cavity and pelvic organs (if necessary, also examination of the head).

2. Diarrhea is non formed or liquid stool more than 3 times in 24 hours and can be classified into several types based on its duration, cause, and characteristics. Here are some common diagnoses associated with diarrhea syndrome:

1. Acute Diarrhea. Infectious Causes: viral (e.g., Norovirus, Rotavirus), bacterial (e.g., Salmonella, E. coli, Shigella, Campylobacter), parasitic (e.g., Giardia, Cryptosporidium). Non-infectious Causes: food poisoning, medication side effects (e.g., antibiotics), stress or anxiety
2. Chronic Diarrhea: inflammatory bowel disease (IBD) (Crohn's disease, ulcerative colitis), irritable bowel syndrome (IBS) (diarrhea-predominant IBS), malabsorption syndromes (celiac disease, lactose intolerance and et), endocrine disorders (hyperthyroidism, diabetes mellitus), chronic Infections (HIV/AIDS, tuberculosis)
3. Functional Diarrhea • Often related to bowel habits without any identifiable organic cause.
4. Medication-Induced Diarrhea • Commonly caused by antibiotics, antacids containing magnesium, and certain chemotherapy drugs.
5. Dietary Causes • Excessive intake of certain foods (e.g., fatty foods, artificial sweeteners). • Food allergies or intolerances.
6. Post-surgical Diarrhea • Following gastrointestinal surgery, particularly procedures affecting absorption or motility.
7. Traveler's Diarrhea • Typically caused by consuming contaminated food or water while traveling.
8. Cancers • Colorectal cancer or other malignancies that affect the gastrointestinal tract.

Diagnostic Approach: • History Taking: Duration, frequency, appearance of stool, associated symptoms (fever, weight loss, etc.), recent travel, dietary habits, medication use.

• Physical Examination: Signs of dehydration, abdominal tenderness.

• Laboratory Tests: Stool cultures, ova and parasite tests, blood tests for inflammation markers.

• Imaging Studies: If indicated, such as CT scans for structural abnormalities.

Conclusion A thorough clinical evaluation is essential to determine the underlying cause of diarrhea syndrome and guide appropriate management. If diarrhea persists or is accompanied by severe symptoms, medical attention is crucial.

Treatment dependent on the cause.

### 3. Providing emergency care for ventricular paroxysmal tachycardia

1. Lidocaine 1% - 1 mg/kg intravenously for 2 minutes, if there is no effect, it can be repeated after 5-10 minutes. Then intravenously by drip 2 mg/min for the first 12 hours, then 1 mg/min for 12 hours. The second drug is procainamide, which is administered intravenously by bolus 100 mg every 5 minutes until the elimination of VPT or reaching a total dose of 10-20 mg/kg. Monitor blood pressure and ECG. Then administer 2 mg/min intravenously by drip for several hours. 2. If there is no effect: intravenous slow jet injection of novocainamide (procainamide) 10%-5.0 - 0.15-0.2 ml/kg intravenously together with 1% solution of mesaton - 0.1 ml/year of life (to prevent a sharp drop in blood pressure, especially against the background of heart failure. It also inhibits antegrade conduction in the AV node). 3. If the first two are ineffective - ornide (bretylum tosylate) - sympatholytic - 5%-1.0 - 5-10 mg/kg. in 50 ml of 5% glucose for 20 min. 4. If malignant GPT is resistant to other drugs, a 5% solution of cardarone (amiodarone) is indicated 5 mg/kg or 0.1 ml/kg in 150 ml of 5% glucose solution - it blocks K<sub>e</sub> channels, to a lesser extent Ca-channels, inhibits  $\alpha$  and  $\beta$  receptors. 5. 0.1% anaprilin solution (obzidan), propranolol - 0.01-0.02 mg/kg, very slowly by jet. If the attack is not relieved for a long time (more than 24 hours), signs of circulatory failure increase, jugular veins swell, pallor and cyanosis increase, then defibrillation is indicated. Carrying out cardioversion (a method of treating tachyarrhythmias with a defibrillator). In case of a combination of paroxysmal tachycardia and heart failure, intravenous digoxin 0.025% - 0.03-0.05 mg/kg/day in 3 administrations, rapid saturation. Half of the daily dose in the first administration. Digoxin is combined with the administration of propranolol and verapamil, but propranolol and verapamil cannot be given together due to a sharp drop in blood pressure and the risk of cardiac arrest.

#### ECG answer

1. Determination of rhythm and its frequency
2. Determination of the position of the electrical axis of the heart
3. Assessment of intervals and conduction disturbances (blockades) - duration of the P wave, PQ interval, QRS complex, QRST interval - bundle branch block, bundle branch block, combined blockades - WPW syndrome
4. Analysis of P, Q, R, S, T waves, ST segment (severity, polarity in the norm)
5. Identification of the stage of myocardial infarction (MI) development

#### Emergency case answer

1. The findings of using ibuprofen, a nonsteroidal anti-inflammatory drug (NSAID), tachycardia, postural drop of blood pressure, tenderness in the epigastrium, pallor and the presence of soft black tarry stool (melaena stool) are suggestive of bleeding from a gastric ulcer. Upper gastrointestinal (UGI) bleeding is a common clinical problem and has been associated with increasing NSAID use and the high prevalence of Helicobacter pylori infection in patients with bleeding peptic ulcer. Rapid assessment and resuscitation should precede the diagnostic evaluation, particularly in patients with haemodynamic changes (such as elevated heart rate and postural changes in blood pressure) due to severe bleeding.
2. The differential diagnosis:
  - Peptic ulcer bleeding (60%–65% of cases)
  - Gastritis and duodenitis (8% of cases)
  - Oesophageal varices (6% of cases)
  - Mallory–Weiss tear (4% of cases)
  - Gastric malignancy (1%–2% of cases)
  - Arteriovenous malformation (angiodysplasias) (10% of cases)
  - Oesophagitis or oesophageal ulcer
  - Duodenal ulcer
  - Pancreatic cancer (rare cause)
  - No identified cause

The following are essential for the diagnosis of peptic ulcer bleeding:



- Haematemesis, melaena stool, history of aspirin or NSAID use, abdominal pain, nocturnal symptoms, history of peptic ulcer bleeding or confirmed H. pylori infection.
  - Early upper endoscopy (within 24 hours) confirms the diagnosis and allows for targeted treatment (e.g. injection of a sclerosant or epinephrine, thermocoagulation, allocation of metallic clips and rubber banding).
3. Symptoms and signs:
- Abdominal pain, coffee ground-like emesis, haematemesis, dyspepsia, soft black tarry stools, bright red blood per rectum (occurs when there is a loss of more than 1000 mL of blood), warfarin, aspirin, NSAIDs, selective serotonin reuptake inhibitors (SSRIs) or corticosteroid use, or history of peptic ulcer disease.
  - Previous abdominal surgery, previous episodes of UGI bleeding, alcohol use and smoking.
  - Ask about and assess for chronic renal or liver diseases, or chronic obstructive pulmonary disease.
  - Heavy alcohol ingestion may be suggestive of Mallory–Weiss tear.
  - Signs of chronic liver disease may indicate that the bleeding is due to portal hypertension.
3. Management goals:
- Correct any haemodynamic changes.
  - Assess risks.
  - Stop bleeding.
  - Manage the cause of bleeding.
- A. Correct any haemodynamic changes. (i) Patients with haemodynamic compromise should be given 0.9% saline or lactated Ringer injections and crossmatched for 2–4 units of packed red blood cells. (ii) Blood transfusion should be administered to those with a haemoglobin level of 70 g/L or less. The haemoglobin should be maintained at 90 g/L. (iii) Patients with active bleeding and coagulopathy (and INR > 1.8) should be considered for fresh frozen plasma. If there is thrombocytopenia, platelet transfusion should be considered.
- B. Assess risk. Clinical assessment should be for whether the bleeding is from upper or lower GI tract. Assess the patient's age, presence of shock, systolic blood pressure, heart rate and comorbid conditions. Assess risk for rebleeding. Review the Rockall risk scoring system (for further reading, check Rockall et al., 1996).
- C. Stop bleeding. Nasogastric tube is placed for aspiration. Intravenous proton-pump inhibitor is used in patients admitted for active bleeding. Early upper endoscopy (within the first 24 hours of presentation) should be considered. Gastric lavage to clear the stomach of blood increases the success of localisation of the source of bleeding. Early endoscopy confirms the diagnosis and allows for targeted treatment (e.g. injection of a sclerosant or epinephrine, thermocoagulation, allocation of metallic clips and rubber banding).

## PRIMARY CARE

**Teachers:** Prof. Albina V. Sineglazova, Asst. Swapnil D. Parve, Asst. Albina R. Nurieva, Asst. Zemfira R. Asatullina, Asst. Aliya S. Fakhрутdinova, Asst. Svetlana V. Vantyaeva.

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**Total hours: 396****Semester 9.**

Total hours: 108:

Lectures - 18 hours

Practical classes - 45 hours

Independent work - 45 hours.

**Semester A.**

Total hours — 72:

Lectures - 18 hours;

Practical classes - 30 hours

Independent work - 24 hours.

Differential credit.

**Semester B.**

Total hours — 108:

Lectures - 18 hours

Practical classes - 45 hours

Independent work - 45 hours.

**Semester C.**

Total hours: 108:

Lectures - 18 hours

Practical classes - 40 hours

Independent work - 14 hours;

Exam - 36 hours.

**Course description:**

- **Lecture** is a traditional teaching approach where a teacher delivers information to a group of students through a formal discourse. It could be a monologue or an interactive session where the teacher talks, comments and the students listen, answer, take notes, and get acquainted with the material.
- **Practical classes** are usually devoted to detailed study of specific topics, and it is being held in each academic group separately. It involves active participation of students in problem/case-based discussion and requires preliminary preparation (flipped classroom approach).
- **Self-study** is independent work with teaching materials (literature, video and audio material) on the educational portal of the University.

**The goal** of mastering the course "Primary Care" encompass the education of specialists in the field of human health, with the aim of establishing conditions for health maintenance, providing preventive care, diagnosis, and treatment at the outpatient level.

**Objectives of the course:**

- implementing measures for health education and disease prevention among the adults and elderly population;
- implementation of long-term monitoring and follow-up of adults, considering their age, sex, and initial health status, conducting interventions aimed at enhancing the efficacy of long-term monitoring among special contingents (employees of various organizations, pregnant women etc.) and patients with chronic disease conditions;
- collection and analysis of medical and statistical information (for example, disease burden) related to health indicators of the population of various age and sex groups, with respect to their health status;
- diagnosis of diseases and pathological conditions in the adults based on anamnesis, physical examination, laboratory and instrumental tests;
- diagnosis of emergency conditions and provision of first aid to adults;

- treatment of adults using non-pharmacological and pharmacological approaches;
- conducting rehabilitation activities for adults who have had a physical disease, injury or surgery;
- evaluating temporary and permanent disability;

### **Calendar plan of lectures of the discipline "Primary Care"**

#### **5<sup>th</sup> year, 9<sup>th</sup> semester**

1. Disease prevention in polyclinic and health centers. Health promotion in a primary care practice
2. Cardiovascular disease prevention in a primary care practice
3. Coronary artery disease (CAD), chronic coronary syndromes. Cardiorehabilitation. Managing patients post-acute coronary syndrome and percutaneous coronary intervention in a primary care practice
4. Approach to obesity, metabolic syndrome and prediabetes in a primary care practice
5. Approach to dyslipidemia, and atherosclerosis in a primary care practice
6. Approach to arterial hypertension in a primary care practice
7. Approach to metabolic dysfunction associated liver disease (non-alcoholic fatty liver disease) in a primary care practice
8. Approach to chronic kidney disease in a primary care practice
9. Approach to a patient with osteoarthritis in a primary care practice

#### **5<sup>th</sup> year, 10<sup>th</sup> semester (Semester A)**

1. Approach to a patient with chest pain in a primary care practice
2. Basics of EKG, dysrhythmias and their management in a primary care practice
3. Evaluation and management of congestive heart failure in a primary care practice
4. Approach to a patient with edema in a primary care practice
5. Preoperative evaluation
6. Geriatric patients in a primary care practice
7. Approach to a patient with arterial hypotension in a primary care practice
8. Somatic disorders in pregnant patients.
9. Polypragmasy. Drug induced nephrotoxicity

#### **6<sup>th</sup> year, 11<sup>th</sup> semester (Semester B)**

1. Evaluation and management of acute respiratory viral illnesses. Influenza in a primary care practice
2. Evaluation and management of Coronavirus disease (COVID 19) in a primary care practice
3. Differential diagnosis of cough. Evaluation and management of bronchitis in a primary care practice
4. Evaluation and management of community acquired pneumonia in a primary care practice
5. Evaluation and management of bronchial asthma in a primary care practice
6. Evaluation and management of chronic obstructive pulmonary disease in a primary care practice
7. Evaluation and management of common allergic illnesses in a primary care practice. Vaccinations.
8. Rational antimicrobial use in primary care practice
9. Evaluation and management of low-grade fever in patients. Fever in a returning traveller. Travel medicine

#### **6<sup>th</sup> year, 12<sup>th</sup> semester (Semester C)**

1. Evaluation and management of dyspeptic syndrome a primary care practice
2. Evaluation and management of irritable bowel syndrome in a primary care practice
3. Evaluation and management of emergencies in a primary care practice

4. Evaluation and management of low back pain, spondyloarthropathies in a primary care practice
5. Approach to a patient with arthralgias, arthritis and their differential diagnosis in a primary care practice
6. Evaluation and management of osteoporosis in a primary care practice
7. Evaluation and management of urinary syndromes, urinary tract infections in a primary care practice
8. Evaluation and management of anemia, and differential diagnosis in a primary care practice
9. Approach to a patient with headache in a primary care practice

### **Calendar plan of practical classes of the discipline "Primary Care"**

#### **5<sup>th</sup> year, 9<sup>th</sup> semester**

1. Dispensarization, screening and long-term follow-up in a primary care practice
2. Approach to obesity, metabolic syndrome in a primary care practice
3. Approach to prediabetes, type 2 diabetes mellitus in a primary care practice
4. Approach to dyslipidemia, and atherosclerosis in a primary care practice
5. Approach to arterial hypertension in a primary care practice
6. Approach to metabolic dysfunction associated liver disease, non-alcoholic fatty liver disease and cholelithiasis in a primary care practice
7. Approach to a patient with arthralgias and their differential diagnosis, osteoarthritis, and gout in a primary care practice
8. Approach to chronic kidney disease, drug induced nephrotoxicity in a primary care practice
9. Module 1 «Prevention in primary care practice. Cardiometabolic disorders»

#### **5<sup>th</sup> year, 10<sup>th</sup> semester (Semester A)**

1. Basics of EKG for a primary care practitioner
2. Evaluation and management of patients with rhythm disturbances in a primary care practice
3. Approach to a patient with chest pain in a primary care practice
4. Chronic coronary syndromes, coronary artery disease and cardiorehabilitation in a primary care practice
5. Evaluation and management of congestive heart failure in a primary care practice
6. Emergencies in a primary care practice Module 2 «Ambulatory cardiology»

#### **6<sup>th</sup> year, 11<sup>th</sup> semester (Semester B)**

1. Acute respiratory viral illnesses. Influenza. Coronavirus disease (COVID 19). Vaccinations
2. Differential diagnosis of cough. Bronchitis, pneumonia in a primary care practice
3. Evaluation and management of bronchial asthma in a primary care practice
4. Evaluation and management of chronic obstructive pulmonary disease in a primary care practice
5. Evaluation and management of low-grade fever in patients. Fever in a returning traveler. Travel medicine
6. Rational antimicrobial use in primary care practice
7. Evaluation and management of shortness of breath. Acute respiratory distress syndrome
8. Evaluation and management of common allergic illnesses in a primary care practice. Vaccination
9. Module 3 «Ambulatory pulmonology»

#### **6<sup>th</sup> year, 12<sup>th</sup> semester (Semester C)**

1. Upper gastrointestinal disorders (GI) in a primary care practice. Functional GI disorders. Dyspepsia
2. Lower gastrointestinal disorders (GI) in a primary care practice. Functional GI disorders. Irritable bowel syndrome

3. Evaluation and management of peptic ulcer disease in a primary care practice
4. Evaluation and management of low back pain in a primary care practice
5. Evaluation and management of urinary syndromes in a primary care practice. Urinary tract infections
6. Evaluation and management of nephrotic syndrome in a primary care practice
7. Evaluation and management of anemia, and differential diagnosis in a primary care practice
8. Module 4 «Miscellaneous»

#### **Text books and required supplies:**

1. Multiple choice question bank in the discipline "Primary Care" Sineglazova A.V., Parve S.D., Nurieva A.R., Kim T.Yu. a teaching manual for students studying in the specialty 31.05.01 "General Medicine" / Kazan, 2023.
2. Clinical case: an essential tool in teaching primary care to medical students, A. V. Sineglazova, S. D. Parve, Z. R. Asatullina, A. R. Nurieva, A. S. Fakhrutdinova. guide for students studying in the specialty 31.05.01 General Medicine / Kazan, 2024.
3. Primary care medicine: office evaluation and management of the adult patient / Allan H. Goroll, Albert Mulley. — Seventh edition.
4. Family medicine: principles and practice / Paul M. Paulman, Robert B. Taylor, Audrey A. Paulman, Laeth S. Nasir. — Seventh edition.
5. Министерство здравоохранения Российской Федерации (Клинические рекомендации) URL: [https://cr.minzdrav.gov.ru/clin\\_recomend](https://cr.minzdrav.gov.ru/clin_recomend)
6. Российское научное медицинское общество терапевтов [website]. URL: <https://rnmot.org/?ysclid=lzcn34uk7u719105857>
7. Федеральная электронная медицинская библиотека [website]. URL: <https://femb.ru/?ysclid=lzcn48s006541784455>
8. Национальный медицинский исследовательский центр терапии и профилактической медицины Министерства здравоохранения Российской Федерации [website]. URL: <https://www.gnicpm.ru/>
9. Справочная правовая система "КонсультантПлюс" [website]. URL: <https://student2.consultant.ru/cgi/online.cgi?req=home>
10. Электронная библиотека "Консультант студента" [сайт]. URL: <http://www.studentlibrary.ru/>
11. Электронная медицинская библиотека "Консультант врача" [website]. URL: <http://www.rosmedlib.ru/>
12. European Federation of Internal Medicine Academy [website]. URL: <https://www.efimacademy.org/>
13. American college of physicians. Clinical guidelines & recommendations [website]. URL: <https://www.acponline.org/clinical-information/clinical-guidelines-recommendations>
14. European society of cardiology [website]. URL: <https://www.escardio.org/>
15. American college of cardiology [website]. URL: <https://www.acc.org/>

#### **Evaluation and grading:**

##### **Forms of evaluating (monitoring) class progress:**

- oral discussion
- case vignette (clinical case scenario)
- logbook.

Routine performance assessment is carried out using a 10-point scale, where 0-6 – “unsatisfactory”, 7 – “satisfactory”, 8 – “good”, 9 - 10 – “excellent”.

According to the Regulations on the monitoring of current academic performance and intermediate attestation of students, intermediate attestation (examination) in the Discipline “Primary Care” is conducted in the form of an interview using one case vignette that a student chooses (task): Case Vignette (Clinical Case Scenario). The answer to the case is aimed at assessing the knowledge and skills of managing a patient in a primary care/outpatient setting.

The final rating, which is recorded in the progress book/credit book (Zachetnaya knizhka), is calculated in the rating system of the university (BRS), considering all other criteria (class and lecture attendance, class assignments, rating of intermediate attestation, assessment of the supervision logbook, etc.) by the Regulations on the monitoring of current academic performance and intermediate attestation of students.

The discipline rating is expressed on a 100-point scale, where 0-69 corresponds to “unsatisfactory”, 70-79 points - “satisfactory”, 80-89 - “good”, and 90-100 means “excellent”. The discipline rating is calculated accurately to one decimal place.

**Forms of Exam:**

- case vignette (clinical case scenario)
- oral discussion

**Rules of educational process and behavior in the cycle of primary care and at the department of primary care and general practice.**

**1. According to the student's contract with the university:**

- Item 3.1.2 states that learners/students must conscientiously complete the educational program and master all types of professional activities according to the relevant qualification characteristics of the specialist, including attending classes stated in the curriculum and independently preparing for classes.
- Item 3.1.3 states that learners/students must comply with the requirements and internal regulations and all other normative statements, respect academic discipline, and generally accepted norms of behavior.
- Item 3.1.5 states that learners/students must respect the university's properties.

**2. Department webpage for announcements:** <https://kazangmu.ru/general-practice/foreign>;  
<https://kazangmu.ru/general-practice>

**3. Program information:** <https://kazangmu.ru/general-practice/foreign>

**4. Marking scheme:** [https://kazangmu.ru/files/ovp/International/Grading\\_a\\_case.pdf](https://kazangmu.ru/files/ovp/International/Grading_a_case.pdf)

**5. Attendance:**

- Attending all classes and lectures is mandatory.
- Absences for valid reasons must be proven with appropriate documentation or spravka.
- A lecture is considered attended if, after attending the lecture online and the student has solved the test on the education portal  $\geq 70\%$  marks for that day. If a student was absent during live-online lecture, and wants to rework, he/she must watch the video lecture on the portal and solve the test by 18:00 on same day and obtain mark  $\geq 70\%$ .
- Subsequently, ratings would be entered into the university rating system (BRS), considering these nuances.

**6. Do not be late.** Arrive for the class on time. In case the student is late and is entering the classroom/clinical center after the faculty member has started teaching/clinical visits, means missed class/clinical visit needs to be reworked.

**7. Do's during final tests/exams:**

- Arrive in the allocated time slot.
- Students should take a pen with them besides the identification document, zachetnaya knizhka (progress book/credit book).
- Before entering the hall, the student should leave all gadgets, bags, cheat sheets, notes, and books in the designated area.
- Respect the honor and dignity of other students and employees of the KazanSMU.
- Stay quiet on the premises and respect others who are taking the test.

**8. Don'ts during final tests/exams:**

- Do not talk, whisper, or prompt to fellow students during the class test, final test, or exams. Such behavior will result in immediate dismissal from the auditorium with an act of malpractice being documented and submitted to the university leadership. Such behavior will result in the student forfeiting his/her attempt and attract negative result.
- Engaging in malpractice, such as using phones, watches, headphones, books, cheat sheets, or any resources is considered an academic dishonesty, and is prohibited. Engaging in any sort of malpractice will result in immediate dismissal from the auditorium.
- Discussing or conveying questions, tickets, and answers to fellow students immediately after the test on the premises is prohibited.

#### **9. Rules on tests/assignments/final tests/exams and reworks:**

- All final tests and exam attempts would be audio and/or video recorded. If the student feels he/she was unfairly evaluated, the head of the department and/or appeal committee will revisit these recordings along with the student's written answer to make a final decision. The appeal committee decision may have three outcomes: it may keep the same marks or reduce marks or increase the marks.
- All missed classes/lectures if not reworked would result in a negative coefficient.
- Information about the rework schedule will be posted on the department's webpage.
- The scheduled date and time of the final test will be considered the first attempt, even if the learner/student does not appear. Exceptions can be made for valid reasons with appropriate documentation or spravka.
- In case the student received unsatisfactory mark, he/she has the right to two reattempts during the semester (for module that was taught in the current semester) on the date and time assigned by the faculty member. In case of absence during the reattempt, previously obtained mark stays in force and is entered into the university rating system (BRS). Marks obtained in the last attempt/reattempt will be considered final and would be entered in the rating system. For example, during the scheduled final test at the end of the cycle, a student received 60%; in the first reattempt - 65% and in the final reattempt - 63%. Then, 63% will be entered into the university rating system (BRS).
- The marks obtained in the final attempt/reattempt will be entered into the university rating system (BRS) at the end of each semester. The fall/autumn semester entries close in December; and spring semester entries closes in May. Please ensure the academic debts have been cleared before the end of the semester so that appropriate corrections can be made in the university rating system (BRS).

#### **10. Contacting faculty members:**

- Contact faculty members only during office hours.
- Do not bother faculty member on holidays, unless extremely necessary.
- When sending a note to the faculty member, please greet, introduce yourself, and concisely write your question and wait for the response patiently. The faculty member will respond as time permits.

#### **11. Classes and Clinical visits:**

- Students are required to put on their white lab coat (apron) during classes and while visiting clinical centers.
- Students' white lab coats (aprons) coats should be spotless and ironed.
- Students must wear their second pair of shoes during the classes and while visiting clinical centers.
- Students are required to carry their stethoscopes while visiting clinical centers
- During clinical visits, classes, tests, or breaks, do not yell or talk loudly, resulting in a nuisance for others on the premises.

**12. Educational/research or other resources and intellectual property:** Any resources, including, but not limited to, slide sets, videos, or articles hosted on a department website or education portal, can be used for study purposes, of course, and do not require permission to use.

However, it should be noted that resources, including, but not limited to, lectures, videos, slide decks, etc., are considered intellectual property. Any student who utilizes and/or plagiarizes materials taken from the course for non-course uses or their personal gain is subject to legal action. Their unauthorized use for commercial purposes is considered an infringement and attracts legal action. For example, one can download and use the slide set to annotate the slides and prepare for classes. However, using the slide set or even a portion or a single slide for one's own presentation at the department or other places is not permitted without obtaining a written permission. Such action implies that the student has consciously stolen someone else's work and presented it as theirs. This offense attracts legal action.

**13. Academic honesty should be maintained at all times.**

**14.** Students bear material responsibility for damage caused to the property of the KazanSMU and clinical centers, per the norms of the current legislation of the Russian Federation.

**15.** Respect the honor and dignity of other students and employees of the KazanSMU and clinical centers.

**16. Prohibited:**

- All course videos, PowerPoints, course materials, and course assessments are not to be used by students outside the classroom, including posting materials on social media platforms.
- Do not create obstacles in the education/learning process of other students.
- Illegal storage, manufacture, processing, consumption, sale, or promotion of narcotic drugs, psychotropic substances, or their analogs, as well as plants containing narcotic drugs or psychotropic substances, or parts thereof, containing narcotic drugs or psychotropic substances.
- Drinking alcoholic beverages, as well as being under the influence of alcoholic, narcotic, or other toxic intoxicating substances.
- Smoking (including hookah and electronic cigarettes).
- Carrying, using, storing explosive, chemically dangerous substances or firearms (including traumatic), pneumatic, gas, and other weapons.
- Violation of anti-terrorist and public health and fire safety rules.
- Do not use physical force and other actions that entail dangerous consequences for others.
- Do not talk using mobile phones, or other communication devices during classes, intermediate and final tests, and exams.
- Use of obscene language on the premises and the campus (obscene expressions, including vulgar, rude, bawdy expressions).
- Do not talk loudly or make noise.
- In case of symptoms of infectious illness, please stay at home and call the precinct physician and inform the group leader, faculty member and the university leadership.

**Example of Clinical Vignette**

A 32-year-old man consulted a primary care physician with **complaints of:**

- severe, pressing, retrosternal chest pains, which lasted for about 2 hours from midnight, ibuprofen had no effect;
- pressing and constricting retrosternal chest pain and shortness of breath on the way to the clinic, which resolved at rest; because of frequent stops the patient had to make, the road to the clinic took half an hour instead of 10 minutes.

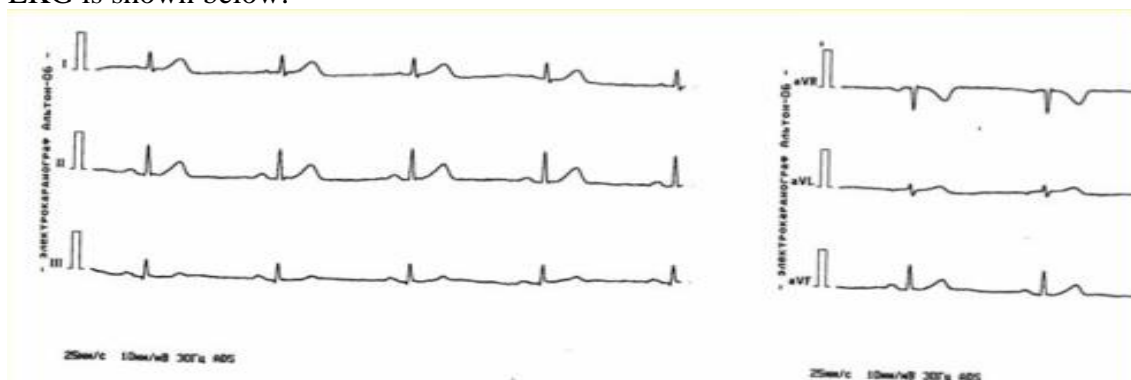
**Medical history:** Over the past 2 years, he notes an increase in blood pressure up to 180/100 mm Hg, for which he consulted a doctor, but does not take the recommended drugs. Random measurements of BP reveal BP in the range of 140-150 / 80-90 mm Hg. At the same time, the work-up revealed an increase in the level of total cholesterol up to 7.4 mmol/L and LDL 4.0 mmol/L, pharmacological treatment for this was not prescribed - he was following a diet. For 4 years he has been suffering from type 2 diabetes mellitus, is being followed-up by an endocrinologist, takes metformin 500 mg, 2 times a day. During therapy, fasting glycemia is 6.0-7.0 mmol/L, glycated hemoglobin is 6.7%.



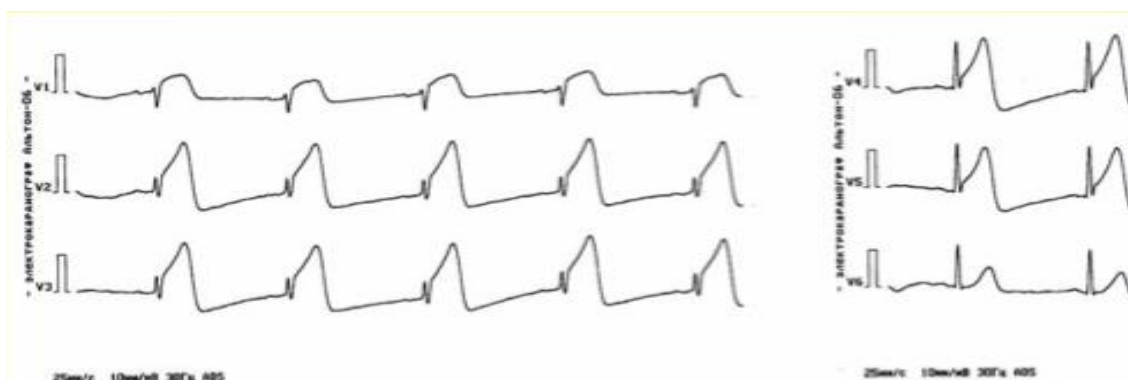
**Other history:** He grew and developed normally. Works as a salesman in a men's clothing store. **Past diseases:** myocarditis in childhood; chronic gastritis, exacerbations in spring / autumn no more than once a year; appendectomy at age 18. **Family history:** father died of myocardial infarction at 52 years old, mother is suffering type 2 diabetes. **Allergies:** there is no history of allergic reactions. **Psychosocial history:** smokes from the age of 15 (20-30 cigarettes a day).

**Physical exam:** General condition is serious. Patient looks well nourished, height 1.89 m, weight 112 kg, BMI 31.35 kg/m<sup>2</sup>, body temperature 36.6°C. The skin and visible mucous membranes are normal in color, peripheral lymph nodes are not enlarged, there is no edema. On comparative percussion of the lungs – resonant note, on auscultation - vesicular breathing, small bubbling wet rales in a small amount in the lower parts of both lungs (below the angle of the scapula), respiratory rate - 22 per minute. Heart sounds are muffled and rhythmic, heart rate 50 per minute. BP 120/70 mm Hg. The abdomen is soft and non- tender. The liver does not protrude from the costal margin.

EKG is shown below:



Answer the following questions:



1. What is the diagnosis?
2. What justifies the diagnosis?
3. Provide a plan of differential diagnosis with at least three diseases having similar presentation.
4. What is/are the indication(s) for hospitalization in this patient?
5. Which test or tests would you order next? When would you schedule them?
6. Which non-pharmacological approaches would you recommend?
7. Which medications (with doses, forms of administration, and frequency) would you prescribe? What are the side effects that you would monitor?
8. What goals would you set for primary/secondary prevention and how would you achieve them?
9. What should be done during follow up (short-term and long-term)?

**Criteria for evaluating clinical cases**

<b>№</b>	<b>Question</b>	<b>Criteria for obtaining maximum points</b>	<b>Points</b>
1.	Preliminary/ provisional diagnosis	The diagnosis is fully formulated according to the International Classification of Diseases, indicating the code, in accordance with clinical guidelines, taking into account concomitant pathology and functional disorders.	0-10
2.	Substantiation of preliminary/ provisional diagnosis	The diagnosis is fully substantiated by comparing the diagnostic criteria with the signs and symptoms of the patient.	0-10
3.	DDx with the most probable disease	The most suitable diseases were selected for differential diagnosis. The differential diagnosis is structured. A thorough analysis of the patient's clinical picture and physical examination was conducted. Conclusions are logical.	0-20
4.	Whether hospitalization is indicated for the patient. If any, list out the indications for hospitalization	The correct answer does not add points. An incorrect answer decreases by 5 points.	-5 / 0
5.	Schedule an outpatient examination required for diagnosis	Complete response in accordance with the standards of care and clinical guidelines.	0-10
6.	Non- pharmacological management	The triage was carried out appropriately and the type of medical care that the patient requires was determined (emergency and life threatening, emergency but not life threatening, planned). A correct plan of non-pharmacological measures was prepared at the time of examination. All types of non-pharmacological management indicated in this clinical situation are offered.	0-10
7.	Prescribe pharmacotherapy indicating the name of the drug (generic name), form, dose, frequency and duration of use	Drugs are prescribed using generic names with the indication, form, doses, frequency and duration of use. The most appropriate option of therapy (drug) has been prescribed. When prescribing, the patient's condition, features of the course of the disease, the effectiveness and tolerability of previous therapy, and the presence of comorbid pathology were taken into account.	0-20
8.	Goals for primary/secondary prevention	Setting the goals for primary and secondary prevention. List out the interventions for particular preventions	0-10
9.	Outpatient follow- up	The duration and frequency of outpatient follow-up are indicated correctly. All health indicators that are supposed to be monitored are listed with target values. All types of examinations within the framework of outpatient follow-up, types of non-pharmacological management and pharmacotherapy are offered.	0-10

## LIFE SAFETY

**Teachers: Prof. Ainagul Bayalieva, Assoc. Prof. PhD Alyam Dinmukhametov, assistant lecturer Timur Turaev, assistant lecturer Luay Al Hadury**

**Building, Department, classroom #** NUK, Anesthesiology and Reanimatology, Disaster Medicine Department, Chair of Department, 5 floor, room 515,516,517,519,521,526

### **Contact details:**

- Telephone number: 8(843) 236 05 33 (Prof. Ainagul Bayalieva)
- E-mail address: airmk@mail.ru
- Office and working hours: 517 (9-17)

### **Total hours — 72:**

Lectures 10 hours;

Practical classes 30 hours;

Independent work 32 hours;

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

### **Course objectives: The purpose of mastering the discipline**

mastering the discipline " Safety of life " - maintaining and ensuring the health of the population, improving the quality of life by providing qualified medical care, conducting preventive work with the population, ensuring the organization of the work of medical personnel.

### **Tasks of the discipline:**

To form knowledge in the field of:

The tasks of mastering the discipline:

- understanding of the role and place of life safety among the fundamental and medical sciences, about the directions of development of the discipline and its achievements;
- familiarize students with the legal, regulatory, technical and organizational foundations for ensuring life safety;
- acquaint students with the principles of ensuring safe human interaction with the environment and rational conditions of activity, security systems;
- acquaint students with the features of medical support for the population in wartime and in emergency situations of peacetime;
- familiarize students with the content of measures taken to protect the population, patients, personnel and property of medical institutions in wartime and in peacetime emergency situations;
- teach students to practically implement the main measures to protect the population, patients, medical personnel and property from the damaging factors of various types of weapons and in peacetime emergency situations;

- train students to organize and carry out special processing;
- train students to use medical protective equipment in a qualified manner;
- form students' skills of a healthy lifestyle, labor organization, safety rules and monitoring of environmental safety;
- form culture of professional safety, the ability to identify hazards and assess risks in the field of their professional activities;
- form motivation and ability to independently improve the level of safety culture.

### **Course topics:**

#### **Calendar plan of lectures**

1. Methodological and legal foundations of human life safety.
2. National security.
3. Emergencies. Unified State System for Prevention and Elimination of Consequences of Emergencies.
4. *Protecting a person from harmful and dangerous factors of natural and man-made origin.*
5. Fundamentals of organizing medical and psychological support for the population, medical workers and rescuers in emergency situations.
6. Life safety in medical organizations.

#### **Calendar plan of laboratory classes**

1. Methodological and legal foundations of human life safety. Legal basis for ensuring life safety in the Russian Federation.
2. Human life safety system in the Russian Federation
3. Russia's national security. The role and place of Russia in the world community. The system of national interests of Russia. Fundamentals of mobilization training and health mobilization. State material reserve for medical and sanitary purposes. Military registration and booking of medical workers.
4. Modern wars and armed conflicts. Definition and classification of wars and armed conflicts. Means of armed struggle. The damaging factors of modern types of weapons.
5. The civilian population in countering the spread of the ideology of terrorism and extremism. The security of society and the individual. Hazards and their impact on the human body. System of measures to ensure the safety of organized teams. Measures to ensure the personal safety of citizens.
6. Basic concepts, definitions, classification, medical and health consequences of emergency situations. Phases of development and damaging factors of emergency situations.
7. Methods for forecasting and assessing the situation in emergency situations. Unified State System for Prevention and Elimination of Consequences of Emergencies.
- a. Module on topics 1-7
8. Basic principles and legal framework for the protection of the population. Fundamentals of the organization of rescue and other urgent work in emergency situations. The system of civil defense and the main directions of its activity.
9. Fundamentals of organization and measures to protect the population in peacetime and wartime. System and methods of human protection from the main types of dangerous and harmful effects of natural and man-made origin. Methods of control and determination of dangerous and negative factors. General characteristics and classification of protective equipment. Protective structures, individual technical and medical means of protection. Sanitary and special treatment.
10. Fundamentals of the organization of medical and psychological support for the population, medical workers and rescuers in emergency situations. The main psychological causes of erroneous actions and the occurrence of dangerous situations. Psychotraumatic factors of an emergency situation. Features of the development of neuropsychiatric disorders in the

population and rescuers in emergency situations. Organization of medical and psychological assistance to the population, medical workers and rescuers in emergency situations

11. Safety of medical work. Characteristics of threats to the life and health of medical workers. The system of labor protection and safety in medical organizations. The main approaches, methods and means of ensuring the safety of the doctor. Features of ensuring fire, radiation, chemical, biological and psychological safety of medical personnel. Safety requirements when working in structural units of medical organizations. Security of medical services. Characteristics of threats to life and health of hospital patients. Forms of manifestation of threats to patient safety. The system for ensuring patient safety in medical organizations. Therapeutic and protective mode of work of medical organizations. Sanitation of patients. Evacuation of patients in emergency situations
12. Module on topics 8-12
13. Outcoming testing. Final test

### **Text books and required supplies:**

#### **Main**

1. Kolesnichenko, P. L. Life safety: textbook / P. L. Kolesnichenko. - Moscow: GEOTAR-Media, 2019. - 544 p. – ISBN 978-5-9704-5194-6. - Text: electronic // EBS "Student Consultant" : [website]. – URL: <https://www.studentlibrary.ru/book/ISBN9785970451946.html> (date of access: 11/30/2021). – Access mode : by subscription.

#### **Additional**

1. Modern means of armed struggle: a textbook for medical students / [compiled by: M. I. Kovalev, Ziganshin]. – Kazan: KSMU, 2010. – 34 p.
2. Dinmukhametov, A. G. Medical means of prevention and assistance in case of chemical and radiation injuries: study guide / A. G. Dinmukhametov. - Kazan: KSMU, 2009. - 86 p.
3. Technical means of individual protection: textbook / [compiled by A. G. Dinmukhametov]. - Kazan: KSMU, 2008. - 57 p.

#### **Internet resources**

1. Electronic catalog of the Scientific Library of Kazan State Medical University [http://e-library.kazangmu.ru/cgi-bin/irbis64r\\_plus/cgiirbis\\_64\\_ft.exe?C21COM=F&I21DBN=IBIS\\_FULLTEXT&P21DBN=IBIS&Z21ID=&S21CNR=5](http://e-library.kazangmu.ru/cgi-bin/irbis64r_plus/cgiirbis_64_ft.exe?C21COM=F&I21DBN=IBIS_FULLTEXT&P21DBN=IBIS&Z21ID=&S21CNR=5)
2. Electronic library system of KSMU <https://lib-kazangmu.ru/>
3. Electronic library system "Student Advisor" <http://www.studentlibrary.ru>
4. Scientific electronic library eLibrary.ru <http://www.elibrary.ru>
5. Reference legal system "ConsultantPlus"
6. Access from library computers.
7. Medline is a medical abstract-bibliographic database/search system. The PubMed system provides access to Medline. PubMed documents medical and biological articles from the specialized literature, as well as links to full-text articles, if they are available on the Internet. PubMed contains abstracts from the following areas: medicine, dentistry, general health, psychology, biology, genetics, biochemistry, cytology, biotechnology, biomedicine, etc.) <https://www.ncbi.nlm.nih.gov>

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

#### **ATTENDANCE REQUIREMENTS**

Attendance will be recorded in lecture and seminar journals.

In case of illness or other reasons for which you will not be able to attend classes, you must notify the dean's office and department, provide a medical certificate or permission from the dean's office to miss classes for a good reason. Working off the missed lectures can be carried out on the educational portal. Your tutors will give you specific deadlines for reopening resources. Working off missed seminars will require the fulfillment of all types of practical tasks provided for by the discipline program in these classes.

Students who missed more than 50% of classes will have to retake the discipline.

Students who believe that the assessment of his work was affected by extraordinary circumstances can write a reasoned explanation to the head of the department or to the dean's office.

#### **CURRENT CONTROL**

##### **Requirements for current control**

##### **Level 1 - knowledge assessment**

To evaluate learning outcomes in the form of knowledge , the following types of control are used:  
– tests

##### **Example of test tasks**

Territorial subsystems of the RSChS are created to prevent and eliminate emergencies

= in the constituent entities of the Russian Federation within their territories

~in cities and districts

~in towns and cities  
~ at industrial facilities

### **Criteria for evaluation**

The mark on the test is set in proportion to the proportion of correct answers:

90 - 100% - "excellent" rating;

80 - 89% - "good" rating;

70 - 79% - "satisfactory" rating.

Less than 70% of correct answers - the mark "unsatisfactory".

### **- test papers**

#### **Example of tests**

Dynamics of development of neuropsychiatric disorders affected in emergencies in the course of professional activity.

Criteria for evaluation

"Excellent" (90 - 100 points) - the work answers the question in full, the correct interpretation of the terms is given, key issues are considered, the literature is correctly selected.

"Good" (80 - 89 points) - the work answers the question in full, the correct interpretation of the terms is given, the key issues of the topic are partially considered, the literature is selected correctly, but does not go beyond the recommended.

"Satisfactory" (70 - 79 points) - the work answers the question, but not fully, the correct interpretation of the terms is given, the key issues of the topic are partially considered, the literature is selected correctly, but does not go beyond the recommended.

"Unsatisfactory" (0 - 69 points) - the work does not answer the question posed, the terms are misinterpreted, the key issues of the topic are not touched upon, a high percentage of borrowings without references to scientific literature.

### **- verbal messages**

#### **Topics of reports**

Natural disasters and accidents and their damaging factors.

Anthropogenic catastrophes and accidents and their damaging factors.

Man-made disasters and accidents and their damaging factors.

Criteria for evaluation

"Excellent" (90 - 100 points) - the report fully reveals the topic, the student answers all additional questions; speaks without looking at the text.

"Good" (80 - 89 points) - the report covers the topic, but requires additions, the student answers all additional questions; speaks, relying on the text, but not reading it.

"Satisfactory" (70 - 79 points) - the report covers the topic, but requires additions, the student cannot answer most of the additional questions, partially reads the text during the story.

"Unsatisfactory" (0 - 69 points) - the report does not cover the topic, the student cannot answer most of the additional questions, reads the text.

A survey is a dialogue between a teacher and a student, the purpose of which is to systematize and clarify the knowledge that students have, to test their individual abilities to master the material. Completeness of knowledge of theoretical controlled material. Ability to public communication (demonstration of public speaking skills, discussion on professional topics, knowledge of clinical guidelines materials, knowledge of professional terminology).

Passed - the student demonstrates knowledge of the material in the section, based on familiarization with the required literature and modern publications, actively participates in the discussion, gives logical, reasoned answers to the questions posed.

Not credited - lack of knowledge on the section under study, low activity in the discussion.

### **Level 2 - skill assessment**

To evaluate learning outcomes in the form of skills, the following type of control is used:

– solving and compiling situational problems

### **Case study example**

The victim after 6 hours was removed from the rubble in the area of an earthquake measuring 8 points on the Richter scale. The obstruction contained the lower limbs up to the middle third of the thigh. Medical assistance was provided by the sanitary squad. The victim is conscious, in contact, the condition is satisfactory, pallor of the skin is noted. Pulse 96 beats per minute. A/D 115/60 mm Hg.

#### **Questions:**

1. Specify the type of disaster.
2. List the damaging factors.
3. What is the purpose and main activities of first aid.

Criteria for evaluation

70 points or less - the content of the task is not understood, the product is inadequate to the task;

70 - 79 points - serious errors of a logical and factual nature were made, an attempt was made to formulate conclusions;

80 - 89 points - the task was completed, but one or two minor errors of a logical or factual nature were made, conclusions were drawn;

90 - 100 points - the task is completed, conclusions are drawn.

### **Types of case studies and case studies:**

tasks to establish the correct sequence, interconnectedness of actions, clarify the influence of various factors on the results of the task;

establishing a sequence (describe the algorithm for performing an action);

finding errors in the sequence (determine the correct version of the sequence of actions);

indicate the possible influence of factors on the consequences of the implementation of the skill, etc.

### **Level 3 - Skills Assessment**

To assess learning outcomes in the form of skills, the following types of control are used:

- assignments for decision-making in a non-standard situation (situations of choice, multi-alternative solutions, problem situations)

#### **Example**

There was a breakthrough of the dam of the Cheboksary hydroelectric power station.

Requirements for the task : scientific reasoning, knowledge of the relevant terminology, links to the acquired knowledge.

In the case of the task from the example, the correct answer will be: "According to the classifications and methods of calculation, the breakthrough wave will reach the city of Kazan."

### **- assignments for assessing the consequences of decisions made**

#### **Example**

There was a local accident at a nuclear power plant.

Requirements for the task : scientific reasoning, knowledge of the relevant terminology, student's awareness of various approaches to the problem and what methods of preventing thyroid lesions



and RV lesions are currently accepted by the scientific community. In the case of the task from the example, the correct answer would be: "Prevention with iodine-containing drugs, adaptogens and evacuation of the population from the alleged contamination zone."

#### **- tasks for evaluating the effectiveness of the actions**

Example

Algorithm for the actions of management and staff in case of a threat by phone about mining a shopping center.

Requirements for the task : scientific reasoning, knowledge of the relevant terminology, a systematic approach to the problem.

In the case of the task from the example, the correct answer will be: "An emergency mode is being introduced. An emergency evacuation of visitors and all staff is underway. Inspection of the territory of the facility by law enforcement agencies.

#### **Evaluation criteria for all three types of assignments**

"Excellent" (90 - 100 points) - the answer is correct, scientifically argued, with links to the topics covered.

"Good" (80 - 89 points) - the answer is correct, scientifically argued, but without reference to the topics covered.

"Satisfactory" (70 - 79 points) - the answer is correct, but not scientifically argued, or the answer is incorrect, but an attempt is made to substantiate it from alternative scientific positions covered in the course.

"Unsatisfactory" (0 - 69 points) - the answer is incorrect and not scientifically substantiated.

#### **INTERIM CERTIFICATION**

The discipline "Life safety" ends with an intermediate certification in the form of a test.

The account includes:

The presence of passed tests on all topics and the final test.

The student must have 100% attendance of both lectures and practical classes or work them out by the end of the course of the discipline.

During the passage of the discipline, the student in the journal of practical exercises should have at least 3 marks:

The answer is evaluated during the survey,

Protection of the abstract message,

Answer during the analysis of a situational problem.

Providing an intermediate grade for completing the course.

## **TRAUMATOLOGY AND ORTHOPEDICS**

**Teachers: Lobashov Vladislav Vasilievich, assistant, PhD**

**Al-Lami Mustafa Ali Jasim, assistant**

**Building, Department, classroom # 7<sup>th</sup> hospital** Address: 420103, Kazan, Marshal Chuikov St., 54

#### **Contact details:**

- Telephone number: +7 917 217-88-82
- E-mail address: fagumu69@mail.ru
- Office and working hours: 7th hospital Address: 420103, Kazan, Marshal Chuikov St., 54

**Total hours — 216:**

Lectures 36 hours;  
Practical classes 85 hours;  
Independent work 59 hours;  
Control 36 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) .

### **Course objectives: The principals of traumatology and orthopedic surgery**

The goals of mastering the traumatology and orthopedics discipline are formation of systematic knowledge and skills of the basic life support, trauma management and orthopedic diseases for medical students. This can give a general view for the student about trauma and how it threatening the human life, also to know what is the orthopedic diseases and how its affecting the skeletal system in the human body.

### **Tasks of the discipline:**

To form knowledge in the field of:

- understanding the meaning of trauma as a general concept and to know why its considered as a first cause of death.
- studying several types and classification of trauma and how to preform basic life support
- forming systematic knowledge of students on general orthopedic diseases and pediatric orthopedic diseases
- development of the student's professional self-awareness, his ability to use the acquired knowledge in the basic surgical and emergency skills and research activity of the future specialist.

### **Course topics:**

#### **Calendar plan of lectures**

1. Emergency trauma. Trauma as a social problem. Organization of trauma and orthopedic surgery system. General principles and methods of treatment of injuries of the musculoskeletal system. Regeneration of bone tissue. Principles of fracture treatment, classification, mistakes and complications and basic management of trauma.
2. Open fractures. Purulent complications of fractures. Modern methods of treatment of open fractures and traumatic osteomyelitis.
3. Clinic and diagnosis of fractures and dislocations of the bones of the upper extremities.
4. Clinic and diagnostics of fractures of the upper limbs.
5. Clinic and diagnosis of fractures and dislocations of the lower extrimity and foot.
6. Diseases and injuries of the spine and head.
7. Pelvic diseases and injuries. Examination, treatment. Clinic and diagnostics of fractures and dislocations of the hip and knee joint.
8. Outpatient trauma clinic.
9. Injury of the abdomen.
10. Diagnosis, complications, modern principles of treatment Breast damage.

### **Calendar plan of the cycle**

- 1.1. Emergency trauma. Trauma as a social problem. Organization of trauma and orthopedic surgery system. General principles and methods of treatment of injuries of the musculoskeletal system. Regeneration of bone tissue.
- 1.2. Principles of fracture treatment, classification, mistakes and complications. Open fractures.
- 2.1. Complications of open fractures. Modern methods of treatment of open fractures and traumatic osteomyelitis. (Definition of the terms "initially open fracture" and "secondarily open fracture". Classification of open fractures. Features of localization. Associated damage - damage to blood vessels and nerves. Principles of treatment with open fractures. Features of primary surgical treatment of wounds for various types of damage. Variants of osteosynthesis with open fractures of bones. Management of patients after an open fracture.)
- 2.2. Purulent complications of fractures are traumatic osteomyelitis. (Principles of general and local treatment of traumatic osteomyelitis.)
- 3.1. Clinic and diagnostics of fractures of the upper limbs. (Classification of fractures: congenital, acquired; traumatic, pathological; closed, open; uncomplicated, complicated)
- 3.2. Clinic and diagnosis of fractures of limb bones. (Classification of fractures: congenital, acquired; traumatic, pathological; closed, open; uncomplicated, complicated)
- 3.3. (Clinic and diagnosis of dislocations in / of limbs. Traumatic dislocations of bones. Definition of the concept of "dislocation of bones." Types of traumatic dislocations: complete, incomplete; fresh dislocations, stale dislocations, chronic; simple dislocation, complicated dislocation; anterior dislocation, posterior dislocation; sprains, irreparable dislocations; habitual dislocations. Principles of treatment of traumatic dislocations of extremities.)
- 4.1. Clinic and diagnosis of fractures and dislocations of the lower extremity and foot. (Clinic and diagnosis of fractures of limb bones. Classification of fractures: congenital, acquired; traumatic, pathological; closed, open; uncomplicated, complicated).
- 4.2 Clinic and diagnosis of dislocations of limbs
- 4.3 Traumatic dislocations of joints. Definition of the concept of "dislocation of joints." Types of traumatic dislocations: complete, incomplete; fresh dislocations, stale dislocations, chronic; simple dislocation, complicated dislocation; anterior dislocation, posterior dislocation; sprains, irreparable dislocations; habitual dislocations. Principles of treatment of traumatic dislocations of extremities.
5. Diseases and injuries of the spine and head. (Hematoma, contusion, coma)
6. Pelvic diseases and injuries. (radiological and clinical examination, complications, treatment.
7. Clinic and diagnostics of fractures and dislocations of the hip and knee joint.)
8. Outpatient trauma clinic (disease, injections, casting, non-operative treatment, wound management).
9. Injury of the abdomen (liver and splint rupture).
10. Diagnosis, complications, modern principles of treatment Breast damage (Pneumothorax, hemothorax diagnostics and treatment principles).

### **Text books and required supplies:**

1. Goodship, Allen E. "AO principles of fracture management (book and CD-ROM).: By Thomas P. Ruedi and William M. Murphy. Pp. 864. Stuttgart: Georg Thieme, 2000.
2. Blom, Ashley, David Warwick, and Michael Whitehouse, eds. *Apley & solomon's system of orthopaedics and trauma*. CRC press, 2017
3. Hallab, Nadim James, and Joshua J. Jacobs. "Orthopedic applications." *Biomaterials science*. Academic Press, 2020. 1079-1118.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/practice works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, practice work, tests during classes, etc.) is carried out using 10-point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt, the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline during the cycle.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0-69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of modules**

#### **Module 1**

1. Emergency trauma. Trauma as a social problem. Organization of trauma and orthopedic surgery system. General principles and methods of treatment of injuries of the musculoskeletal system. Regeneration of bone tissue.
2. Principles of fracture treatment, classification, mistakes and complications. Open fractures. Purulent complications of fractures.
3. Modern methods of treatment of open fractures and traumatic osteomyelitis.
4. Clinic and diagnosis of fractures and dislocations of the bones of the upper extremities.
5. Clinic and diagnosis of fractures and dislocations of the lower extrimity and foot.
6. Diseases and injuries of the spine and head.
7. Pelvic diseases and injuries. Examination, treatment. Clinic and diagnostics of fractures and dislocations of the hip and knee joint.
8. Outpatient trauma clinic.
9. Diagnosis, complications, modern principles of treatment Breast damage.

#### **Module 2**

1. Introduction to orthopedics, osteoarthritis, rheumatoid arthritis, tuberculosis arthritis, septic arthritis.
2. Congenital orthopedic and osteochondopathy diseases of foot, spine, hip and Developmental Dysplyisa of the hip DDH.
3. Shoulder diseases, Rotator cuff syndrome, Acromioclavicular joint, adhesive capsulitis, bursitis, tendinitis, shoulder replacement &arthroscopic

4. Elbow, tennis elbow, golfer elbow, cubital and carpal tunnel syndrome, olecranon bursitis , dupuytren contracture, trigger finger disease , de quervain disease, ganglion cyst.
5. Hip diseases, coxarthrosis, Avascular necrosis, femoral acetabular impairment, spondylolysis, Total hip replacement. Arthroscopic
6. Knee, valgus, varum, meniscus injury (discoid), bursitis, tendonitis, ACL and PCL Injuries. Total knee replacement and arthroscopic of knee.
7. Ankle foot, valgus valgus and varus , flat foot diabetic foot , achilles, planter fasciitis
8. Spine, spinal stenosis, scoliosis, degenerative disc disease disc deformities.

### EXAMPLE OF EXAM TICKET

The question card of the exam consists of 3 questions, one X-ray and one clinical case.

Questions 1 - 3 on orthopedic diseases which was during the year.

Example:

- 1- Compartment syndrome, definition, common sites, etiology, investigation, treatment

Compartment syndrome occurs when excessive pressure builds up inside an enclosed muscle space in the body. The condition usually results from bleeding or swelling after an injury. The dangerously high pressure in compartment syndrome slows the flow of blood, oxygen, and nutrients to and from the affected tissues. It can be an emergency, requiring surgery to prevent permanent injury. Laboratory and imaging tests (such as an X-ray) can support the diagnosis of compartment syndrome. acute compartment syndrome require immediate surgery to reduce the compartment pressure. A long incisions through the skin and the fascia layer underneath (fasciotomy), releasing excessive pressure.

- 2- Developmental Dysplasia of the Hip, evaluation, epidemiology, risk factors, presentation, imaging, treatment.

DDH may be defined simply as abnormal growth of the hip. Abnormal development of the hip includes the osseous structures, such as the acetabulum and the proximal femur, as well as the labrum, capsule, and other soft tissues.

- Subluxation – Incomplete contact between the articular surfaces of the femoral head and acetabulum
- Dislocation – Complete loss of contact between the articular surface of the femoral head and acetabulum
- Instability – Ability to subluxate or dislocate the hip with passive manipulation
- Teratologic dislocation – Antenatal dislocation of the hip

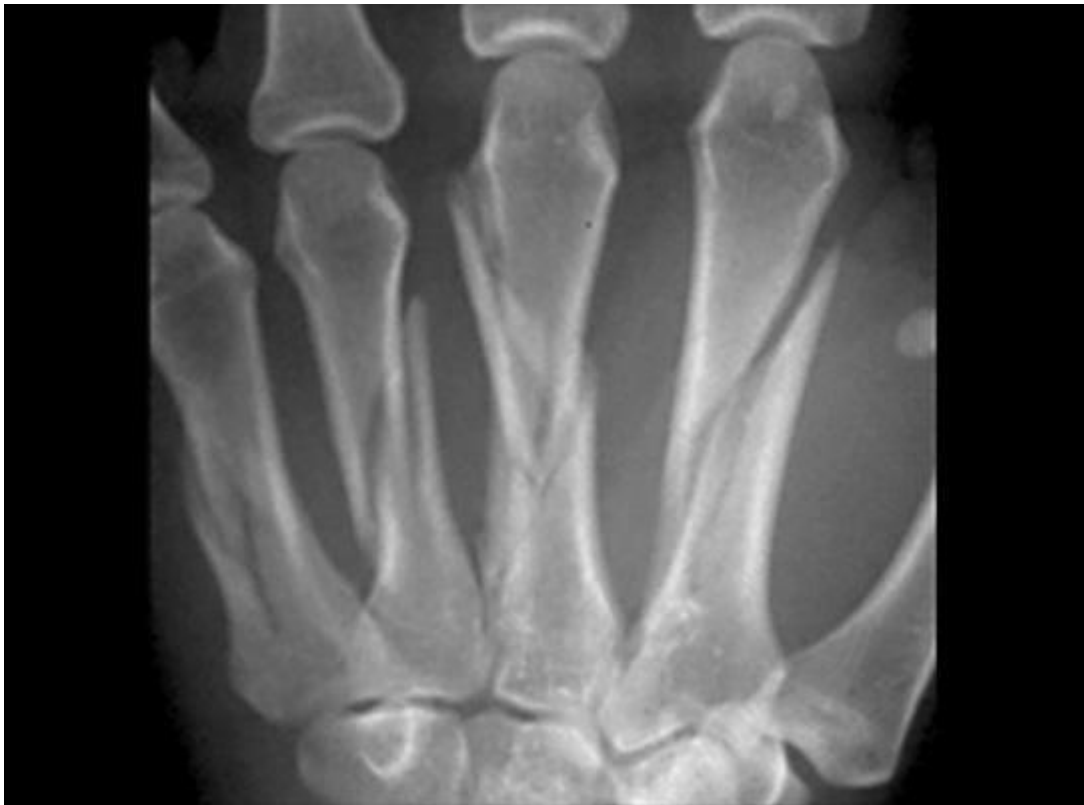
Early diagnosis made up on physical examination and early ultrasound of the hip.

Treatment going through several stages start with conservative by Pavlik harness immobilization till reach the surgical reduction of the hip joint.

- 3- Carpal Tunnel Syndrome, evaluation, epidemiology, etiology, classification, presentation, imaging, treatment, prognosis.

Common acquired compressive neuropathy of the median nerve that presents with symptoms of numbness and tingling in the median nerve distribution of the hand, Diagnosis is made clinically with primary symptoms of night pain, hand weakness/clumsiness, and numbness in median nerve distribution along with positive provocative tests and/or EMG/NCS studies, Treatment is usually conservative with night splints and corticosteroid injections. Operative treatment in the form of carpal tunnel release is reserved for refractory cases.

X-ray showing an orthopedic picture which the student has to make good read for current X-ray and tell diagnosis and management.



Answer: X-ray anterioposterior view of the hand showing closed , spiral metacarpal bone fractures

This type of fractures treated with ORIF

Clinical case – orthopedic case which telling history about trauma or orthopedic situation which the student have to explain and make the diagnosis and management

A 19-year-old woman is brought to the emergency department by ambulance after she sustained an injury to the right knee while rollerblading. The patient says she felt sudden, severe pain in the knee when she turned a corner quickly. She fell to the ground and was unable to bear weight on the right leg. Physical examination shows swelling and deformity of the right knee as well as inability to fully extend and straighten the right lower extremity. X-ray studies show dislocation of the patella. In addition to administration of analgesics.

- 1-What is the diagnosis of this case?
- 2-Which investigations are recommended for this patient?
- 3-What is the most appropriate management?

Answer:

- 1- Patellar dislocation
- 2- CT scan and MRI looking for soft tissue damage.
- 3- Early reduction and immobilization for 6 weeks

Mark will be for each question:

- correct answer - 10 points
- correct explanation - 10 points

**Total for one question: 20 points.**

**Maximum total for all questions – 100 points.**

## ONCOLOGY, RADIATION THERAPY

**Teachers: Assistant Professor of the Department of Oncology, Radiation Diagnostics and Radiation Therapy Farida Akmetzyanova, Angelina Karamanyan**

**Building, Department, classroom:** Republican Clinical Oncology Dispensary; Department of Oncology, Radiation Diagnostics and Radiation Therapy, 6th floor, classrooms 1 and 2

**Contact details:**

- Telephone number: 8 – 917-260-40-11 (Farida Akmetzyanova)
- E-mail address: farida\_md@mail.ru
- Office and working hours: 301-302 (9-16)

**Total hours 108**

Lectures - 18 hours

Practical classes - 45 hours

Self-study (independent work) - 45 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher. is usually devoted to detailed study of specific topics and it is being held in each academic group separately. Practical classes involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Self-study (independent work)** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>) and Kazan State Medical University Lectorio Academy.

**Course objectives: The purpose of mastering the discipline**

The aim of the academic discipline "Oncology, radiation therapy" is: training in collecting and analyzing information about the patient's health status, a professional algorithm for solving practical problems of diagnostics, treating patients and preventing diseases, skills of professional medical behavior, maintaining medical records

**Tasks of the discipline:**

The objectives of the course for students are:

- familiarization of students with the basic principles of theoretical oncology;
- training in early recognition (detection) of malignant neoplasms during examination of a patient, differential diagnostics with other diseases that occur with similar symptoms, based on their leading syndromes, training in the selection of optimal methods of laboratory and instrumental examination to confirm or cancel the diagnosis of cancer;
- study of the main nosological forms of malignant tumors, the possibilities of their prevention and early diagnosis, familiarization with modern principles of diagnosis and treatment of cancer patients.
- familiarization with the peculiarities of organizing oncological care for the population in the Republic of Tatarstan and Russia
- training students in methods of diagnosis and treatment of the main localizations of malignant tumors in adults (lung cancer, esophagus, stomach, breast, skin, prostate, kidney, bladder, melanoma, tumors of the pancreatoduodenal zone, colorectal cancer)

**Course topics:****Calendar plan of lectures**

1. Modern problems of oncology. Organization of oncological service in Russia and the Republic of Tatarstan. Pathogenesis of clinical symptoms. Basic principles of diagnostics of oncological diseases
2. Basic principles of cancer treatment.
3. Radiation therapy. Types of radiation therapy. Indications and contraindications for radiation therapy. Questions of private radiation therapy by localization of malignant neoplasms
4. Skin cancer and melanoma
5. Precancerous breast diseases and breast cancer
6. Stomach cancer
7. Colorectal cancer
8. Tumors of the genitourinary system (prostate cancer, kidney cancer, bladder cancer)
9. Lung cancer

**Calendar plan of practical classes**

1. Modern problems of oncology. Organization of oncological service in Russia and the Republic of Tatarstan. Pathogenesis of clinical symptoms. Basic principles of diagnostics of oncological diseases. Basic principles of cancer treatment.
2. Radiation therapy. Types of radiation therapy. Indications and contraindications for radiation therapy. Questions of private radiation therapy by localization of malignant neoplasms.
3. Skin cancer and melanoma. Incidence, risk factors, prevention, classification, clinical forms, precancerous skin diseases, diagnostic methods, the importance of morphology for diagnosis, difficulties in diagnostics in small forms of melanoma, treatment, prognosis.
4. Precancerous breast diseases and breast cancer. Incidence, relevance of the problem, risk factors for breast cancer, mastopathy role in the occurrence of breast cancer, prevention. Screening in mammology, classification of breast cancer, diagnostic methods, treatment, prognosis.
5. Stomach cancer. Cancer of the hepatoduodenal zone. Incidence, prevention, precancer, tactics, stomach cancer classification, diagnostic methods, treatment, prognosis.  
Cancer of the hepatoduodenal zone. Incidence, risk groups, prevention, classification, factors determining the clinical picture, diagnostic methods, treatment, prognosis.
6. Colorectal cancer. Incidence, relevance of the problem, etiology, prevention, classification of CRC, clinical forms of CRC, diagnostic methods, treatment of CRC. Prognosis.
7. Tumors of the genitourinary system (prostate cancer, kidney cancer, bladder cancer). Kidney cancer. Incidence, classification, diagnostics, treatment, prognosis. Prostate cancer. Incidence, screening, classification, diagnostics, treatment, prognosis; Bladder cancer. Incidence, classification, diagnostics, treatment, prognosis.
8. Lung cancer. Morbidity, risk group, prevention, classification, factors determining the clinical picture of lung cancer, diagnostic methods, the role of Ro diagnostic methods, treatment, prognosis.
9. Outcoming testing. Final test.

**Text books and required supplies:**

1. Internal disease. Two-Volume textbook. Edit. A.I. Martinov, N.A. Myhin, V.S. Moiseev, M. GEOTAR. Med., 2001, 600 p.
2. Manual of general practitioner in 2 volumes, edit N.R. Palev, Moscow, EXMO-PRESS, 2002, 990 p.p.
3. Harrison's Principles of Internal Medicine 16th (Two-Volume Set). Dennis L. Kasper, Eugene Braunwald, Stephen Hauser, Dan Longo McGraw-Hill – 2012.- 2780 p.p.



4. Cecil Textbook of Medicine: Single Volume. Lee Goldman, Dennis Ausiello - Saunders - 2007. - 3120 p.p.
5. I.R. Lazovskih. Manual of clinical symptoms and syndromes. M., Medicine, 2000.
6. V.P.Pomerancev et al. Basic of radiology in diagnosis and treatment of internal diseases. Tula, 2000.
7. R.Hegglin. Differential diagnosis in internal medicine. M., Medicine, 1999.
8. <https://www.uptodate.com>
9. Kazan State Medical University Lecturio Academy
10. [www.cancer.org](http://www.cancer.org)
11. [www.webmed.com](http://www.webmed.com)
12. [www.clinicalkey.com](http://www.clinicalkey.com)

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/ assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, tests during classes, survey (oral response), etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module**

The following types of control are used to assess learning outcomes in the form of knowledge:

**Survey (oral response)** – a dialogue between a teacher and a student, the purpose of which is to systematize and clarify the student's existing knowledge, and to test his or her individual ability to assimilate the material

**Examples of questions:**

1. List the etiological factors of skin cancer
2. International classification of breast cancer
3. Name the main types of treatment in oncology.
4. In what cases is palliative treatment used.

**Test control**

1. *Determination of steroid hormone receptors is necessary for*
  - a) radiation therapy
  - b) hormone therapy
  - c) chemotherapy
  - d) surgical treatment of the mammary gland
2. *Breast cancer can have the following clinical forms*
  - a) nodular
  - b) diffuse
  - c) eczema-like changes in the areola and nipple
  - d) all answers are correct
3. *For mass diagnostics of breast cancer*
  - a) thermography
  - b) mammography
  - c) fluorography
  - d) puncture biopsy
  - d) palpation
4. *Breast cancer can metastasize*
  - a) lungs
  - b) bones
  - c) liver
  - d) brain
  - e) all listed organs

**EVALUATION OF THE MODULE ANSWER**

**Test control**

**Assessment criteria:**

The **test grade** is given proportionally to the percentage of correct answers:

90-100% - grade "excellent"

80-89% - grade "good"

70-79% - grade "satisfactory"

Less than 70% of correct answers - grade "unsatisfactory".

**Survey (oral response)**

Survey (oral response) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”

## COMORBID CONDITIONS IN THE PRACTICE OF DISTRICT THERAPIST

**Teachers of OB&GYN Department:** PhD Albina Valerevna Ganeeva, PhD Yuri Valerievich Orlov, PhD Elvira Ilgizarovna Galimianova, Polina Leonidovna Kapelyushnik

**Building, Department, classroom:** Medical university clinic (Prof.Gruzdev clinic), KSMU, Department of Obstetrics and Gynaecology named after Prof. V.S. Grudev, Lecture Hall, study room#10

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- Telephone number:
- E-mail address: ob\_gyn@kazangmu.ru
- Working hours: 9 a.m.- 5 p.m.

**Teachers of Public Health and Healthcare Organization Department:** A.R. Amirova, V.A. Shcherbakov, D.H. Nigmatullina

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**Contact details:**

- Telephone number: (843) 236-08-81
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- Office and working hours: 308 (9-17)

**Teachers of Neurology and Rehabilitation Department ( Module “Neurological diseases in the practice of a GP”):** PhD Aislyu Faizutdinova, PhD Alexandr Kazantsev, PhD Shamil Bogdanov

**Building, Department, classroom:** RCH, Orenburgsky tract 138, bild. A, Department of Neurology, rooms 214, 217

**Contact details:**

- e-mail address: [enver\\_bogdanov@mail.ru](mailto:enver_bogdanov@mail.ru) (head of department - Prof. Enver Bogdanov),
- [aisluzab@mail.ru](mailto:aisluzab@mail.ru) (teaching assistant - PhD Aislyu Faizutdinova)

**Course description:**

- **Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.
- **Practical classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. It involves active participation of students in problem discussion and requires preliminary preparation by the student. Practical training is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.
- **Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

The discipline “Comorbid conditions in the practice of district therapist” is included in the basic part of the Working curriculum.

**The Goal** of mastering the academic discipline “Comorbid conditions in the practice of district therapist” are: deepening knowledge of public health and health care organization, skills and abilities in neurology, physiological and pathological obstetrics and gynecology, the study of pathology, the most common in the practice of district therapist.

**Objectives of the discipline**

1.To form the skills of obstetric, gynaecological, neurological examination with identification of pathological symptoms, syndromic association of symptoms and formulation of diagnosis;

2. To form knowledge about the basics of etiopathogenesis, clinical manifestations, diagnosis, treatment and prevention of the most significant for the district therapist pathological conditions in neurology, obstetrics and gynaecology;
3. To form the knowledge necessary for the justified appointment of basic methods of research in neurology, obstetrics and gynaecology, and interpretation of their results.
4. To teach students to provide assistance in pathological conditions in neurology, obstetrics and gynaecology;
5. To form the students' knowledge necessary for the organisation of medical and preventive care of population.

#### **Scope of the academic discipline (module) and types of academic work**

<b>Total</b>	<b>Contact work</b>		<b>Independent work</b>
	<b>Lectures</b>	<b>Practical classes (seminars)</b>	
<b>Department of Obstetrics and Gynaecology named after Prof. V.S. Gruzdev</b>			
26h	6	10	10
<b>Department of Public Health and Healthcare Organization:</b>			
24 h	2	10	12
<b>Department of Neurology and Rehabilitation</b>			
22h	2	10	10
<b>Overall 72/2</b>	<b>10</b>	<b>30</b>	<b>32</b>

**Type of intermediate certification - credit.**

#### **Content of the discipline structured by topics**

##### **A. OB&GYN section:**

##### **Lecture plan:**

<b>№</b>	<b>The title of lecture</b>
1.	Renal syndromes in the obstetrician-gynecologist practice
2.	Hemostatic system disorders in the obstetrician-gynecologist practice
3.	Pelvic pain in the obstetrician-gynecologist practice

##### **Lecture course content**

##### **1. Renal syndromes in the obstetrician-gynecologist practice.**

Renal diseases. The significance of renal pathology in obstetrics and gynaecology. Arterial hypertension. Classification. Differential diagnosis. Hypertensive disorders in pregnancy, labour and postpartum period.

##### **2. Hemostatic system disorders in the obstetrician-gynecologist practice**

Thrombophilia as a cause of haemorrhage, infertility and pregnancy failure. Classification, frequency of occurrence. Features of clinical manifestations.

##### **3. Pelvic pain in the obstetrician-gynecologist practice**

Pelvic pain. Etiopathogenesis, classification of pelvic pain. Clinical manifestations. Differential diagnosis.

#### **Content of the topics of practical training session**

##### **1. Renal syndrome in the obstetrician-gynaecologist practice**

Renal diseases. The significance of renal pathology in obstetrics and gynaecology. Asymptomatic bacteriuria. Chronic pyelonephritis. Glomerulonephritis. Kidney stone disease. Clinical manifestations. Diagnosis. Treatment. Possible complications in pregnancy.

Analysis of case study.

### **2. Hypertensive disorders in the obstetrician-gynecologist practice**

Arterial hypertension. Chronic and gestational arterial hypertension. Pre-eclampsia. Eclampsia. Classification. Current trends in diagnosis, treatment and delivery of pregnant women with pre-eclampsia. Clinical and laboratory criteria of severe pre-eclampsia. Critical forms of pre-eclampsia, obstetric tactics, features of anaesthesia in pre-eclampsia. Eclampsia in pregnancy and labour, postpartum period.

Analysis of clinical situations/case study.

### **3. Hemostatic system disorders in the obstetrician-gynecologist practice**

Thrombophilia as a cause of bleeding, pregnancy failure and infertility. Classification, frequency of occurrence, peculiarities of clinical manifestations. Antiphospholipid syndrome. Diagnosis. Peculiarities of clinical manifestation in gynaecological patients and pregnant women. Acquired hypercoagulability, clinical manifestations, therapeutic approaches, complications. Obstetric haemorrhage: Placenta previa, Placental abruption. Etiopathogenesis, clinical features, diagnosis. Management of Obstetric Hemorrhage. Haemorrhagic shock. Principles of Infusion therapy.

Analysis of case study.

### **4. Pelvic pain in the obstetrician-gynecologist practice**

Pelvic pain classification. Etiopathogenesis, clinical manifestations, differential diagnosis. Pregnancy Related Pelvic Pain. Pelvic Congestion Syndrome. Chronic pelvic pain syndrome in gynecological practice: Pelvic inflammatory disease, tumours (ovarian torsion, ovarian cancer, necrosis of the myomatous node). Pain syndrome in deep infiltrating endometriosis. Pain following an ectopic pregnancy. Diagnostic methods, management plan.

Analysis of clinical situations/case study report.

### **5. Module (Case study report (oral interview)/Final test)**

## **B. Department of Public Health and Healthcare Organization:**

### **Calendar plan of lectures**

1. Vascular pathology of the brain and spinal cord in the practice of a district therapist.
2. Fundamentals of organizing outpatient and polyclinic care for the population
3. Pelvic pain in obstetric and gynecological practice.
4. Disorders of the coagulation system in obstetric and gynecological practice.
5. Renal syndrome in the practice of an obstetrician-gynecologist

### **Calendar plan of practical classes**

1. Dizziness in the practice of a district therapist.
2. Pathology of the peripheral nervous system in the practice of a district therapist.
3. Vascular pathology of the brain and spinal cord in the practice of a district therapist.
4. Dysfunction of the autonomic nervous system in the practice of a district therapist.
5. Headaches in the practice of a district therapist.
6. Accounting and reporting documentation in the work of a district therapist, general practitioner. Electronic outpatient card. ICD
7. Employment contract and effective contract. Working hours. Rest time. Standardization and payment of labor. Collective agreement. Accreditation and certification
8. Preventive work of a district therapist, general practitioner. Formation of a healthy lifestyle among the population. Medical examination and preventive check-ups.
9. Expertise of working capacity in the practice of a district therapist, general practitioner.
10. Ensuring quality and patient safety. Ethics and deontology. Medical confidentiality. Criminal liability
11. Pelvic pain in obstetric and gynecological practice.

12. Disorders of the coagulation system in obstetric and gynecological practice.
13. Renal syndrome in the practice of an obstetrician-gynecologist
14. Obesity in the practice of an obstetrician-gynecologist.
15. Hypertensive conditions in obstetric and gynecological practice.

### **Department of Neurology and Rehabilitation;**

#### **Course topics:**

	<b><u>Total hours</u></b>	Lectures	Practical classes	Independent work
<b>Section 1. Neurological diseases in the practice of a GP</b>	<b>22</b>	2	10	10
Topic 1.1. Headaches and dizziness in the practice of a GP		0,3	3	3
Topic 1.2. Disorders of the peripheral nervous system in the practice of a GP		0,3	2	2
Topic 1.3. Vascular disorders of the brain and spinal cord in the practice of GP.		1	3	3
Topic 1.4. Dysfunction of the autonomic nervous system in the practice of a GP. Emergency in neurological disorders		0,4	2	2

#### **Contents**

Topic 1.1. Headaches and dizziness in the practice of a GP	
Lecture Contents	Headaches and dizziness in the practice of GP. Etiology. Pathogenesis. Classification, approaches to therapy and prevention.
Contents of the practical lesson	Headaches (primary and secondary) and dizziness (vestibular and non-vestibular) in the practice of GP. Principles of examination a patient with these complaints. The role of clinical and instrumental investigations. Diagnosis, differential diagnosis and treatment. Pharmacological and non-pharmacological methods of therapy and prevention. Indicators of the quality of medical care for this pathology.
Topic 1.2. Disorders of the peripheral nervous system in the practice of a GP	
Lecture Contents	Disorders of the peripheral nervous system in the practice of a GP. Etiology. Pathogenesis. Classification, approaches to therapy and prevention
Contents of the practical lesson	Disorders of the peripheral nervous system (vertebral, toxic/metabolic, infectious, hereditary) in the practice of a GP. Principles of examination of a patient with this pathology. The role of clinical and laboratory and instrumental methods. Diagnosis, differential diagnosis and treatment. Pharmacological and non-pharmacological methods of therapy and prevention. Post-surgery spine syndrome. Indicators of the quality of medical care for this pathology.
Topic 1.3. Vascular disorders of the brain and spinal cord in the practice of GP.	
Lecture Contents	Vascular pathology of the brain and spinal cord in the practice of a GP. Acute cerebrovascular accidents (stroke) during pregnancy, childbirth

	and the postpartum period. Etiology, pathogenesis. Classification, approaches to therapy and prevention.
Contents of the practical lesson	Vascular pathology of the brain and spinal cord in the practice of a GP. Acute cerebrovascular accident during pregnancy, childbirth and the postpartum period. "Therapeutic" window. Principles of examination of a patient with this pathology. Diagnosis, differential diagnostics and treatment. Indicators of the quality of medical care for this pathology.
Topic 1.4. Dysfunction of the autonomic nervous system in the practice of a GP. Emergency in neurological disorders	
Lecture Contents	Dysfunction of the autonomic nervous system in the practice of a GP. Etiology, pathogenesis. Classification, approaches to therapy and prevention
Contents of the practical lesson	Dysfunction of the autonomic nervous system in the practice of a GP. Principles of examination of a patient with this pathology. Diagnosis, differential diagnostics and treatment. Indicators of the quality of medical care for this pathology. Algorithms for diagnostics in emergency for stroke, epileptic seizure, syncope, myasthenic crisis.

## **Module**

### **A. Example of clinical case and MCQ on OB&Gyn department;**

#### **Case study**

A 32-year-old G3P1 woman was admitted to the maternity hospital with complaints of bloody discharge from the genital tract for 1.5 hours..

**Past medical history:** Pregnancy of 32-33 weeks, Arterial hypertension of 1 degrees of risk 1, Obesity I degree. She has been observed at the antenatal clinic since 7 weeks of gestation. She is also under observation of a cardiologist, complied with all medication prescribed by the doctor.

**Family history:** her father died of myocardial infarction at the age of 53. She has been smoking since the age of 16, before pregnancy - 1 pack a day, during pregnancy - 3-4 cigarettes a day.

**On general examination:** On admission BP 160/100-160/90 mmHg, no complaints of headaches. Height 165 cm. Body weight - 86 kg. Weight gain during pregnancy + 4 kg. Absence of labour activity.

Three hours after admission, she complained of a severe headache and tinnitus. The face was hyperaemic, the woman was agitated, BP 190/100- 210/120 mmHg, pulse was tense, 100 beats per minute , urinalysis - 3 g/l proteinuria.

The fetal lie is longitudinal, the fetal head is mobile above the pelvic inlet; fetal heartbeat is 120 beats per minute, rhythmic. Amniotic sac is intact.

**Vaginal examination:** the cervix is closed. The head is engaged to pelvic inlet. The discharges are moderate, bloody.

1. Diagnosis?

2. What additional investigations should be performed for the fetal assessment?

3. What is the management plan?

4. Which groups of hypotensive drugs are prescribed for pregnant women with arterial hypertension?

5. What are the risk factors for the development of this pathology in the patient?

6. Are there any preventive measures for this condition? Which medications should be prescribed?

7. What are the possible complications of this pathological condition?

8. What is the patient's management tactics in postpartum period?

9. Which drug should be administered to the patient to prevent seizures?

10. What is the long-term prognosis for this patient?

### **Final test example of Multiple Choice Questions:**

**1. Which is the least frequent site of an ectopic pregnancy?**

- A. Fallopian tube
- B. Cervix
- C. Ovary
- D. Abdominal cavity
- E. Between the leaves of broad ligament

**2. Perforation tends to occur earliest when an ectopic pregnancy is located in which portion of fallopian tube ?**

- A. Isthmic
- B. Interstitial
- C. Ampullary
- D. Infundibular
- E. No difference

**3. Prenatal diagnosis at 16 weeks of pregnancy can be performed using all of the following, except:**

- A. Amniotic fluid
- B. Maternal blood
- C. Chorionic villi
- D. Fetal blood
- E. none

**4. A primigravida presents to casualty at 32 weeks gestation with acute pain abdomen for 2 hours, vaginal bleeding and decreased fetal movements. She should be managed by;**

- A. Immediate cesarean section
- B. Immediate induction of labor
- C. Tocolytic therapy
- D. Magnesium sulphate therapy
- E. none

**5. Placenta previa, all true except :**

- A. Shock out of proportion of bleeding
- B. Malpresentation
- C. Head not engaged
- D. Painless bleeding
- E. none

**6. A 34wk GA lady presented with vaginal bleeding of an amount more of that of her normal cycle. O/E uterine contracts every 4 min, bulged membrane, the cervix is 3 cm dilated, fetus is in a high transverse lie and the placenta is on the posterior fundus. US showed translucency behind the placenta and the CTG (Cardiotocography) showed FHR of 170, the best line of management is:**

- A. C/S immediately.
- B. give oxytocin.
- C. do rupture of the membrane.
- D. amniocentesis
- E. none

**7. Main causes of postpartum hemorrhage:**

- A. Trauma
- B. Coagulopathy



- C. Uterine atony
- D. Placental fragment retention
- E. All of above

**8. Uterine inertia is due to EXCEPT?**

- A. Over distension of uterus
- B. Presence of fibroid uterus
- C. Fetal malpresentations
- D. Placental abruption
- E. repeated interaurine manipulation

**9. Shock is out of proportion to the amount of bleeding in :**

- A. postpartum haemorrhage
- B. Retained placenta
- C. Acute puerperal inversion of uterus
- D. Hypofibrinogenemia
- E. none

**10. The gold standard in diagnosing ectopic pregnancy**

- A. Laparoscopy
- B. Culdocentesis
- C. Beta HCG
- D. US
- E. Progesterone

**11. Which one of the following is a risk factor for developing DVT?**

- A. Family history of thromboembolic disease.
- B. Factor V Leiden.
- C. Antiphospholipid syndrome.
- D. Sepsis.
- E. All of the above.

**12. Fibroid uterus may present with all of the following except?**

- A. Amenorrhoea
- B. Pelvic mass
- C. Infertility
- D. Polymenorrhoea

**13. A female with recurrent abortion and isolated prolonged APTT is most likely associated with**

- A. Lupus anticoagulant
- B. DIC
- C. Von Willebrand disease
- D. Hemophilia

**14. Most common site of gonococcus infection in females in:**

- A. Cervix
- B. Urethra
- C. Posterior fornix.
- D. Uterus

**15. Signs and symptoms of pelvic inflammatory disease include all of the following except:**

- A.diffuse lower abdominal pain
- B.vaginal discharge
- C.bleeding
- D.diarrhea

**B. Public health and healthcare organization Department;**

**Examples of questions for oral examination in routine performance assessment Public health and healthcare organization Department**

1. Define the term "Healthy lifestyle"
2. Types of disability.
3. According to the WHO, what are the signs of the quality of medical care?
4. International Classification of Diseases. Concepts.
5. Define the term "Accreditation"

**Examples for final MCQ in midterm assessment :**

**1. Lifestyle factors that may affect patient's health include**

- A. lack of unhealthy habits
- B. social and psychological discomfort**
- C. rational organization of life activities
- D. adequate physical activity

**2. The scientific basis for prevention of chronic non-infectious diseases is the concept of**

- A. healthy lifestyle
- B. combat against bad habits
- C. individual prophylaxis
- D. risk factors**

**3. Specify the most precise definition of "Quality of health care":**

- A. characteristic, that reflects the degree to which the interventions performed meet the professional standards or technologies chosen to achieve the goal
- B. completeness and timeliness of interventions in accordance with the medical and economic standard
- C. degree of consumer satisfaction with medical care
- D. the most complete achievement of the results of treatment

**4. Licensing is subject to:**

- A. all medical institutions regardless of their form of ownership
- B. only autonomous medical organizations
- C. only private medical institutions
- D. only public medical institutions

**5. The disability certificate form is a \_\_\_\_\_ document.**

- A. financial
- B. economic
- C. planned
- D. reporting

**6. Medical confidentiality – it is:**

- A. information about the fact that a citizen applied for medical assistance, his state of health and diagnosis, other information obtained during his medical examination and treatment
- B. information about the fact that a citizen applied for medical assistance

- C. information about state of health and diagnosis of individual
- D. information about the fact that a citizen applied for medical assistance, other information obtained during his medical examination and treatment

**7. Medical negligence – it is:**

- A. causing grievous bodily harm through medical assistance
- B. death of patient for reasons not related to the provision of medical assistance
- C. sufficient medical assistance didn't lead to recovery
- D. error in diagnosis is not the fault of the doctor

**C. Department of Neurology and Rehabilitation;**

**Example of questions**

<p><b>Transient ischemic attack is:</b></p> <ol style="list-style-type: none"> <li><b>1. Temporary symptoms of neurological dysfunction caused by regional ischemia of brain tissue, but not leading to the development of infarction lesion on CT or MRI</b></li> <li>Clinical syndrome, represented by focal and/or general cerebral disorders, developing suddenly, as a result of acute cerebrovascular accident</li> <li>Syndrome caused by blood entering the subarachnoid space due to rupture of blood vessels of the brain or its membranes</li> <li>Autoimmune disease of the blood vessels of the brain, leading to the development of focal and/or general cerebral disorders</li> <li>Intracranial hemorrhages due to acquired changes and/or malformations of blood vessels</li> </ol>
<p><b>The patient complains for shooting pain in the lumbar region, irradiating to the left leg, increasing with movement and sneezing. Examination is positive for hypoesthesia of the lateral side of the foot, loss of the Achilles reflex. Possible diagnosis:</b></p> <ol style="list-style-type: none"> <li>Myelopathy of the lower thoracic spine</li> <li><b>2. Herniation, radiculopathy S1</b></li> <li>Herniation, radiculopathy L1</li> <li>Neuropathy of the tibial nerve</li> <li>Neuropathy of the femoral nerve</li> </ol>
<p><b>The patient complains about dull pain in the cervical region increasing in movement. The symptoms last more than 10 years with episodes of remission. Neurological examination detects pain during palpation in the cervical region, limitation of movement in the cervical part. Tendon reflexes are normal, equal, there are no sensory disturbances. Possible diagnosis:</b></p> <ol style="list-style-type: none"> <li>Myelopathy of the cervical spinal cord</li> <li>Herniation, radiculopathy C1</li> <li><b>3. Nonspecific vertebral pain</b></li> <li>Neuropathy of the occipital nerve</li> <li>Herniated disc, radiculopathy C5</li> </ol>
<p>A 23-year-old female patient complains of shooting pain in the lumbar region, which increases with movement, radiates down to the left leg to the popliteal fossa, limps on the left leg. She fell ill a week ago after lifting heavy goods. She has been suffering from lumbar pain for about 2 years with periodic exacerbation. She is currently 20 weeks pregnant.</p> <p>Objectively: the cranial nerves are normal. There are no sensory disturbances. Tendon reflexes are physiological and equal. The strength in all muscle groups is 5 points. There is palpable pain in the lumbar spine in the area of the spinous processes and paravertebrally with muscle tension. Lasegue's symptom is weakly positive on the left. The range of motion in the spine is limited then knees to the right and forward.</p> <p>Your possible diagnosis and its justification.</p> <p>What diagnostic methods will you use to confirm your assumption?</p> <p>What treatment will you prescribe for the patient?</p>

## **5.Current control**

### **1 - oral interview:**

Evaluation criteria:

**‘Unsatisfactory’** - the answer is incorrect, there is no scientific argumentation, the topic of the question not disclosed, no references to normative documentation;

**‘Satisfactory’** - the answer is correct, scientific argumentation is not sufficient, the topic of the question is not fully disclosed, references to normative documentation of the question is not fully disclosed;

**‘Good’** - the answer is correct, scientific argumentation is not complete, the topic of the question is disclosed sufficiently, but not completely, references to normative documentation are given correctly;

**‘Excellent’** - the answer is correct, fully scientifically argued, the topic of the question is revealed completely, references to normative documentation are given correctly.

### **2. MCQ (testing):**

The grade for the test is given in proportion to the share of correct answers.

Evaluation criteria:

Less than 70% - **unsatisfactory**

70-79% - **satisfactory**

80-89% - **good**

90-100% - **excellent**

## **Assignments on the organisation of independent work of students**

### **Organisation of independent work includes:**

- requirements for the fulfilment of independent work;
- current control;
- list of literature for independent preparation with the indication of specific pages (if necessary).

### **Types and assignments for independent work (examples):**

1. Answer for clinical cases, MCQ
2. Preparation of a report (optionally) for a conference (abstract, clinical).
3. Training and research work on the scientific topics of the department.
4. Preparation and oral presentation of abstracts.
5. Preparation of literature reviews.
6. Preparation for Final test.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **Text books and required supplies:**

1. Obstetrics / ed. by V.E. Radzinskiy, A.M. Fuks, Ch.G. Gagaev. — M.:GEOTAR-Media, 2019.  
[https://drive.google.com/file/d/1aj5yWlg\\_QHw7WFBQyYzgCapBB-3Dy9Ou/view?usp=sharing](https://drive.google.com/file/d/1aj5yWlg_QHw7WFBQyYzgCapBB-3Dy9Ou/view?usp=sharing)

2. Gynecology : textbook / ed. by Radzinskiy V. E. , Fuks A. M. – M.: GEOTAR-Media, 2020. - 896 p.  
- ISBN 978-5-9704-5799-3.  
<https://www.studentlibrary.ru/ru/book/ISBN9785970457993.html?SSr=07E8091B5D392>
3. Dewhurst's textbook of obstetrics and gynaecology. – 7th ed. / edited by D. Keith Edmonds. – 7th ed.  
<https://drive.google.com/file/d/1T2BDI4dHux34KmlYYCAAndkDYvxmGiUX/view?usp=sharing>
4. Obstetrics and gynecology.—6th ed. / Douglas W. Laube [et al.].  
[https://drive.google.com/file/d/1Kg57icCYj\\_DbVRKpuZc5t6z8Gc\\_QhN\\_7/view?usp=sharing](https://drive.google.com/file/d/1Kg57icCYj_DbVRKpuZc5t6z8Gc_QhN_7/view?usp=sharing)
5. Johns Hopkins Handbook of Obstetrics and Gynecology/ed.by Linda M. Szymanski, MD, PhD, Jessica L. Bienstock, MD, MPH. Baltimore, Maryland, 2016.  
<https://drive.google.com/file/d/18VKXTVR7cihM618Pg9Y-yagCMmR-q5qK/view?usp=sharing>
6. Lecturio <https://kazangmu.lecturio.com>
7. Osmosis <https://www.osmosis.org/>
8. Diseases of the peripheral nervous system. A methodical manual. Ismagilov M.F., Danilov V.I. 2002, Kazan
9. Diagnostic paraclinical complex in neurology. A methodical manual. M.F. Ismagilov, 2006, Kazan
10. Clinical tasks in neurology. A methodical manual. M.F. Ismagilov. 2009 Kazan
11. Headache. A methodical manual. M.F. Ismagilov. 2009 Kazan
12. Vestibular dizziness. A methodical manual. M.F. Ismagilov. 2011 Kazan
13. Emergency conditions in neurology. A methodical manual. E.Z. Yakubov. 2011 Kazan
14. A methodical manual on neurology and neurosurgery for self-study and independent work of students. E.Z. Yakubov.2011 Kazan
15. Methods of examination of a neurological patient. The main syndromes of damage. A methodical manual for classroom work. E.Z. Yakubov.2011 Kazan
16. Antithrombotic therapy of ischemic cerebrovascular accidents: a methodical manual. Methodical manual. E.Z. Yakubov. 2011 Kazan.
17. Guide to extragenital pathology in pregnant women. M.M. Shekhtman
18. Pharmacotherapy in obstetrics. Khasanov A.A. et al. A teaching aid for students, Kazan, KSMU, 4,3 UPL, 2010. 64 copies
19. Placental insufficiency. A teaching aid for students. Khamitova G.V. Zhuravleva V.I., Orlov Yu.V. Kazan, 2009.75 copies
20. Methods of examination of gynecological patients. A teaching aid for students. Zhuravleva V.I., Orlov Yu.V. Kazan, 2011.83 copies
21. HELP syndrome. Study guide for students. Minullina N.K., Orlov Yu.V. Kazan, KSMU, 2010,1,
22. Hyperplastic processes of the endometrium. Study guide for students. Egamberdieva L.D. Kazan, 2011.
23. Mavrina O.S. Methodological recommendations. Medical examination of the population for students / Mavrina O.S., Khuzikhanov F.V., Kiyasov I.A. // Under the general editorship of MD, PhD, prof. F.V. Khuzikhanov. - Kazan: KSMU, 2015. - 23 p.
24. Kiyasov I.A. Methodological recommendations. Market of medical services for students / Kiyasov I.A., Khuzikhanov F.V. // Under the general editorship of MD, PhD, prof. F.V. Khuzikhanov. – Kazan: KSMU, 2015. – 33 p.
25. Diseases of nervous system / V.A. Parfenov. — Moscow : Medical Informational Agency, 2023. - 432 p.
26. Bradley's Neurology in Clinical Practice / Robert B. Daroff , Joseph Jankovic , John C. Mazziotta, and Scott L. Pomeroy, Seventh Edition, 2016, Elsevier. ISBN: 978-0-323-28783-8 [Электронный ресурс]: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20130000801>
27. Duus' Topical Diagnosis in Neurology : anatomy, physiology, symptoms [Text] : учебник / М. Baehr, M. Frotscher ; with contributions by W. Kueker ; translated by E. Taub : 400 illustrations, most in color, by G. Spitzer, B. Gay . - 4th. rev. ed. - Stuttgart ; New York : [s. n.], 2005. - 517 p : il. ; 21 см. - Index : p. 497-517. - ISBN 3-13-612804-4 (97 экз.)
28. Fundamentals of Neurologic Disease [Text] / L. E. Davis with M. K. King, J. L. Schultz. - New York : Demos, 2005. - 235 p. : il ; 20 см. - Англ. - Index : p. 227-235. - ISBN 1-888799-84-6 (98 экз.)
29. Epilepsy : Global Issues for the Practicing Neurologist [Text] : a publication of the world federation of neurology. Vol. 2 / J. Engel [et al.] ; World Federation of Neurology. - New York : Demos, 2005. - 140 p. : il. ; 21 см. - (Seminars in Clinical Neurology). - Index : p. 135-140. - ISBN 1-888799-88-9 (97 экз.)

30. Neurology secrets / [edited by] Joseph S. Kass, Eli M. Mizrahi. Sixth edition., Philadelphia, PA : Elsevier, Inc, 2017. ISBN 9780323359481 : <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20120061583>

## LEGAL AND ETHICAL FOUNDATIONS IN MEDICAL ACTIVITY

**Teachers:** professor F.T. Nezhmetdinova, assistant professor I.L. Maximov, senior teacher V.A. Shcherbakov

**Building, Department, classroom #** NUK, Department of Biomedical ethics, Medical Law and History of Medicine, 317, 319, 322

### **Contact details:**

- Telephone number: (843) 236-39-91 (department of biomedical ethics, medical law and history of medicine)
- E-mail address: [biopravo@kazanmu.ru](mailto:biopravo@kazanmu.ru)
- Office and working hours: 326 (8-17)

### **Total hours: 72 h**

Lecture hours 10 h

Practical classes hours 26 h

Self-study hours 36 h

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes** are aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazanmu.ru/course/view.php?id=1772>).\_\_

### **Course objectives:**

The goals of mastering the discipline **legal and ethical foundations in medical activity** are:

- identifying ethical problems in medicine and biology;
- giving a rational justification for ethical decisions;
- applying ethical principles in the assessment and solution of the specific problem situations of modern medical practice.

### **Tasks of the discipline:**

To form knowledge in the field of:

- understanding the main ethical problems in medicine and biology;
- studying methods of solving of the main ethical problems in medicine and biology;
- forming rational justification for ethical decisions;
- applying ethical principles in the assessment and solution of the specific problem situations of modern medical practice

### **Course topics:**

#### **Calendar plan of lectures**

1. History and philosophy of ethics, bioethics

2. What is bioethics
3. The Relationship Between the Doctor and the Patient in the 21<sup>st</sup> century
4. Social, legal and ethical aspects of the beginning of life. Social, legal and ethical aspects of the end of human life
5. Ethical-legal problems of transplantation and transfusion medicine. The principles of the UNESCO Universal Declaration on bioethics

#### **Calendar plan of practical classes**

1. Ethics and moral. What is ethics?
2. What is bioethics?
3. Human dignity and human rights
4. Benefit and harm
5. The autonomy of the individual and individual responsibility
6. Informed consent
7. The persons who do not have legal capacity to give consent
8. Privacy and confidentiality
9. Equality, justice and equity. Non-discrimination and stigmatization. Social responsibility
10. Module control work №1. Social, legal and ethical aspects of the beginning of life. Social, legal and ethical aspects of the end of human life
11. Ethical-legal problems of transplantation and transfusion medicine. Ethical-legal problems of HIV-infection.
12. Ethical-legal problems of modern methods of intervention in human nature. Experimental medicine. Ethical and legal issues. The principles of the "universal Declaration on bioethics and human rights" UNESCO in the conduct of biomedical experiments
13. Module control work №2. Final test

#### **Text books and required supplies:**

1. Legal and ethical foundations in medical activity. Nezhmetdinova F.T., Guryleva M.E., Maximov I.L. Kazan, 2019. – 156 p.

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Example of module No. 1. Propaedeutic bioethics**

1. The concept of bioethics of the following definition corresponds most:
  - a. the science of survival; “the bridge between biology and ethics” (Potter);
  - b. ethics of the doctor;
  - c. deontology;
  - d. medical ethics;
  - e. cultural studies
2. Contract model between doctors and patients have the type of relationship
  - a. colleagues to each other;
  - b. husband and wife;
  - c. the seller and the buyer;
  - d. the father and the son;
  - e. engineer and the mechanism.
3. Morality is ...
  - a. the totality of scientific tests;
  - b. the criterion of “good-evil” attitude and norms of people in culture;
  - c. the form of the “objective unconscious”, which indicates the due;
  - d. philosophical doctrine;
  - e. strict observance of the laws and the Constitution.
4. Biomedical ethics and medical law must be able:
  - a. medical law is a priority;
  - b. independence;
  - c. biomedical ethics is a criterion for medical law;
  - d. medical law determines the correctness of biomedical ethics;
  - e. should be kept a priority biomedical ethics.

**Example of module No. 2 on the section of clinical bioethics**

1. Medical mistakes are:
  - a. unfavorable outcomes associated with the refusal of a competent patient from appropriate treatment;
  - b. the unfavorable outcomes associated with random circumstances that a conscientious physician could not foresee and prevent;
  - c. the negligent perform of a doctor’s duties;
  - d. honest mistakes of the doctor in diagnosis, technique, treatment, surgery;
  - e. the unfavorable outcomes associated with the refusal of a competent patient from an adequate examination.
2. Transplantation can be performed without the consent of the donor, if the donor:



- a. retarded;
  - b. the deceased man, who left the document for the use of its organs;
  - c. incurable disease;
  - d. a particularly dangerous criminal, sentenced to life imprisonment;
  - e. citizen of another state.
3. The main ethical principles of human research does not apply:
- a. risk/benefit ratio;
  - b. low social status of the patient;
  - c. informing the patient;
  - d. scientific substantiation of the project;
  - e. obtaining consent.
4. Euthanasia in Russia:
- a. allowed in exceptional cases;
  - b. the law on euthanasia is under discussion;
  - c. there is no the law on euthanasia in the Russian legislation;
  - d. prohibited by law;
  - e. permitted by law.

### **EVALUATION OF THE MODULE ANSWER**

The question card of the module consists of 10 multiple choice questions.

Each question is evaluated by 10 points.

Total:  $10 \times 10 = 100$  points.

#### **Scale of marks:**

10 correct answers – 100 p.

9 correct answers – 90 p.

8 correct answers – 80 p.

7 correct answers – 70 p.

6 and less correct answers – 60 p. (not passed).

## **ECONOMICS**

**Teachers: Assistant G.A. Khusnutdinova**

**Building, Department, classroom #** NUK, Department of Economic theory and Social work, 126, 132

#### **Contact details:**

- Telephone number: 89872323008 (assistant G.A. Khusnutdinova)
- E-mail address: Gulnaz.gilyazova@kazangmu.ru
- Office and working hours: 132 (9-17)

#### **Total hours: 72 h:**

Lectures 10 h

Practical classes 14 h

Self-study 48 h

#### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

### **Course objectives: The purpose of mastering the discipline**

#### **The goals of mastering the discipline Economics are as follows:**

- To form systemic theoretical knowledge, skills and competences in economics.
- To teach to carry out critical analyses of problematic financial, economic, socio-economic situations on the basis of a systematic approach.
- To develop the ability to formalise knowledge in a competent presentation at seminars, examinations, test papers, in solving practical problems, tests, cases.
- To provide theoretical economic, financial literacy to students, which will allow them to solve certain financial and economic problems within the speciality and in personal life.
- To develop students' ability to make sound economic decisions.

#### **Tasks of the discipline:**

- To provide students with basic theoretical knowledge, skills, abilities, competences in economics, allowing them to adequately assess and effectively implement economic relations in the implementation of professional medical activity;
- To provide students with knowledge of the fundamentals of economic theory and basic principles of economic functioning and economic development;
- To teach students to use in their practical knowledge, skills and competences in economic and financial life;
- To teach students to use the principles of economics, quality management systems and marketing in their professional activities;
- To prepare students for further study of interdisciplinary foundations based on knowledge of economics;
- To form in students a respectful attitude to patients - consumers of services of medical organisations, basic understanding of responsibility for economic costs and results of work;
- To provide skills in studying and analyzing regulatory and legal documents, journals and publications, educational and scientific literature on economics; to foster in students a respectful attitude towards laws and other legal acts in economics as a fundamental guarantor of observance of economic rights, freedoms and interests of citizens and society.

### **Course topics:**

#### **Calendar plan of lectures**

1. General Problems and Basic Concepts of economic theory (2 hours).
2. Market organisation: content and structure. Economic theory of commodities and money.
3. Mechanism of market functioning.
4. Property. Entrepreneurship. Costs of production. Profit.
5. Macroeconomic indicators. Economic growth. The role of the state in a market economy.
6. Finances. Budget. Taxes.
7. Banks. Credit. Financial market. Securities.
8. Labour market. Employment. Unemployment.
9. Social policy of the state. Policy revenues.

### **Calendar plan of practical classes**

1. General Problems and Basic Concepts of economic theory.
2. Module on topic 1.
3. Market organisation: content and structure. Economic theory of commodities and money.
4. Mechanism of market functioning.
5. Property. Entrepreneurship. Costs of production. Profit.
6. Module on topics 3-5.
7. Macroeconomic indicators. Economic growth. The role of the state in a market economy.
8. Finances. Budget. Taxes.
9. Banks. Credit. Financial market. Securities
10. Module on topics 7-9.
11. Labour market. Employment. Unemployment.
12. Social policy of the state. Policy revenues.
13. Module on topics 11-12.
14. Fundamentals of regional economy.
15. World economy. International economic relations.

### **Textbooks and required supplies:**

1. Economic Theory [Electronic resource]/ Gary S. Becker. – Routledge; 2nd edition, 2017. – 242 p.
2. Introductory Microeconomics [Electronic resource] / Dr. Deepashree. – New Saraswati House, India, 2018. – 372 p.
3. Principles of Macroeconomics an Open Text by Douglas Curtis and Ian Irvine [Electronic resource]/ D. Curtis, I. Irvine. – Lyryx, 2017. – 430 p.
4. An Introduction to International Economic Relations [Electronic resource]/ Y.Kozak, T. Shengelia – Tbilisi : Publishing House “Universal“, 2014. -224 p.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

**Examples of module No. 1. questions “General Problems and Basic Concepts of economic theory”**

No	1 option	2 option
1	Economic theory (to give definition)	Economic system (to give definition)
2	Main elements of the economic system (list 7)	Characteristics of economic theory as a science (name 5 and explain)
3	4 basic questions of economics (name and explain)	Functions of economic theory (name 4 and explain)
4	Methods of studying economic phenomena and processes (name 5, explain)	Classification types of benefits (name 5 criteria, in them types, characteristic features)
5	Positive approach	Normative approach
6	Economic categories (definition, 10 examples)	Economic laws (definition, 5 examples)
7	Microeconomics (give definition; give 5 examples of what it studies; name the indicators)	Macroeconomics (give definition; give 5 examples of what it studies; name the indicators)
8	Main economic goals of the economic system (list 9 and explain.)	The main economic objectives of the organisation (list 10)
9	Administrative-command (centralised) system (main characteristics, pros and cons, model examples)	Market economic system (main characteristics, pros and cons, examples of models)
10	Social market economy	The social state
11	Needs	Production
12	Factors shaping needs (list at least 5)	The law of exaltation of needs (to give full definition)
13	Classification of needs A. Marshall's (name 5 species)	A. Maslow's hierarchy of needs (draw, name levels and types)
14	Economic benefit	Infrastructure
15	Customised production	Public production
16	Production infrastructure	Social infrastructure
17	Intangible industries	Material industries
18	3 properties of factors of production (name it, explain it)	Reproduction (define, name 2 types, explain)
19	Extensive reproduction	Intensive reproduction
20	Factors of intensive of reproduction (list 5 factors)	Factors of extensive of reproduction (list 5 factors)
21	Resources (definition, types)	Factors of production

		(definition,structure)
22	Labour	Labour force
23	Labour resources	Human capital
24	Personal (human) factor Production (definition, structure)	Material factor of production (definition, structure)
25	Entrepreneurial skills	Investment resources
26	Earth	Natural, natural resources
27	Means of production (definition, structure)	Productive forces (definition,structure)
28	Means of labour (definition, examples)	Tools of labour (definition, examples)
29	Knowledge	Science
30	Technology	Information
31	Resource endowment	Resource conservation
32	Three basic properties of factors (name and explain)	Resource constraints. The problem of choice
33	Types of information	Data protection
34	Economic efficiency	Social efficiency
35	Performance indicators	Factors affecting efficiency
36	Labour productivity (2 definitions)	The main factors determining level of labour productivity

### EVALUATION OF THE MODULE ANSWER

The question card of the module 1 consists of 2 options, 36 questions each.

Questions 1-28 worth 3 points each, questions 29-36 worth 2 points each.

\* The teacher has the right to remove from 0.5 to 3 points for incorrect writing of answers

Total:  $(28 \times 3) + (8 \times 2) = 100$  points

## PSYCHOLOGY AND PEDAGOGY

**Teachers:** Sofja Urjevna Osokina, Anna Alexandrovna Akberova,

**Building, Department, classroom** NUK, 3<sup>rd</sup> floor, medical and general psychology and pedagogy department - room 334

### **Contact details:**

Telephone number: +78432369669

E-mail address: med.psychologyKSMU@yandex.ru

Office and working hours: Monday – Friday from 9 a.m. to 18 p.m.

### **Total: 72 h**

Lectures – 10 h;

Practical classes – 26 h;

Self-study – 36 h;

### **Course description:**

The course is dedicated to several branches of psychology for better understanding of a basic principles and laws of a mind work through the prospective of the main approaches (psychodynamic, behavioral, humanistic) including cognitive psychology, psychology of personal development, health psychology, psychology of individual differences and general psychology.

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher, involving experimental scientific research activities. It requires the use of special psychological methods (tests, questionnaires etc.).

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material)

### **Course objectives:**

The objectives of the discipline "Psychology and Pedagogy" are the forming of psycho-pedagogical, ethical, deontological philosophy as the foundation for the study of professional disciplines, and for future professional activities.

### **Tasks of the discipline:**

To form knowledge in the field of:

1. the introduction to the scientific field of psycho-pedagogical disciplines for successful socialization and professionalization;
2. forming knowledge about mind functioning, behavior and personality;
3. skill development to use the knowledge in professional practice for the patient benefits;
4. communicative skills development for effective interaction with patients and colleagues;
5. teaching students how to use methods to improve their own personal and cognitive abilities and a motivation for the personal and professional growth.

### **Course topics:**

#### **Calendar plan of lectures:**

1. Introduction to psychology: Basic terms. Methods of research. Branches of psychology.
2. Cognitive processes: sensation, perception, attention, memory, cognition, language and speech.
3. Emotions. Motivation. Theories of motivation and emotions. Stress. Theories of stress.
4. Temperament. Types of temperament, the role of a temperamental type in the process of development.
5. Character: reflexes, habits as a part of behavior. Personality: psychological approaches in studying personality (psychodynamic, behavioral, humanistic)

#### **Calendar plan of laboratory classes:**

1. Introduction to psychology. The structure of psychology. Experiments, Tests, Observation, Interview as basic scientific methods in psychological research.
2. The control work. Cognitive processes: measuring and analyzing of cognitive sphere: properties of attention, types of memory, styles of thinking.
3. Cognitive processes. Discussion of tests' results and making psychological conclusion.
4. IQ: identifying a personal level of intelligence quotient. Discussion of test results and making psychological conclusion
5. Emotions and feelings: introduction to emotional sphere of psyche. Emotional intelligence.
6. The control work. Empathy. Alexithymia. Studying of particular qualities of emotional sphere in communicative process.

7. Coping strategies: Stress resistance. Individual styles in stress experience. Subconscious defense mechanisms
8. The control work. Temperament: revealing primary and secondary temperamental blends, basic types of temperament, impulsiveness, impressionability.
9. Character: behavioral stereotypes in everyday life, compilation of personality profile.
10. Personality approaches: Discussion of opportunity to use different psychological approaches in a system of medical treatment. To elevate the level of communicative skills for effective interaction with patients and colleagues
11. Writing a psychological portrait according to the tests results to use psychological methods to improve students' personal and cognitive abilities and a motivation for the personal and professional growth
12. Final test
13. Credit scoring

#### **Text books and required supplies:**

1. Introduction to Psychology, 8th edition. James W. Kalat. North Carolina State University. 2008
2. Biological Psychology 10<sup>th</sup> edition. James W. Kalat. North Carolina State University. 2009
3. The Psychology of Verbal Communication. Robert M. Krauss Columbia University *International Encyclopedia of the Social and Behavioral Sciences* 2002.
4. Psychology, 11th Edition 11th Edition by David G. Myers, C. Nathan DeWall Publisher: Worth Publishers; 11th edition (January 12, 2015)
5. Psychology Miles Hewstone, Frank D. Fincham and Jonathan Foster Blackwell Publishing (2005)

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes

- Eating is allowed only during breaks
- Using phone is allowed only during breaks

#### **Requirements:**

- A personal copybook is required for every practical class and lecture
- Make notes during the lecture (you should use your notes for the monitoring progress preparation)
- Be prepared for the control work after each lecture
- All the psychological test results should be kept in a personal copybook during the whole semester

#### **Example of module No. 1. Cognitive sphere**

1. Give the definition of intelligence
2. List the cognitive processes
3. List and describe the types of memory
4. Explain the difference between sensation and perception processes
5. Give the definition of attention

#### **Example of module No. 2 Emotional (affective) sphere**

1. Give the definition of emotional intelligence
2. List and describe the functions of emotions
3. List and describe the stress phases according to Hans Selye theory
4. Explain the difference between conscious and subconscious coping strategies
5. List and describe emotion-based coping strategies

#### **Example of module No. 3 Personality**

1. Give the definition of Temperament
2. List and describe the types of Temperament
3. Explain the difference between Temperament and Character notions
4. Give the definition of Personality
5. Describe one Personality theory

#### **EVALUATION OF THE MODULE ANSWER**

The question card of the module consists of 5 questions

Total:  $5 \times 20 = 100$  points

**Total** for one question: **20 points**

## **MEDICAL CHEMISTRY**

**Teachers: Prof. Liliya Nikitina, PhD Inna Fedyunina**

**Building, Department, classroom #** NUK, Department of General and Organic Chemistry, 629, 658

#### **Contact details:**

- Telephone number: 89033075070 (Prof. Liliya Nikitina)
- E-mail address: nikitl@mail.ru
- Office and working hours: 633 (9-17)



**Total hours — 72:**

Lectures 10 hours;

Practical classes 30 hours;

Independent work 32 hours;

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University <https://e.kazangmu.ru/course/view.php?id=2306>

**Course objectives: The purpose of mastering the discipline**

The purposes of mastering the discipline of **medical chemistry** are formation of systematic knowledge of medical students about the structure and chemical transformations of low- and high-molecular organic compounds, taking part in the processes of vital activity of the human body at the molecular level, as well as mastering fundamental foundations of organic chemistry, necessary for studying other academic disciplines and acquisition of professional medical qualities (hereinafter - discipline).

**Tasks of the discipline:**

- study of the structure and chemical properties of the main classes of biologically important organic compounds, structure and functions of the most important chemical compounds (nucleic acids, natural proteins, water-soluble and fat-soluble vitamins, hormones, etc)
- formation among students systematic knowledge of the chemical transformations of low- and high-molecular organic compounds, taking part in the processes of vital activity of the human body
- development of the student's professional self-awareness, his ability to use the acquired knowledge in the analysis of medicinal products of organic nature and in the research activities of the future specialist.

**Course topics:****Calendar plan of lectures**

1. Types of chemical bonds in organic compounds. Delocalized chemical bond.  $\pi$ -,  $\pi$ - and p,  $\pi$  – conjugation. Conjugate systems with open and closed chain. Mutual influence of atoms in molecules of organic compounds and ways of its transfer. Inductive effect. Mesomeric effect. Types of reactions and reagents in organic chemistry. Mechanisms of organic reactions, their relationship with the electronic and spatial structure of reacting substances and conditions for conducting reactions.
2. Carbonyl compounds. Comparative reactivity of aldehydes and ketones. Oxidation and reduction reactions of carbonyl compounds. Their actions of Cannizzaro and aldol condensation. Reactions of nucleophilic substitution at trigonal carbon atom. Carboxylic acids and their functional derivatives. Hydroxy- and oxo-acids as the most important representatives

of hetero-functional compounds. Stereoisomerism and chemical properties of hydroxy- and oxo-acids.

3. Monosaccharides: classification, structure, cyclo-chain tautomerism. Most important representatives of monosaccharides: glucose, galactose, ribose, deoxyribose, fructose. Monosaccharide reactions: formation and hydrolysis of O-glycosides and N-glycosides, excessive alkylation, phosphorylation, oxidation and reduction.
4. Amines: relationship between structure and basicity. Most important reactions of amines. Urea and ureides. Biogenic aminoalcohols: colamine, choline and their derivatives. Amino acids. Biologically important reactions of  $\alpha$ -amino acids: deamination, hydroxylation. Decarboxylation of  $\alpha$ -amino acids is the path to formation of biogenic amines and bioregulators. Peptides.
5. Terpenes and terpenoids. Classification. Isoprene rule. Acyclic, monocyclic and bicyclic monoterpenes. Features of chemical properties. Wagner-Meerwein rearrangement. Menthane and its derivatives used in medicine. Diterpenes: retinol (vitamin A), retinal. Tetraterpenes (carotenoids):  $\beta$ -carotene (provitamin A). Steroids. The structure of gonane (cyclopentanoperhydrophenanthrene). Chemical properties of steroids, caused by functional groups.

### **Calendar plan of laboratory classes**

1. Classification and nomenclature of organic compounds.
2. Electronic structure of organic compounds. Conjugation and aromaticity. Electronic effects of substituents.
3. The concept of reaction mechanisms on the example of  $A_E$ ,  $A_N$ ,  $S_E$ ,  $S_N$ ,  $S_R$  and reagents (electrophile, nucleophile, radical). Reactions of hydrocarbons.
4. Alcohols. Structure. Acidic and nucleophilic properties. Reactions, involving the electrophilic center. Features of chemical properties of polyhydric alcohols. Phenols. Structure. Acidic properties. Preparation of ethers and esters. Reactions of electrophilic substitution in the aromatic nucleus of phenols. Oxidation reactions of alcohols and phenols. Differences in chemical properties of alcohols and phenols. Laboratory work "Chemical properties of alcohols and phenols".
5. Aldehydes and ketones. Structure. Reactions of nucleophilic addition; stereochemical result of the addition reactions. Condensation reactions; oxidation and reduction. Differences in the chemical properties of aldehydes and ketones. Laboratory work "Chemical properties of carbonyl compounds".
6. Reactivity of carboxylic acids. Structure. Acidic properties. Formation of esters, anhydrides, halogen anhydrides, amides. Features of the chemical behavior of dibasic carboxylic acids. Laboratory work "Chemical properties of carboxylic acids".
7. Hydroxy-acids of aliphatic series. Chemical properties as hetero-functional compounds. Specific reactions of  $\alpha$ -,  $\beta$ -,  $\gamma$ -hydroxy acids. Chemical properties as hetero-functional compounds. Oxo-acids. Chemical properties as hetero-functional compounds. Keto-enol tautomerism of  $\beta$ -dicarbonyl compounds. Laboratory work "Chemical properties of hydroxy- and oxo-acids".
8. Module on topics 2-7.
9. Fats and phospholipids.
10. Monosaccharides – glucose, galactose, fructose, ribose, deoxyribose. Optical isomerism. Tautomeric forms. Application in medicine. Laboratory work "Properties of monosaccharides".
11. Amino acids. Internal salts. Amphoterism. Reactions of deamination and decarboxylation. Formation of peptides. Structure of protein molecules. Laboratory work "Properties of amino acids and proteins".
12. Nucleotides and nucleic acids.
13. Unsaponifiable lipids. Isoprenoids. Terpenes. Mono- and bicyclic terpenes. Low-molecular bioregulators: carotenoids, alkaloids, steroids, sex hormones, vitamins.
14. Module on topics 9-13.

15. Outcoming testing. Final test.

**Text books and required supplies:**

1. Zurabyan S.E. Fundamentals of Bioorganic Chemistry. – M.: GEOTAR-MED, 2003.-320 p.
2. N.Lezhava, O.Gabrichidze. An introduction to medical chemistry / Tbilisi, - 2006. – 292 p.
3. L.E. Nikitina, I.V. Fedyunina. An introduction to bioorganic chemistry. For English-speaking students of the faculty of general medicine / Kazan: KSMU, 2013. — 70 p.
4. L.E. Nikitina, I.V. Fedyunina. Manual on laboratory classes on bioorganic chemistry course for English-speaking students of the faculty of general medicine. / Kazan: KSMU, 2016. — 46p.

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
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- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Examples of module No. 1 questions**

**1. Which of the following compounds is the most reactive in nucleophilic addition reactions?**

- a. trichloroacetic aldehyde
- b. acetaldehyde
- c. acetone
- d. formaldehyde

**2. Which of the following compounds oxidation forms methyl ethyl ketone?**

- a. butanol-1
- b. propanol-1
- c. propanol-2
- d. butanol-2

**3. Which of the following groups is contained in phenylhydrazone?**

- a.  $C=N-NH_2$
- b.  $C=N-NH-C_6H_5$
- c.  $C=NH-R$
- d.  $C=N-OH$

**4. Which of the following compounds prohibits the reaction of aldehyde oxidation?**

- a.  $Cu(OH)_2$
- b.  $O_2$
- c.  $H_2$
- d.  $Ag_2O$

**5. Aldol condensation is a reaction between:**

- a. 2 molecules of aldehyde without a hydrogen atom at C-2
- b. 2 ketone molecules without a hydrogen atom at C-2
- c. 2 ketone molecules with a hydrogen atom at C-2
- d. 2 molecules of aldehyde with a hydrogen atom at C-2

#### **Examples of module No. 2 questions**

**1. Which of the following alcohol components exist in fats and phospholipids?**

- a. ethylene glycol
- b. sorbitol
- c. glycerol
- d. butantriol-1,2,4

**2. How many molecules of  $H_2$  are required to convert trilinolein to tristearin?**

- a. 3 molecules of  $H_2$
- b. 6 molecules of  $H_2$
- c. 4 molecules of  $H_2$
- d. 5 molecules of  $H_2$

**3. Which of the following is solid at room temperature?**

- a. dilinolenopalmitin
- b. triolein
- c. palmitodystearin
- d. oleodilinolein

**4. Which of the following form when an excess of hot KOH acts on triolein?**

- a. glycerin and oleic acid
- b. glycerin and potassium oleate
- c. potassium glycerate and oleic acid
- d. potassium glycerate and potassium oleate

**5. Which of the following acids are not considered higher fatty acids?**

- a. linoleic acid
- b. benzoic acid
- c. palmitic acid
- d. oleic acid

#### **EVALUATION OF ANSWER of Modules**

The ticket of the module consists of 10 tasks. Questions are evaluated by 10 points.  
Total: 10 x 10 = 100 points

## FUNCTIONAL ANATOMY

**Teachers:** PhD Aisylu Faizutdinova, PhD Sabina Munasipova, PhD Shamil Bogdanov

**Building, Department, classroom:** Mayakovsky str. 11, “OSC“, rooms of Department of Neurology, 4<sup>th</sup> floor

**Contact details:** e-mail address: [enver\\_bogdanov@mail.ru](mailto:enver_bogdanov@mail.ru) (head of department - Prof. Enver Bogdanov), [aisluzab@mail.ru](mailto:aisluzab@mail.ru) (teaching assistant - PhD Aisylu Faizutdinova)

**Total hours — 72:**

Lectures 10 hours;  
Practical classes 30 hours;  
Independent work 32 hours

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. It involves active participation of students in problem discussion and requires preliminary preparation by the student. **Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

### **Course objectives: The purpose of mastering the discipline**

The objectives of mastering the discipline are study of the structural foundations of human functioning in norm and pathology.

### **Tasks of the discipline:**

- to study the anatomical and functional relationships of the adult human body in norm;
- to consider the dynamics of anatomical and functional relationships from the standpoint of the evolution of vertebrates, ethno-geographical features and human ontogenesis;
- to teach students the basic methods of clinical research of anatomical and functional relationships of an adult;
- to acquaint students with the basics of paraclinical research of anatomical and functional relationships;
- to consider the features of anatomical and functional relationships in the main forms of pathology;
- to study the mechanisms of restoration and compensation of disturbed anatomical and functional relationships.
- A feature of the discipline is the need to develop in students who are just beginning to study medicine, the ability to model, analyze the sequence: structure - function - dysfunction - topical diagnosis - choice of treatment method

## **Course topics:**

### **Plan of lectures**

1. Functional anatomy of the spine
2. Functional anatomy of upper limb
3. Functional anatomy of lower limb
4. Functional anatomy of the cranium and brain. Part 1.
5. Functional anatomy of the cranium and brain. Part 2.

### **Plan of practical classes**

1. **Functional anatomy of the spine.** Anatomical and functional relationships of the spinal column in the adult rate. Clinical testing, imaging (CT, MRI, X-ray), clinical illustrations. Features of anatomic and functional relationship of the spinal column at the main forms of disease.
2. **Functional anatomy of upper limb.** Anatomical and functional relationships of an adult upper limb normally. Clinical testing, imaging (CT, MRI, X-ray), clinical illustrations. Features of anatomic and functional relationship of the upper limb at the major forms of pathology. **Module 1 control – test and practical skills.**
3. **Functional anatomy of lower limb.** Anatomical and functional relationships of an adult lower limb normally. Clinical testing, imaging (CT, MRI, X-ray), clinical illustrations. Features of anatomic and functional relationship of the lower limb at the major forms of pathology.
4. **Functional anatomy of the cranium and brain.** Anatomical and functional relationships of the cranium and brain. Clinical testing, imaging (CT, MRI, X-ray), clinical illustrations. Features of anatomic and functional relationship of the cranium and brain at the major forms of pathology. **Module 2 control – test and practical skills.**
5. **Final control.**

### **Text books and required supplies:**

1. Atlas of clinical gross anatomy / Moses, Kenneth Prakash; Banks, John C.; Nava, Pedro B.; Petersen, Darrell K., 2-nd ed. – Elsevier Saunders, 2013. - 633p. - <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20110698266>
2. Aids to the examination of the peripheral nervous system / 4<sup>th</sup> ed., W.B. Saunders, 2000. – 62p.
3. Atlas of morphology and functional anatomy of the brain / Scarabino T., Salvolini U. et al. – Springer. – 2006. (Электронные ресурсы издательства Springer (<http://www.springerlink.com>))
4. Diseases of nervous system / V.A. Parfenov. — Moscow : Medical Informational Agency, 2023. — 432 p. [Электронный ресурс]
5. Duus' Topical Diagnosis in Neurology : anatomy, physiology, symptoms [Text] : учебник / M. Baehr, M. Frotscher ; with contributions by W. Kueker ; translated by E. Taub : 400 illustrations, most in color, by G. Spitzer, B. Gay . - 4th. rev. ed. - Stuttgart ; New York : [s. n.], 2005. - 517 p : il. ; 21 см. - Index : p. 497-517. - ISBN 3-13-612804-4 (97 экз.)

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

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in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

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Overall student rating is build up from class attendance, module and test results, midterm assessment results.

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- Look professional: you have to wear clean white coat and change shoes
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### **Forms of control**

**Module 1 “Functional anatomy of the spine and upper limb” control include test tasks (50% of Mod. 1 rating) and practical skills (50% of Mod. 1 rating)**

#### **Example of test tasks**

1. The anterior longitudinal ligament:
  - limit excessive rotation of the vertebral column
  - **limit excessive extension of the spinal column**
  - limit excessive bending of the spine
2. Yellow ligament reach their greatest development in
  - cervical spine
  - thoracic spine
  - **lumbar spine**
3. What ligaments connect the vertebrae arc?
  - anterior longitudinal ligament
  - posterior longitudinal ligament
  - **yellow ligament**
4. Function of platysma:
  - **lowers the corners of the mouth down**
  - **protects subcutaneous veins from compression**
  - lowers the lower jaw
5. Damage to this nerve results in "wrist drop," the inability to extend the hand at the wrist:
  - obturator
  - **radial**
  - axillary
  - phrenic

#### *Evaluation criteria:*

The test score is given in proportion to the percentage of correct answers:  
90-100% - excellent grade

80-89% - "good" rating

70-79% - "satisfactory" rating

Less than 70% of correct answers – “unsatisfactory” rating.

**List of the practical skills**

1. Vertebral column flexibility tests:
  - a. Finger-floor test
  - b. Ott test
  - c. Schober test
2. Lasegue test
3. Visual Analog Scale of the Pain
4. Functional testing of the main trunk and upper limb muscles

*Evaluation criteria:*

"Excellent" (90-100 points) Fully knows and masters the examination technique, can answer additional questions, has additional information

"Good" (80-89 points) He knows and has mastered the examination technique, can partially answer additional questions

"Satisfactory" (70-79 points) He may have mastered the examination technique, cannot answer additional questions

"Unsatisfactorily" (0-69 points) He does not know how and does not know the technique of examination. Does not demonstrate a respectful attitude towards the subject

**Module 2 “Functional anatomy of lower limb, cranium and brain” control include test tasks (50% of Mod. 2 rating) and practical skills (50% of Mod. 2 rating)**

**Example of test tasks**

1. The sympathetic and parasympathetic nervous systems are subdivisions of the:

- A) autonomic nervous system**
- B) voluntary nervous system
- C) somatic nervous system
- D) central nervous system
- E) peripheral nervous system

2. Cerebrospinal fluid circulates through all of the following except:

- A) corpus callosum**
- B) lateral ventricles
- C) fourth ventricle
- D) cerebral aqueduct
- E) subarachnoid space

3. Loss of muscle coordination results from damage to the:

- A) hypothalamus
- B) cerebrum
- C) midbrain
- D) cerebellum**
- E) thalamus

*Evaluation criteria:*

The test score is given in proportion to the percentage of correct answers:

90-100% - excellent grade

80-89% - "good" rating

70-79% - "satisfactory" rating

Less than 70% of correct answers – “unsatisfactory” rating.



## List of the practical skills

1. Motor examination
  - a. muscle tone
  - b. muscle strength
2. Coordination
  - a. Trunkal stability: stance and gait, Romberg's sign
  - b. limb coordination; finger –to –nose test; heel-to-shin
3. Sensation (differentiate peripheral, segmental, central lesions)
  - a. pain
  - b. temperature
  - c. vibration
  - d. Touch
4. Signs of meningeal irritation
  - a. Nuchal rigidity
  - b. Kernig's sign
  - c. Brudzinski's sign
5. Functional testing of the main head and lower limb muscles

### Evaluation criteria:

"Excellent" (90-100 points) Fully knows and masters the examination technique, can answer additional questions, has additional information

"Good" (80-89 points) He knows and has mastered the examination technique, can partially answer additional questions

"Satisfactory" (70-79 points) He may have mastered the examination technique, cannot answer additional questions

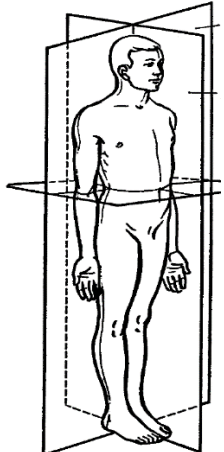
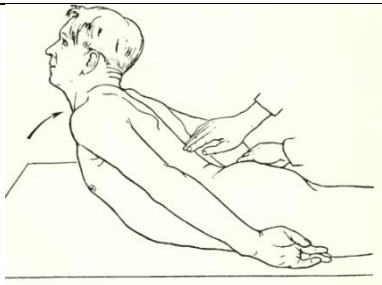
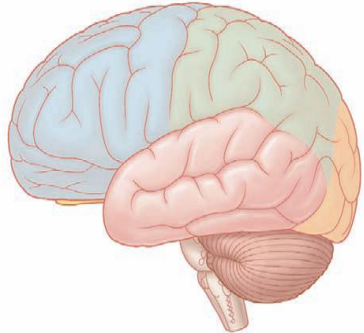
"Unsatisfactorily" (0-69 points) He does not know how and does not know the technique of examination. Does not demonstrate a respectful attitude towards the subject

**Final control** include **Practical skills control** (student must demonstrate testing of individual two muscle function) - **40% of final rating**, **Answer on the theoretical questions (30% of final rating)** and **final test questions (30% of final rating)**.

**Example of test tasks, List of Practical skills and Evaluation criteria** – see above.

### Example of theoretical questions

**Find on the picture:**

		
deep dorsum plantar palmar	Examination _____ of _____ muscle.	MAIN PARTS OF THE BRAIN

Where are located the supraspinous ligaments?

How are true ribs distinguished from false ribs?

The axillary nerve supplies \_\_\_\_\_ muscles.

FIND location of lesion: “weakness of the opposite side of the body”

- (a) *Frontal cortex*, (b) *Precentral cortex*, (c) *Postcentral cortex*,  
(d) *Occipital cortex*, (e) *The lateral sulcus in the frontal, parietal or temporal lobes of the dominant hemisphere*

What is Normal results of the Male muscles erector spine dynamometry ( ---- kg)

## PHYSICS AND FUNDAMENTALS OF COMPUTER TECHNOLOGY WITH PROGRAMMING

**Teachers: PhD Elena N. Zhivotova, Natalia V. Boiko**

**Building, Department, classroom #** NUK, Department of Medical and Biological Physics, 509, 501, 504.

### **Contact details:**

- Telephone number: 89381530078 (PhD Elena Zhivotova), 89033405595 (Boiko N.V.)
- E-mail address: elzhivotova@gmail.com
- Office and working hours: 522 (9-17)

### **Total hours — 72:**

Lectures 10 hours;

Practical classes 30 hours;

Independent work 32 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

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**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University.

### **Course objectives: The purpose of mastering the discipline**

The aim of achievement by medical students of mastery of course **Physics and fundamentals of computer technology with programming** is the formation of systematic knowledge on physical properties of matter and physical processes taking place in biological objects including human body as well as the learning of fundamental principles of mathematics and applied mathematics necessary for the study of some others educational courses and the acquisition of professional medical skills.

### **Tasks of the discipline:**

To form knowledge in the field of:

- usage of physics concepts and procedures in the prevention, diagnosis, and treatment of disease;
- diagnostic imaging; medical imaging technologies, such as X rays MRI scans and CT scans;
- radiation therapy by facilitating targeting and destruction of cancer cells (accurate calculations regarding radiation doses and an understanding of how radiation interacts with tissue are crucial for ensuring treatment while minimizing harm to healthy cells);
- cardiovascular medicine (this field of medicine heavily relies on the principles of physics to comprehend how blood flows within the heart and blood vessels. Medical professionals utilize this understanding to diagnose and provide treatment, for heart related ailments;
- physical basics of laboratory analysis;

### **Course topics:**

#### **Calendar plan of lectures**

1. Radioactivity. Biological Effects of Exposure to Radiation. Radiation dosimetry. Ionizing radiation in diagnostics and therapy.
2. Atomic and molecular spectroscopy. Light absorption. Colorimetry. Spectroscopy of Biological Macromolecules. Photoelectric effect. Photomultiplier tubes. X-ray tubes. Medical uses of X-rays. Computed tomography.
3. Information. Properties. Encoding of information.
4. File system NTFS in the Windows operating system.
5. Applications. MS Office.

#### **Calendar plan of laboratory classes**

1. Radioactivity. Interaction of nuclear radiation with matter. Detectors of ionizing radiation
2. Atomic and molecular spectroscopy.
3. Light absorption. Colorimetry.
4. Photoelectric effect.
5. Module on topics 5-8.
6. Module on topics 9-12. Outcoming testing. Final test.
7. Creating documents. Word text editor.
8. Additional features of the Word program.
9. Excel spreadsheets. Data entry, calculation principles, diagramming in Excel workbooks.
10. Excel Logical Functions.
11. Excel: Functions from the Date and Time, References and Arrays categories.
12. Techniques for working with large Excel tables.
13. ACCESS database management system. Create tables, forms, and queries.
14. Final test.

### **Text books and required supplies:**

1. Davidovits, Paul. Physics in Biology and Medicine. Fifth Edition. Elsevier Science. 2018. – 358 p.
2. Hobbie, Russell K. R. Intermediate Physics for Medicine and Biology. 4th Edition. Springer. 2015. – 616 p.
3. College Physics. OpenStax. Open Education Resource (OER) LibreTexts Project.
4. Everitt B.S. Medical Statistics from A to Z. Cambridge University Press. 2006. – 249 p.
5. Janet L. Peacock. Oxford Handbook of Medical Statistics. Oxford University Press. 2011. – 517 p.

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

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#### **Example of test questions**

Absorption spectrum results when an electron in an atom undergoes a transition from

- (e) lower energy level to a higher one.
- (f) higher energy level to a lower one.
- (g) intermediate levels.
- (h) all of the mentioned.

Correct answer: (a)

Correct answer - 5 points.

Proteins absorb strongly at

- (a) 260 nm.
- (b) 280 nm.
- (c) 420 nm.
- (d) 680 nm.

Correct answer: (b)

Correct answer - 5 points.

#### **Example of problems**

A sugar solution 20% rotates the plane of polarization through an angle of 21 degrees. Find the concentration of sugar in other solution, if under the same conditions the plane of polarization is rotated through an angle of 12 degrees. Write the value rounded up to the second decimal place.

Correct answer: 11.43.

Correct answer - 5 points.

### EVALUATION OF THE MODULE ANSWER

The question card of the module consists of 20 tasks (12 theoretical MCQ, 4 practical MCQ and 4 numerical answer problems). Each question is evaluated by 5 points.

### EVALUATION OF THE “FUNDAMENTALS OF COMPUTER TECHNOLOGY WITH PROGRAMMING” MODULE TEST.

Students perform the final test on a computer. For each option, Excel tables have been prepared, in which you need to perform the calculations specified in the ticket. The task for the test contains 5 practice questions. Each question is evaluated by 20 points.

#### Example of test's task

	A	B	C	D	E	F	G	H	I	J	K	L
1	Shares of drugs with prices cheaper and more expensive than 1,000,000 rubles in the total purchase											
2		<1000000	>1000000	Total								
3	Total (rub)											
4	%											
5	PRICE LIST TABLE											
6	#	medications	FIRM-Seller	expiration date	UNIT PRICE	number of years of validity	number of packs (unit)	Payment for the entire purchase		medications	Average unit price	Number of this medicine in the price list
7	1	Abirateron NV	ООО "НьюВак" (ООО "НьюВак") - Россия	14.08.2023	265711	2	90	23913995		Abirateron NV	265711	1
8	2	Affinitor	Новартис Фарма АГ - Швейцария	02.02.2026	150001	4	200	30000226		Affinitor	176461	12
9	3	Affinitor	"Конафарма АГ", Швейцария	02.02.2022	162000	0	150	24300019		Amikacin - Ferein	181478	6

1. In the column entitled “*number of years of validity*”, calculate, using the date in the “*expiration date*” column, how many full years this medicine can be used.
2. In the column “*Payment for the entire purchase*” calculate the amount paid for each drug, taking into account number of packs (unit).
3. Column entitled “medications” contains the names of drugs, among which there are many duplicates, since they are sold by different companies. Column entitled “*medications unique*” contains only unique drug name from this *Price list*. In the “*Average unit price*” column, calculate the average price for each drug.
4. In the column entitled “*Number of this medicine in the price list*”, count the number of each drug in the price list.
5. Above, in blue cells, calculate the total amounts (rubles) separately for medicines with prices cheaper and more expensive than 1,000,000 rubles (*hint: use values from column UNIT PRICE*). Then recalculate these data as a percentage of the total purchase. Create a rule to highlight red drugs with a shelf life of less than a year. Create a pie chart with legend for data.

## MOLECULAR PHYSIOLOGY

**Teachers:** Prof. Mukhamedyarov Marat Aleksandrovich, Prof. Petrov Aleksey Michailovich, PhD Telina Evelina Nicolaevna, PhD Martinov Alexandr Vladimirovich, PhD Nabatov Alexey Anatolievich, Khabibrakhmanov Aidar Nazimovich, Nagiev Kerim Kazbekovich, Talan Matvei

Sergeevich, Ponomareva Daria Nicolaevna, Bilalova Diana Faridovna, Vavilov Dmitrii Nicolaevich

**Building, Department, classroom # Universitetskaya, 13, Department of Normal Physiology, 310 - 315**

**Contact details:**

Teacher - telephone number: 89600365142 (PhD Telina Evelina Nicolaevna)

E-mail address: evelinatelina@mail.ru

Lecturer - telephone number: 89063201140 (Prof. Petrov A.M.)

E-mail address: fysio@rambler.ru

Office and working hours: Universitetskaya, 13, 325, 327 (9-17)

**Total hours – 72 h:**

Lectures: 10 h;

Practical classes: 30 h;

Independent work – 32 h;

Control – credit

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

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**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **Molecular physiology** discipline are formation of systematic knowledge about the vital activity of the whole organism and its individual parts and about the main ways to assess the functional and molecular state of the body; formation the skills of interpretation of basic physiological principles and basic knowledge of physiological functions on the molecular way, which submitted to the activities of the all organism systems.

**Tasks of the discipline:**

To form knowledge in the field of:

- the basic physiological principles, which submitted to the activities of the all organism, it's systems, tissues and cells;
- the common biological mechanisms of regulation of the vital activity of the human, that providing the adaptation, homeostasis and health care on the cellular level;
- formation of the skills with the educational and scientific literature by themselves, acquaint with a basic methods of physiological experiments.
- the study of physiological processes such as neuromuscular transmission and chemical processes through practical experimental methods

### **Course topics:**

- Section 1. The Cell Membrane: Ionic mechanisms of resting potential and action potential. Intracellular signaling.
- Section 2. Central and Peripheral Nervous System: Sleep. Molecular mechanisms of slow-wave and rapid eye movement (REM) sleep. Memory mechanisms. Sensory organs. Hearing. Nociception. Emotions.
- Section 3. The Heart. Atypical and working cardiomyocytes. Features of action potential formation in heart cells. Heart activity.

### **Calendar plan of lectures**

#### **III semester**

1. Ultrastructure of the Plasma Membrane: The role of phospholipids, proteins, and lipid rafts in the organization of the plasma membrane. Classification, general concepts of the structure and properties of ion channels. Ion pumps. Ionic mechanisms of the resting potential and action potential.
2. Molecular Mechanisms of Signal Transmission in Chemical Synapses: Presynaptic and postsynaptic processes. Classifications of receptors and general concepts of signal transduction mechanisms. Major intracellular signaling pathways (secondary messengers: cAMP, cGMP, calcium ions, inositol trisphosphate, gases, etc.) and their targets.
3. Features of Signal Transmission in Central Synapses: In excitatory and inhibitory synapses. Neurotransmitters, neuromodulators, glutamate and GABA receptors. Structural features of electrical synapses (nexuses) and their role in the nervous system. The importance of astrocytes in controlling synaptic transmission.
4. Sleep: Brain activating systems, mediators, and receptors involved in sleep mechanisms. Molecular mechanisms of slow-wave and REM sleep. The relationship between sleep and memory mechanisms, emotions, the state of the autonomic, somatic, and endocrine systems. Mechanisms of the origin of EEG rhythms characteristic of slow-wave and REM sleep.
5. Memory Mechanisms: Mechanisms of short-term and long-term synaptic plasticity (potentiation and depression) and their significance in memory formation. Key signaling pathways involved in synaptic plasticity.

### **Calendar plan of practical classes**

#### **III semester**

1. Types of Transmembrane Transport of Substances: Mechanisms of ion channels and ion pumps.
2. Mechanisms of Action and Effects of Ion Channel and Ion Pump Blockers.
3. Features of Excitability and Contractility in Smooth Muscle: Specifics of regulatory mechanisms of contraction strength in smooth and skeletal muscle. Molecular mechanisms of skeletal muscle adaptation to physical exercise.
4. Intracellular Signaling: Classification of receptors and general concepts of signal transduction mechanisms. Intracellular signaling pathways and their targets (cAMP, cGMP, inositol trisphosphate, calcium ions, lipid and gaseous messengers).
5. Control Session: Situational tasks.
6. Neurotransmitters and Neuromodulators in the CNS: Molecular mechanisms of signal transmission in CNS synapses. The role of glial cells in modulating synaptic transmission.
7. Mechanisms and Physiological Role of Inhibition in the CNS: Inhibitory neurons, their functional characteristics. Types of receptors for inhibitory neurotransmitters (GABA, glycine, dopamine) and neuromodulators (cannabinoids, endorphins) in the CNS.
8. Neuronal Networks of the Brainstem, Cerebellum, and Basal Ganglia Involved in Controlling Motor Functions: Importance and molecular mechanisms of dopamine action.

9. Sleep: Nature of neuronal activity during different sleep phases. Brain activating systems, mediators, receptors. The role of ion channels in sleep mechanisms. Methods of studying sleep.
10. Molecular Mechanisms of Memory: Importance of phenomena such as long-term potentiation and depression, as well as excitotoxicity. Signaling molecules involved in memory formation. Methods for memory correction.
11. Organization of the Auditory Analyzer: Features of cochlear structure and molecular mechanisms of excitation in the Organ of Corti. Outer and inner hair cells, their ion channels, and excitation mechanisms. Perception of sounds of various frequencies, information encoding along the "auditory" pathway. Investigation of auditory acuity, binaural hearing, bone and air conduction of sound in humans.
12. Molecular Mechanisms of Nociception: (Purinerbic receptors, TRP channels, acid-sensitive ion channels). Antinociceptive system, methods of pain correction. Investigation of pain sensitivity in humans.
13. Reward System: Molecular mechanisms of emotion formation.
14. Control Session: Situational tasks.
15. Ion Channels and Calcium Signaling in Atypical and Working Cardiomyocytes: Features of action potential formation in heart cells. Effects of ion channel modulators on heart activity.

#### **Text books and required supplies:**

1. Ganong's Review of Medical Physiology. 26th Edition. MC Graw Hill. 2019. 1792p. ISBN-10: 978-1-26-012241-1.
2. Hall J. Guyton and Hall Textbook of Medical Physiology. 13rd Edition. Elsevier. 2016. 1046p. ISBN 13:9781455770052.
3. W., Boulpaep E. Medical Physiology. 3rd Edition. Elsevier. 2016. 1312p. eBook ISBN: 9780323391597

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each section (written papers/oral examination/test/abstracts/reports or others).

*Routine performance assessment* (homework, practical work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral examination/situational task). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Control class* is held in forms of MCQ test (one correct answer). Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

#### **Classroom rules:**

- Be respectful



- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

## **EVALUATION of knowledge, abilities and skills**

### **- MCQ Test**

#### Example:

1. Which of the following best describes the role of calcium ions in cardiac muscle contraction?
  - A) Calcium ions bind to tropomyosin, allowing cross-bridge formation between actin and myosin.
  - B) Calcium ions activate calmodulin, initiating a signaling cascade that leads to contraction.
  - C) Calcium ions are released from the sarcoplasmic reticulum, binding to troponin to facilitate actin-myosin interaction.
  - D) Calcium ions inhibit the sodium-potassium pump, resulting in depolarization of the cardiac muscle cell.

Evaluation criteria: The score on the test is set in proportion of correct answers: 90-100% - score "excellent" 80-89% - score "good" 70-79% - score "satisfactory" Less than 70% of correct answers – score "unsatisfactory".

### **- Oral examination**

#### Example:

" Molecular mechanisms of emotions"

Evaluation criteria: "Excellent" (90-100 points) – The student is fully proficient in the basic material, possesses additional information, is able to analyze physiological processes and mechanisms, reveal their significance and interrelation with other organs and systems. "Good" (80-89 points) – The student knows the basic material, but does not fully possess additional information. The answer contains minor errors in the logical sequences. "Satisfactory" (70-79 points) – The student partially owns the material, makes mistakes in terminology, logical sequences, physiological mechanisms, the significance of physiological processes and their relationship with other organs and systems. "Unsatisfactory" (0-69 points) – The student has scattered knowledge with significant errors in physiological processes and mechanisms, makes mistakes in terminology, cannot analyze the significance of physiological processes.

### **- Reports**

#### Example:

" Investigation of auditory acuity, binaural hearing, bone and air conduction of sound in humans", "Effects of ion channel modulators on heart activity. "

Evaluation criteria: "Excellent" (90-100 points) – the report fully reveals the topic, the student tells, practically without looking at the text and answers all additional questions. "Good" (80-89 points) – the report reveals the topic, but requires additions, the student tells based on the text, but without reading it out and answers all additional questions: "Satisfactory" (70-79 points) – the report reveals the topic, but requires additions, the student cannot answer most of the additional questions, partially reads the text during the story. "Unsatisfactory" (0-69 points) – the report does not disclose the topic, the student cannot answer most of the additional questions, reads out the text.

### **- Case-study**

#### Example:

1. A 30-year-old man presents with muscle weakness and fatigue that worsens with activity but improves with rest. He has difficulty with repetitive tasks, such as climbing stairs or lifting objects. There is no significant family or medical history, and a physical examination reveals drooping eyelids.

Clinical Presentation: This scenario indicates a potential issue with the neuromuscular junction, the site where motor neurons communicate with muscle fibers to trigger contraction. Explain the mechanism.

Evaluation criteria: "Excellent" (90-100 points) – the correct answer is given, the essence and mechanisms of physiological processes are explained, their significance for the normal functioning of organs and systems is revealed, if necessary, an analysis of physiological constants and laboratory results is given, the student uses additional information. "Good" (80-89 points) – a short correct answer is given, the essence and mechanisms of physiological processes are explained, their significance for the normal functioning of organs and systems is revealed, if necessary, an analysis of physiological constants and laboratory results is given, the student does not use additional information. "Satisfactory" (70-79 points) – a short answer to the question is given, mistakes are made, the essence of physiological processes is not explained, an incomplete analysis of physiological constants and laboratory results is given. "Unsatisfactory" (0-69 points) – an incorrect answer is given, the problem is not solved.

## **CLINICAL PHYSIOLOGY WITH THE BASICS OF FUNCTIONAL DIAGNOSTICS**

**Teachers:** Prof. Mukhamedyarov Marat Aleksandrovich, Prof. Petrov Aleksey Michailovich, PhD Telina Evelina Nicolaevna, PhD Martinov Alexandr Vladimirovich, PhD Nabatov Alexey Anatolievich, Khabibrakhmanov Aidar Nazimovich, Nagiev Kerim Kazbekovich, Talan Matvei Sergeevich, Ponomareva Daria Nicolaevna, Bilalova Diana Faritovna, Vavilov Dmitrii Nicolaevich

**Building, Department, classroom # Universitetskaya, 13, Department of Normal Physiology, 310 - 315**

#### **Contact details:**

Teacher - telephone number: 89600365142 (PhD Telina Evelina Nicolaevna)

E-mail address: evelinatelina@mail.ru

Lecturer - telephone number: 89063201140 (Prof. Petrov A.M.)

E-mail address: fysio@rambler.ru

Office and working hours: Universitetskaya, 13, 325, 327 (9-17)

#### **Total hours – 72 h:**

Lectures: 10 h;

Practical classes: 30 h;

Independent work – 32 h;

Control – credit

#### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University <https://e.kazangmu.ru/enrol/index.php?id=1921>

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the **Clinical Physiology with the Basics of Functional Diagnostics** discipline are formation of systematic knowledge about the vital activity of the whole organism and its individual parts and about the main ways to assess the functional state of the body; formation the skills of interpretation of basic physiological principles and basic methods of physiological functions examination, which submitted to the activities of the all organism systems.

### **Tasks of the discipline:**

To form knowledge in the field of:

- the basic physiological principles, which submitted to the activities of the all organism, it's systems, tissues and cells;
- the common biological mechanisms of regulation of the vital activity of the human, that providing the adaptation, homeostasis and health care;
- formation of the skills with the educational and scientific literature by themselves, acquaint with a basic methods of physiological functions examination.

### **Course topics:**

- Section 1. The Heart and Circulation.
- Section 2. The Blood.
- Section 3. The Respiratory System.
- Section 4. The Digestive System.
- Section 5. The Urinary System.
- Section 6. Laboratory research methods.

### **Calendar plan of lectures**

#### **IV semester**

1. Physiological mechanisms of regulation of the circulation.
2. Microcirculation. The lymphatic system.
3. Physiological mechanisms of the body's resistance to infectious agents. The immune system.
4. Hemostasis and blood coagulation. Interaction between coagulation, fibrinolysis and anticoagulants.
5. Regulation of respiration. Factors that affect the rate of gas diffusion in lungs and tissues.
6. Regulation of secretion and motility in GIT. Significance of autonomic nervous system.
7. Functions of liver. Regulation of bile production, secretion and excretion.
8. Physiological mechanisms of digestion and absorption in GIT.
9. The body fluid compartments. Mechanisms for controlling the body fluids and their constituents. Edema. Regulation of acid-base balance.

### **Calendar plan of practical classes**

#### **IV semester**

1. ECG for dysfunction of the heart muscle and coronary vessels.
2. Age-related features of blood circulation. Features of regional (coronary, pulmonary, etc.) blood circulation.
3. . Microcirculation. The role of the endothelium in the regulation of blood circulation. Circulation through special regions.
4. Module on topics 1-3.
5. Causes of anemia. Effect of anemia on blood circulation.
6. The immune system. The innate and adaptive immune response.
7. Basic principles of blood transfusion. Blood transfusion reactions. Hemolytic disease of the newborn (erythroblastosis fetalis).
8. Mechanisms of hypo- and hypercoagulation. Clinical use of anticoagulants.
9. Module on topics 5-8.
10. Airflow measurements of obstructive and restrictive disease. Ventilation/perfusion ratios.
11. Regulation of breathing. Acclimatization to increased and decreased barometric pressure.
12. Mechanism of defecation, diarrhea, vomiting.
13. Digestion and absorption in GIT and disorders of this processes.
14. Physiological methods of investigation kidney function. Renal plasma clearance.
15. Mechanisms of endocrine disorders. Normal Values for Selected Common Laboratory Measurements.

#### **Text books and required supplies:**

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2. Hall J. Guyton and Hall Textbook of Medical Physiology. 13rd Edition. Elsevier. 2016. 1046p. ISBN 13:9781455770052.
3. W., Boulpaep E. Medical Physiology. 3rd Edition. Elsevier. 2016. 1312p. eBook ISBN: 9780323391597
4. Educational portal course: Clinical Physiology with the basics of functional diagnostics for faculty of General Medicine <https://e.kazangmu.ru/course/view.php?id=1921>

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each section (written papers/oral examination/test/abstracts/reports or others).

*Routine performance assessment* (homework, practical work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

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*Control class* is held in forms of MCQ test (one correct answer). Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

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- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **EVALUATION of knowledge, abilities and skills**

#### **- MCQ Test**

##### **Example:**

1. The "P" wave on the ECG represents: a) atrial depolarization; b) atrial repolarization; c) ventricular depolarization; d) ventricular repolarization.

Evaluation criteria: The score on the test is set in proportion of correct answers: 90-100% - score "excellent" 80-89% - score "good" 70-79% - score "satisfactory" Less than 70% of correct answers – score "unsatisfactory".

#### **- Oral examination**

##### **Example:**

"Refractive abnormalities of the eye", "Phonocardiography"

Evaluation criteria: "Excellent" (90-100 points) – The student is fully proficient in the basic material, possesses additional information, is able to analyze physiological processes and mechanisms, reveal their significance and interrelation with other organs and systems. "Good" (80-89 points) – The student knows the basic material, but does not fully possess additional information. The answer contains minor errors in the logical sequences. "Satisfactory" (70-79 points) – The student partially owns the material, makes mistakes in terminology, logical sequences, physiological mechanisms, the significance of physiological processes and their relationship with other organs and systems. "Unsatisfactory" (0-69 points) – The student has scattered knowledge with significant errors in physiological processes and mechanisms, makes mistakes in terminology, cannot analyze the significance of physiological processes.

#### **- Reports**

##### **Example:**

"Comprehensive assessment of health, physical development, physique and fitness", "Theories of color perception. Color vision disorders"

Evaluation criteria: "Excellent" (90-100 points) – the report fully reveals the topic, the student tells, practically without looking at the text and answers all additional questions. "Good" (80-89 points) – the report reveals the topic, but requires additions, the student tells based on the text, but without reading it out and answers all additional questions: "Satisfactory" (70-79 points) – the report reveals the topic, but requires additions, the student cannot answer most of the additional questions, partially reads the text during the story. "Unsatisfactory" (0-69 points) – the report does not disclose the topic, the student cannot answer most of the additional questions, reads out the text.

## **- Case-study**

### Example:

2. An agitated worker turned to the doctor, who, after talking with the master, felt a heartbeat. After measuring the pulse and blood pressure (pulse - 98 beats per minute, blood pressure - 120/80 mmHg), the doctor advised the patient to calm down, close his eyes and press on the eyeballs. Assess the worker's condition. What did the doctor achieve with his advice? Explain the mechanism.

Evaluation criteria: "Excellent" (90-100 points) – the correct answer is given, the essence and mechanisms of physiological processes are explained, their significance for the normal functioning of organs and systems is revealed, if necessary, an analysis of physiological constants and laboratory results is given, the student uses additional information. "Good" (80-89 points) – a short correct answer is given, the essence and mechanisms of physiological processes are explained, their significance for the normal functioning of organs and systems is revealed, if necessary, an analysis of physiological constants and laboratory results is given, the student does not use additional information. "Satisfactory" (70-79 points) – a short answer to the question is given, mistakes are made, the essence of physiological processes is not explained, an incomplete analysis of physiological constants and laboratory results is given. "Unsatisfactory" (0-69 points) – an incorrect answer is given, the problem is not solved.

## **TRAINING COURSE**

**Teachers:** Prof. Sergey Bulatov, PhD Enzhe Kharisova

**Building, Department, classroom #** GUK, Center for practical skills, block B, room 1, 2

### **Contact details:**

- Telephone number: 89173902302 (Prof. Sergey Bulatov)
- E-mail address: [boulatov@rambler.ru](mailto:boulatov@rambler.ru)
- Office and working hours: room 006(9-17)

**Total practical hours: 144h**

### **Course description:**

The purpose of **practical training** is to master theoretical knowledge and the ability to use it in real practice.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1582>, <https://e.kazangmu.ru/course/view.php?id=2746>).

### **Course objectives: The purpose of mastering the discipline**

The goals of mastering the discipline "**Training course**" are: at the first stage (**Module 1**) mastering the skills of general patient care with the basics of first aid, at the second stage (**Module 2**) training in the skills of a ward nurse, at the third stage (**Module 3**) training the student in the practical skills of a procedural nurse, and at the fourth stage (**Module 4**) - the application of the practical skills of a doctor in a medical institution.

### **Objectives of the course:**

Using simulation equipment, develop the following skills:

- establishing productive contact with patients with various diseases and their relatives to create the most optimal diagnostic and treatment trajectory; understand the behavioral characteristics of patients and their relatives in various situations, know the principles of consulting the patient and his environment on issues of care and self-care;
- using medical products to perform nursing manipulations, create functionally advantageous positions of patients in bed, determine the type of nutrition for bedridden patients, as well as record indicators and manipulations in the relevant medical documentation;
- correctly collect complaints, anamnesis, technique for conducting an objective examination, formulating a preliminary and clinical diagnosis, to draw up a program for further examination and treatment of patients with somatic diseases of internal organs, interpret data from laboratory and instrumental examination methods;
- drawing up the relevant medical documentation in compliance with the rules of information security and maintaining medical confidentiality;
- identifying life-threatening conditions with subsequent organization of medical care, conducting cardiopulmonary resuscitation.

### **Course topics:**

#### **Calendar plan of practical training**

##### **Module 1.**

Topic 1. Assessment of the main parameters characterizing the state of patient. The main parameters of the functional state of the body in the norm and pathology (body temperature, heart rate, blood pressure, breathing characteristic, body mass index). The definition of health and disease.

Topic 2. General principles of patient care Principles of patient's skin treating, cleaning of the mouth, nose, ears, eyes, genitals. Measures to prevent various complications. Changing of bed linen and patient's clothes. Creation of a functional position for the patient. Rules for transferring and transportation of patients. Features of patients' nutrition and feeding.

Topic 3. Basic cardiopulmonary resuscitation. Causes. Symptoms. Interaction with emergency medical care. First aid. Complications. Responsibility. Assessment of the state of suffering (injured). Basic and expanded cardiopulmonary resuscitation. Signs of clinical and biological death. Organization of assistance to suffering patient (connection with emergency services). Sudden cardiac arrest. Basic and expanded cardiopulmonary resuscitation. Automatic external defibrillator. Cardiopulmonary resuscitation in children. Complications of CPR. Conditions for cessation of CPR.

Topic 4. Bleeding (hemorrhage) Types. Causes. Symptoms. First aid. Complications. Bleeding (hemorrhage) Classification of bleeding. Common signs of bleeding. First aid for external and internal bleeding. Temporary and syrgical methods of Hemostasis.

Topic 5. Traumas. Injuries of various areas of the body. Bruises, sprains, tears, dislocations, fractures. Classification of fractures. First aid. First aid in RTA. Crash syndrome.

Topic 6. First aid for the obstruction of the upper respiratory tract. Drowning. First aid for obturation of the upper respiratory tract by foreign body (restoring of the airway passability). Drowning. First aid.

Topic 7. Burns. Frostbites. Electric shock. First aid. Classification. First aid.

Topic 8. First aid for allergic reactions. First aid in bites. Syncope. Seizures (epileptic seizures). Poisoning. Types and Classification. First aid.

Final exam.

##### **Module 2. Skills of a Ward Nurse.**

Topic 1. The role of a nurse in organizing a safe environment for the patient and staff. Developing skills for behavior in non-standard situations in the workplace, equipping medical personnel, hand washing techniques, hand hygiene.

Topic 2. The role of asepsis and antisepsis in a modern clinic. Rules for putting on and removing gloves, using a mask. Hand and mucous membrane treatment when in contact with biological fluids.

Topic 3. Care for a bedridden patient. Bedsores, places of formation, stages of development. Factors contributing to the development of bedsores. Prevention of bedsores. Features of personal hygiene of a bedridden patient. Developing skills for personal hygiene of a seriously ill patient, giving a functionally advantageous position in bed, moving the patient in bed, transporting the patient inside the ultrasound.

Topic 4. Physiotherapeutic methods of influencing the patient's body. Physiotherapeutic methods of influencing the patient's body.

Topic 5. Use of enemas and a gas outlet tube. Gas outlet tube. Enemas. Types, indications, possible complications. Technique for setting different types of enemas. Disinfection of used equipment.

Topic 6. Routes of administration of drugs. A set of drugs from an ampoule and a vial. Rules for diluting powdered drugs in a vial. Dilution of antibiotics. Features of the introduction of oil solutions. Types of syringes and needles, their design. Safety rules when in contact with blood.

Topic 7. Technique of subcutaneous and intramuscular injections. Selection of anatomical area for intradermal, subcutaneous, intramuscular injections and injection technique.

Topic 8. Prevention of injection complications and assistance in the event of complications. Complications associated with the parenteral route of drug administration. Anaphylactic shock. Measures aimed at preventing complications and first aid when they occur.

Final exam.

### **Module 3. Skills of a procedural nurse.**

Topic 1. The role of a nurse in the treatment process. The role of a nurse in preventing nosocomial infections and ensuring infection safety in healthcare facilities, regulatory documents governing the activities of nurses, admission of a patient to a hospital, the concept of a treatment and protective regimen, types of physical activity. Practicing skills: organizing a workplace in compliance with labor protection requirements, filling out medical documentation, consulting the patient and his environment on issues of care and self-care.

Topic 2. Gastric lavage. Placing a nasogastric tube. Purpose, indications and contraindications for gastric lavage. Technique of insertion and feeding the patient through a nasogastric tube. Determining water balance. Practicing skills: gastric lavage without a tube, using a gastric tube for a conscious patient, gastric lavage for an unconscious patient, placing a nasogastric tube, caring for a nasogastric tube. Features of performing manipulations in children.

Topic 3. Urinary catheterization. The concept of catheterization, purposes and indications for catheterization, types of catheters. Practicing skills: catheterization of the bladder with a soft catheter, insertion of a permanent Foley catheter, perineal care of patients with a urinary catheter, disinfection of used equipment, use of removable urine bags.

Topic 4. Intravenous administration of drugs. Intravenous injection technique. Anatomical areas and technique of intravenous injection. Practicing the skill of performing an intravenous injection. Intravenous drip administration of drugs. Administration of drugs through a catheter in the central and peripheral veins.

Topic 5. Practicing the skills of intravenous drip infusion and administration of drugs through a catheter: preparing the patient, preparing the equipment, filling the drip infusion system, performing a drip administration of the drug, administering drugs through a catheter in the central and peripheral veins, disinfecting and disposing of the used equipment. Taking blood for analysis. Caring for an intravenous catheter. Complications after injections.

Topic 6. Allergies. Classification. First aid for anaphylactic shock.



Topic 7. Fundamentals of Cardiopulmonary Resuscitation. ECG analyzation. General information to analyze ECG in emergency cases. Basic and advanced cardiopulmonary resuscitation. Differences between CPR outside and in hospital. Automated external defibrillator. Cardiopulmonary resuscitation in children. Complications during CPR. Conditions for CPR termination.

Topic 8. Practical training in therapeutic and effective communication in nursing practice. The concept of "therapeutic communication". Principles of therapeutic communication. Practicing the skills of therapeutic and effective communication on patients with different psychological types. Final exam.

#### **Module 4. Clinical skills of a doctor in practice.**

Topic 1. The role of a doctor in establishing a trusting relationship with a patient as an integral part of the treatment process. Communication techniques used to establish psychological contact and trusting relationships with a patient. Initial admission of a patient to a hospital, the concept of a treatment and protective regimen, types of patients depending on their psychotype. Skills development: organizing a workplace for working with a patient, techniques used in collecting anamnesis, requirements for filling out this part of medical documentation, the concept of the "standardized patient" technique and its use in the educational process.

Topic 2. Application of standards in collecting patient anamnestic data and conducting an objective examination as a basis for making a preliminary diagnosis. Individual training in practicing techniques for collecting anamnesis, objective examination of the patient's organs and systems, and making a preliminary diagnosis. Working with a patient-actor using the "standardized patient" technique.

Topic 3. Algorithm for creating an optimal diagnostic program based on the data obtained from a general clinical examination of a patient. The concept of "optimal diagnostic program" using the example of a situational task presented by an actor. Formation of an algorithm of actions for creating diagnostic programs for various somatic diseases of internal organs. Individual training with a patient-actor on the use of the "sp" technique.

Topic 4. Stages of forming a clinical diagnosis and choosing treatment tactics in patients with somatic diseases of internal organs. Formation of a stable skill of stages of formulating a clinical diagnosis based on the sequence of a general clinical examination of a patient and the formation of an optimal diagnostic program. Individual training using the "standardized patient" method.

Topic 5. Possibilities of simulation methods in mastering the skills of general clinical examination of patients. Practicing the skills of examination and palpation, in various pathological conditions of internal organs (rectal, vaginal manual examination, palpation of the prostate, examination of the fundus, examination of the ear canal and eardrum, examination of the mammary glands, palpation of regional lymph nodes in norm and pathology) on available training complexes.

Topic 6. Examination of the quality of the general clinical examination of a patient. Practicing the skills of general clinical examination of patients based on the examination using a two-position video broadcast of a colleague's work using the "standardized patient" method. Developing skills in filling out an expert checklist.

Topic 7. Auscultatory training in determining lung and heart pathology. Developing skills in auscultatory determination of pathological conditions of the respiratory and cardiovascular systems based on the use of V-class realistic training complexes. Formation of a stable topographic-anatomical scheme for conducting a physical examination of a patient.

Topic 8. Differential diagnostics of somatic diseases with similar clinical symptoms in therapeutic practice. Development of an algorithm for differential diagnostics of diseases with similar clinical presentations when making a clinical diagnosis. Individual training with a patient-actor using the "standardized patient" method.

Topic 9. Completion of practical assignments. Checking by the teacher of the practical skills acquired by the student during the module. Individual interview and analysis of errors identified during work using the "standardized patient" method.

Final exam.

**Text books and required supplies:**

1. Emergency medical care at the pre-hospital stage [Electronic resource]: textbook / A. L. Vertkin, L. A. Aleksanyan, M. V. Balabanova et al.; edited by A. L. Vertkin. - M.: GEOTAR-Media, 2016 (<http://www.studentlibrary.ru/book/ISBN9785970435793.html>)
2. Practical skills of a ward nurse [Electronic resource] / Bulatov S.A., Gorbunov V., Akhmadeev N. - Kazan: Kazan State Medical University, 2012. – (<http://www.studmedlib.ru/book/skills-2.html>)
3. Training course "General patient care with the basics of first aid" (module 1): teaching aid for 1st year students of the pediatric faculty / Kazan State Medical University of the Ministry of Health of the Russian Federation; authors: L. L. Gatiyatullina, S. A. Bulatov. - Kazan: Kazan State Medical University, 2021. - 60, [3] p. (<https://lib-kazangmu.ru/learning-resources/kafedra-simulyatsionnykh-metodov-obucheniya-v-meditsine/2282-gatiyatullina-l-l-bulatov-s-a-treningovyj-kurs-obshchij-ukhod-za-bol-nymi-s-osnovami-pervoj-pomoshchi-modul-1-uchebno-metodicheskoe-posobie-dlya-studentov-1-kursa-pediatricheskogo-fakul-teta-2021>)
4. Training course "Skills of a ward nurse" (module 2): teaching aid for 2nd-year students of the pediatric faculty / Kazan State Medical University of the Ministry of Health of the Russian Federation; authors: V. V. Gavrilova [et al.]. - Kazan: Kazan State Medical University, 2021. - 44, [4] p. (<https://lib-kazangmu.ru/learning-resources/kafedra-simulyatsionnykh-metodov-obucheniya-v-meditsine/2283-gavrilova-v-v-i-dr-treningovyj-kurs-umeniya-palatnoj-meditsinskoj-sestry-modul-2-uchebno-metodicheskoe-posobie-dlya-studentov-pediatricheskogo-fakul-teta-2-kursa-2021>)
5. Training course "Skills of a procedural nurse" (module 3): teaching aid for 3rd-year students of the pediatric faculty / Kazan State Medical University of the Ministry of Health of the Russian Federation; authors: L. L. Gatiyatullina [et al.]. - Kazan: Kazan State Medical University, 2021. - 45, [3] p. (<https://lib-kazangmu.ru/learning-resources/kafedra-simulyatsionnykh-metodov-obucheniya-v-meditsine/2284-gatiyatullina-l-l-i-dr-treningovyj-kurs-umeniya-protsedurnoj-meditsinskoj-sestry-modul-3-uchebno-metodicheskoe-posobie-dlya-studentov-pediatricheskogo-fakul-teta-3-kursa-2021>)
6. Clinical skills training for physicians (module 4): teaching aid for the training course for fourth-year students of the pediatric faculty / Kazan State Medical University of the Ministry of Health of the Russian Federation; authors: E. Kh. Kharisova [et al.]. - Kazan: KSMU, 2021. - 45 p. (<https://lib-kazangmu.ru/learning-resources/kafedra-simulyatsionnykh-metodov-obucheniya-v-meditsine/2259-kharisova-e-kh-i-dr-praktikum-klinicheskikh-umenij-vracha-modul-4-uchebno-metodicheskoe-posobie-po-treningovomu-kursu-dlya-studentov-iv-kursa-pediatricheskogo-fakul-teta-2021>)

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (oral examination/practical skills /reports/medical records).

*Routine performance assessment* (practical skills/ answers on questions/ distance work) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* criteria for **Modules 1 – 3** are: "Excellent" (90-100 points) - use of an adequate example, references to the knowledge acquired in the course, scientific explanation of one's point of view. "Good" (80-89 points) - use of an adequate example, without references to the knowledge acquired in the course, scientific explanation of one's point of view. "Satisfactory" (70-79 points) - use of an inappropriate example, without references to the knowledge acquired in the course, scientific explanation of one's point of view. "Unsatisfactory" (0-69 points) - use of an inadequate example, without references to the knowledge acquired in the course and without a scientific explanation of the point of view. For **Module 4**, the *Midterm assessment* correspond to the part of the objective examination of the actor, expert and curator sheet. "Excellent" (90-100 points) – the task is completed in accordance with the standards, "Good" (80-89 points) – the task is completed with minor flaws. "Satisfactory" (70-79 points) – the task is completed with errors that are not of a fundamental nature. "Unsatisfactory" (0-69 points) – the task is not completed or is completed with gross violations of the standards.

Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

There is no exam for the training course disciplineю

Overall student rating is build up from class attendance, practical training and results from educational portal, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1**

**Task 1.** You see a patient with stroke. Preform please the process of caring for the eyes, ears, nose and mouth of this patient. How you will feed this person and prevent bedsores.

**Task 2.** The nurse has delegated the following order to you: obtain a urinary specimen to test for sugar and ketones in a client with a medical history of diabetes mellitus.

### **Example of module No. 2**

1. There are 1,000,000E of ampicillin in a vial. How many ml of solution should be drawn into a syringe for an intramuscular injection of 400,000E of ampicillin at a dilution of 1:2?

Correct answer: if there are 2 ml of ampicillin per 1 ml of novocaine, then I take a 2 ml syringe and inject only a quarter of the contents. The student must perform an intramuscular injection according to the instructions and aseptic rules.

2. What solution is used to administer a hypertonic enema? The student simultaneously comments on the actions and fills the flask with the appropriate solution - 10% sodium chloride solution.

### **Example of module No. 3**

1. The nurse is preparing a client for surgery. What is the most effective method for obtaining an accurate blood pressure reading from the client? Student need to measure blood pressure and make a patients list.

2. Which of the following is most dangerous complication during IV injection? Student need to preform IV injection according as recommended and say about main complications.

### **Example of module No. 4**

1. Clinical case for standardized patient 1. Women 65 years old have complaints of pain in the right hypochondrium, nausea, vomiting. For the first time felt aching pain about 2 weeks ago after eating oysters. For a week, any spicy, fatty food caused pain on the right, nausea. Once there was a single vomiting of gastric contents. Came to the doctor for a consultation and advice on the upcoming work. Denies chronic diseases. Denies hereditary, allergic, drug, infectious anamnesis. Pregnancies 2, births 2. Abortions 0. Menopausal period. There were no injuries, no blood transfusions. Denies bad habits.

General condition is moderate. Hypersthenic constitution, overnutrition. Body temperature is 36.60 C. Height is 180 cm, weight is 79 kg. Skin elasticity is not impaired, color is pale. No rash. No edema of subcutaneous fat. Individual, not enlarged, mobile cervical lymph nodes are palpated, painless, not fused with each other and surrounding tissues. Respiratory rate is 17 per minute. A clear sound is heard over the lungs during comparative percussion. During auscultation, breathing is vesicular, there are no side respiratory sounds. The pulse on the left and right radial arteries is symmetrical, rhythmic, uniform, with weak tension and filling. Pulse rate is 110 per minute. On palpation: apical impulse in the 5th intercostal space 1 cm medially from the left midclavicular line, not diffuse, up to 1 cm wide, of normal pitch and strength. On auscultation: heart tones at all points are muffled, rhythmic, clear. Heart rate when standing is 110 per minute. Blood pressure is 110/70 mm Hg on both brachial arteries. On examination of the oral cavity: the tongue is of normal size, moist, coated with a gray-white coating. On superficial palpation: the abdomen is soft, painful and moderately tense in the epigastrium, more on the right; when percussing with fingers, slight tenderness is revealed in this area (Mendel's symptom is positive). Shchetkin-Blumberg's symptom is negative. On deep palpation: the abdomen is sharply painful in the epigastrium, more on the right (a grimace of pain on the face, you react actively). The boundaries of the stomach are within physiological norms. The Chauffard zone is moderately painful. The liver is palpated along the right midclavicular line 1 cm below the costal arch with a deep breath with a smooth, sharp, sensitive edge (say that the pain radiates to the epigastric region). Pasternatsky's symptom is negative on both sides. The thyroid gland is not visually enlarged and is not clearly palpated.

Results of laboratory and instrumental methods (issued to the curator upon request) In accordance with the standards of diagnosis and treatment of patients with diseases of the digestive system, the following laboratory and instrumental studies are necessary to confirm the preliminary diagnosis.

Complete blood count (sample) Hb - 120 g / l, Erythrocytes -  $4.0 \times 10^{12}$  / l, Leukocytes -  $9.0 \times 10^9$ , ESR - 12 mm / h, Leukocyte formula: p-5%, s- 63%, b-0%, m- 9%, e-1%, l-22%.

Complete urine analysis (sample) - Straw-yellow, transparent Specific gravity 1018, chemical composition: protein, sugar negative, microscopy: Leukocytes 1-2 in the field of view, erythrocytes 0-1 in the field of view, Squamous epithelium units in the field of vision, Salts "+", oxalates

Coagulogram (sample) PTI - 98%, Fibrinogen - 3.8 g, Thrombotest - 4 st,

Biochemical blood test (sample) - Alt - 45 U, Ast - 48 U, Glucose - 4.2 mmol, Amylase - 100 U, Serum iron - 18.3  $\mu$ m,

Blood group (sample) 0 (I) Rh +

Chest radiography (description) - No focal, infiltrative shadows. Strengthening, Deformation of the pulmonary pattern. The structure of the roots is unchanged. The shadow of the heart and aorta are without significant changes.

Fibrogastroscopy with biopsy (description) - The esophagus is passable, the cardiac sphincter is closed, the mucosa is unremarkable. The stomach is of normal shape and size. The mucosa in all parts of the stomach is brightly hyperemic, edematous, in the antral section an ulcerative defect measuring 0.9 x 0.5 cm, covered with fibrin, is visualized, isolated erosions are noticeable around it. A "white scar" is visualized along the lesser curvature. The pylorus is passable. Duodenum: the mucosa in all sections is brightly hyperemic, edematous.

Histological examination of a biopsy of the gastric mucosa (sample) - Glandular epithelial cells Qualitative reaction to H.pylori ++

Test for Helicobacter pylori (sample) The result is positive.

Ultrasound of the liver, pancreas, spleen (description) Liver: contours are clear, smooth, enlarged due to the right lobe. The right lobe is 136 mm, the left lobe is 78 mm. Echogenicity is diffusely increased with signs of minor hepatosis. There are no signs of periportal fibrosis. The portal vein is 8 mm. The intrahepatic vessels are slightly dilated. Gallbladder: 80x30 mm. The walls are smooth, homogeneous. Echogenicity is increased. The contents are non-homogeneous - suspension. Pancreas: head 29 mm, body 23 mm, tail 17 mm. The contours are uneven. The capsule is thickened, the echogenicity of the capsule is increased. The structure is non-homogeneous. The echogenicity is changed unevenly. Spleen: not enlarged 80x45 mm.

ECG (description) The rhythm is sinus, regular, 110 per minute. Normal position of the electrical axis of the heart, angle L +450°.

## TROPICAL DISEASES

**Teachers:** PhD Fairuza Gilmullina, PhD Alfiya Fazulzyanova, PhD Asiya Bulatova

**Building, Department, classroom** Republican Clinical Infectious Hospital, Department of Infectious diseases, 1,2,3,4.

**Contact details:**

- Telephone number: 89393904547 (**PhD Fairuza Gilmullina**)
- E-mail address: fayruza.gilmullina@yandex.ru
- Office and working hours: 1,2,3 (8-17)

**Total hours - 72 hours:**

Lectures - 10 hours

Practical classes – 30 hours

Independent work (self-study) - 32 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/enrol/index.php?id=3167>).

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the tropical diseases are formation of knowledge about the main pathogens of tropical infectious diseases and methods of their identification; the etiology, pathogenesis and clinical manifestations of tropical infectious diseases; how to diagnose them and carry out prevention; participate in treatment and prescribe rational etiotropic and pathogenetic therapy; provide emergency medical care in critical conditions of infectious genesis.

**Tasks of the discipline:**

To form knowledge in the field of:

- teach students to correctly collect and evaluate the medical history of the disease, focusing on diagnostically significant information characteristic of tropical infectious diseases;
- equip students with the ability to identify clinical syndromes during the objective examination of a patient that suggest the presence of a tropical infectious disease;
- to identify, during an objective examination of the patient, clinical syndromes that suggest the presence of a tropical infectious disease;
- to determine the progression, severity, potential outcomes, and possible complications of tropical infectious diseases;
- to make a logical diagnostic search algorithm, planning laboratory and instrumental examinations, and interpreting the results accurately;
- to carry out a range of therapeutic and preventive measures at the pre-hospital stage, during treatment at home and in hospital;
- to carry out a system of preventive and anti-epidemic measures;
- follow-up observation and medical examination after a tropical infectious disease.

**Course topics:****Calendar plan of lectures**

1. Hemorrhagic fevers, general characteristics of hemorrhagic fevers. Lassa fever (Etiology, epidemiology, pathogenesis, clinical manifestation, diagnostic and treatment, prevention). Marburg fever (Etiology, epidemiology, pathogenesis, clinical manifestation, diagnostic and treatment, prevention). Ebola fever (Etiology, epidemiology, pathogenesis, clinical manifestation, diagnostic and treatment, prevention).
2. Amebiasis. Etiology, pathogenesis, pathological changes in intestinal amebiasis. Classification. Clinical manifestation of the intestinal and extraintestinal amebiasis. Diagnostic. Treatment. Prevention.
3. Leishmaniasis. Epidemiology, pathogenesis. Clinical manifestations of visceral leishmaniasis. Cutaneous leishmaniasis of the Old and New World. Diagnostic. Treatment. Prevention.
4. Schistosomiasis. Relevance for tropical countries. Characteristics of pathogens, their life cycles. Main clinical manifestations of early and chronic stages of urogenital and intestinal schistosomiasis. Diagnostic. Treatment. Prevention.
5. Filariasis. The relevance of the problem for tropical countries. The main types of filariae that have medical significance, their characteristics. The role of macro- and microfilariae in the development of the pathological process. Diagnostic. Treatment. Prevention.

**Calendar plan of laboratory classes**

1. Hemorrhagic fevers, general characteristics of hemorrhagic fevers. Dengue fever, yellow fever, Japanese encephalitis, Kyasanur forest disease, Congo-Crimian HF. African hemorrhagic fevers: Lassa, Ebola, Marburg, Zika fever, Smallpox, zoonotic smallpox (monkeypox, cowpox, buffalopox, Tana pox). Case problem solution. Independent supervision of patients. Differential diagnostics. Test control.
2. Epidemic typhus and Brill-Zinsser disease, typhus, tsutsugamushi, Rocky Mountain spotted fever, Marseilles fever, African tick-borne rickettsiosis, North Australian tick-borne rickettsiosis, vesicular rickettsiosis, Q fever; melioidosis, Buruli ulcer, leprosy; yaws, pinta, bejel. Analysis of clinical cases. Analysis of patients, differential diagnostics. Test control.
3. Malaria (*Plasmodium falciparum*). Distribution of malaria in the world, characteristics of malarial plasmodia, clinical features of different forms of malaria, diagnostics of malaria. Features of the course of tropical malaria. Complications of tropical malaria. Characteristics of the main antimalarial drugs and principles of therapy of different types of malaria.

Treatment of complicated forms of tropical malaria. Analysis of clinical cases. Differential diagnosis. Test control.

4. Leishmaniasis. Visceral leishmaniasis: Indian, Mediterranean-Central Asian, East African, New World visceral leishmaniasis. Old World cutaneous leishmaniasis: anthroponotic, zoonotic, East African, Sudanese. New World cutaneous leishmaniasis. African trypanosomiasis. American trypanosomiasis. Clinical cases. Test control.
5. Schistosomiasis: urogenital, intestinal, Japanese. Opisthorchiasis, clonorchiasis. Fascioliasis. Fasciolopsiasis. Paragonimiasis. Metagonimiasis. Microscopy of preparations. Clinical cases. Test control.
6. Filariasis: wucheriosis, brugiasis, loiasis, onchocerciasis, mansonellosis, dirofilariasis. Strongyloidiasis. Ancylostomiasis. Trichostrongylosis. Dracunculiasis. Diseases caused by migrating larvae of zoonotic helminths. Clinical cases. Final test control.

#### **Text books and required supplies:**

1. 13 basic modules on tropical medicine: textbook / M. Sadig, E. Arwadi, D. Chia et al. - Kazan: Kazan State Medical University, 2018. – 140 p.
2. 14 modules on tropical medicine 202: textbook / M. Sadig. - Kazan: Kazan State Medical University, 2018. - 112 p.
3. <https://e.kazangmu.ru/enrol/index.php?id=3167>

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (oral examination/test/ analysis of clinical cases, abstract).

*Routine performance assessment* (homework, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes

- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of module No. 1. Test**

1. The causative agents of malaria are:
  - A) **protozoa**
  - B) viruses
  - C) bacteria
  - D) rickettsia
2. What disease has the synonym 'kala-azar'?
  - A) Malaria
  - B) Tripanosomiasis
  - C) **Leishmaniasis**
  - D) Liver flukes

### **Example of module No. 2**

A 30-year-old male traveler from a rural area in Kenya presents to the emergency department with a 3-day history of high fever, chills, and severe headache. He reports that his fever is accompanied by sweating and fatigue. He has no significant past medical history and recently returned from a trip to a malaria-endemic region. On physical examination, he has a fever of 39.5°C, splenomegaly, and mild anemia. His laboratory results show thrombocytopenia (platelet count: 100,000/ $\mu$ L) and hemoglobin of 9 g/dL.

1. Preliminary diagnosis.
2. Prescribe an examination plan to clarify the diagnosis.
3. Prescribe treatment, describe the medications.
4. Perform differential diagnostics with other diseases.
5. Make a plan for anti-epidemic measures and prevention.

### **EVALUATION OF THE MODULE ANSWER**

The test of the module consists of 10 questions (hemorrhagic fevers).

The test grade is given in proportion to the percentage of correct answers:

90-100% - grade "excellent"

80-89% - grade "good"

70-79% - grade "satisfactory"

Less than 70% of correct answers - grade "unsatisfactory" or "poor"

The second module consists of clinical case (malaria, leishmaniasis):

Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

## **CLINICAL IMMUNOLOGY**

**Teachers:** Assis. Prof. Luntsov A.V., Assis. Prof. Valeeva A.R., Assis. Prof. Khakimova M.R.

### **Building, Department, classroom:**

1) Republican Clinical Hospital, Polyclinic department (terminal 4), Department of Clinical Immunology and Allergology, rooms 512, 515, 516;

2) 21 st Polyclinic, educational unit, room of Department of Clinical Immunology and Allergology



**Contact details:**

- Telephone number: 89179117010 (Assist. Prof. Alina Valeeva)
- E-mail address: aliv05@mail.ru, immunal@mail.ru
- Office and working hours: Republican Clinical Hospital, Polyclinic department (terminal 4), Department of Clinical Immunology and Allergology, rooms 513 (9-16)

**Total hours — 72:**

- Lectures 10 hours;
- Practical training 30 hours;
- Self-study 32 hours;

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1037>).

**Course objectives:****The purpose of mastering the discipline**

to develop the ability to analyze the patterns of functioning of the immune system, to conduct basic methods of clinical and immunological examination, to formulate a preliminary immunological diagnosis with subsequent referral to an allergist-immunologist; to provide treatment measures in emergency and life-threatening conditions in patients with immune disorders

**Tasks of the discipline:**

- development of knowledge about the structure and functional significance of the immune system;
- development of skills in performing immunological investigations and interpreting the results in order to identify immune disorders;
- development of knowledge about the pathogenesis and principles of diagnosing diseases of the immune system;
- development of knowledge about indications for immunotherapy;
- development of skills in carrying out therapeutic measures in emergency and life-threatening conditions inpatients with immune disorders;
- development of skills in studying modern achievements in the field of clinical immunology and allergology

**Course topics:****Calendar plan of lectures**

1. Allergic rhinitis.
2. Bronchial asthma. Definition, classification, diagnostic tools
3. Bronchial asthma. Principles of treatment
4. Urticaria.
5. Immunological fundamentals of vaccination

**Calendar plan of practical classes**

1. Diagnosis of allergic diseases. Allergic rhinitis.

2. Bronchial asthma. Module 1
3. Urticaria and angioedema. Contact allergic dermatitis.
4. Adverse drug reactions. Module 2
5. Evaluation of immune state of patient.
6. Secondary immunodeficiency. Module 3

**Text books and required supplies:**

1. Handbook on discipline 'Clinical Immunology and Allergology' / Skorokhodkina O.V., Vasilyeva A.A., Khakimova R.F., Klyucharova A.R., Valeeva A.R.– Kazan: KSMU, 2018. – 85 p.
2. Khaitov, R. M. Immunology : textbook / Rakhim M. Khaitov. - 2nd updated edition. - Moscow : GEOTAR-Media, 2022. - 272 p. - 272 c. - ISBN 978-5-9704-7089-3. URL : <https://www.studentlibrary.ru/book/ISBN9785970470893.html>
3. Guidelines on allergic diseases and asthma (GINA available on [ginasthma.org](http://ginasthma.org), guidelines available on [eaaci.org](http://eaaci.org))

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (written papers/oral answer/test/ reports/medical records, reports or other).

*Routine performance assessment* (homework, oral answers, solving clinical cases etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University. For tests: Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Example of module No. 1. Respiratory Allergy**

1. Risk factor for allergic asthma is:
  - A. Nasal polyps
  - B. Chronic urticaria
  - C. Smoking
  - D. Air pollution
  - E. Allergic rhinitis
2. Choose one medication which is not controller medication in asthma treatment :
  - A. omalizumab
  - B. montelukast
  - C. salbutamol
  - D. budesonide
  - E. mometasone

3. Which medication is contraindicated in asthma patients:
- A. ACE inhibitors
  - B. epinephrine
  - C.  $\beta$ -agonists
  - D.  $\beta$ -blockers
  - E. diuretics

**Example of module No. 2 , Skin Allergy, Adverse drug reactions**

1. Clinical manifestations of type I drug allergy
- A. anaphylactoid shock
  - B. anaphylactic shock
  - C. Stevens Johnson syndrome
  - D. anemia
  - E. serum sickness
2. Secondary mediator in the course of anaphylactic shock
- A. prostaglandin
  - B. histamine
  - C. tryptase
  - D. heparin
  - E. serotonin
3. Pathogenetic treatment of urticaria:
- A. LTRA
  - B. antibiotics
  - C. antihistamines
  - D. antipyretics
  - E. topical corticosteroids

**Example of module No. 3. Evaluation of immune state, immunodeficiency.**

1. Which disease is example of secondary immunodeficiency
- A. AIDS
  - B. Hyper IgM syndrome
  - C. DiGeorge's syndrome
  - D. Common variable immunodeficiency
  - E. Hyper IgE syndrome
2. Choose lab test which is used to detect immunoglobulins in serum:
- A. CBC
  - B. ELISA
  - C. flow cytometry method
  - D. PCR
  - E. diaskin-test
3. Primary immunodeficiency associated with:
- A. defect of immune system induced by immunosuppressive medications
  - B. defect of immune system induced by ionizing radiation
  - C. acquired defect of immune system
  - D. genetic defect of immune system
  - E. defect of immune system induced due to malnutrition

**EVALUATION OF THE MODULE ANSWER**

90–100 points are given if the student correctly answered for 90% of questions in a test  
80–89 points are given if the student correctly answered for 80-90 % of questions in a test  
70–79 points are given if the student correctly answered for 70-80 % of questions in a test  
Less than 70 points are given if the student answered for less than 69% of questions in a test

## CLINICAL ELECTROCARDIOGRAPHY

**Teachers:** Prof. Svetlana Mayanskaya, PhD Irina Fairushina

**Building, Department, classroom** Republic Clinical Hospital, Department of Hospital Therapy, 6<sup>th</sup> floor, 1-9 rooms

**Contact details:**

- Telephone number: 8(843)237-32-61
- E-mail address: irina.fayruschina@kazangmu.ru
- Office and working hours: assistant room (9-17)

**Total hours — 108:**

Lectures 18 hours;

Practical classes 45 hours;

Independent work 45 hours.

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes** are usually devoted to detailed study of specific topics and it is being held in each academic group separately. It involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgm.kcn.ru:40404/moodle/login/index.php>).\_\_

**Interview** is a dialogue between the teacher and the student, the purpose of which is to systematize and clarify the student's knowledge, check his/her individual capabilities of mastering the material, completeness of knowledge of theoretical controlled material, ability to public communication (demonstration of skills of public speaking and discussion on professional topics, knowledge of literary language norms, professional terminology).

**Case study** is a problem task in which the student is offered to comprehend a real clinical patient-oriented situation necessary to solve the tactical, diagnostic or therapeutic problem. The student independently formulates the goal, finds and collects information, analyzes it, puts forward hypotheses, looks for options to solve the problem, formulates conclusions, justifies the optimal solution to the situation.

**Testing** is a tool with the help of which a teacher assesses the degree of student's achievement of the required knowledge, skills and abilities. Test preparation includes the creation of a verified system of questions, the actual procedure of testing and the method of measuring the results obtained. The test consists of tasks with a choice of one answer out of five offered: for a correct answer - 1 point, for an incorrect or unspecified answer - 0 points.

**Course objectives: The purpose of mastering the discipline**

The purpose of mastering the module “Clinical electrocardiography” is to familiarize students with the subject and objectives of functional diagnostics in cardiology, teaching students the basic techniques and ECG interpretation.

**Tasks of the discipline**

In the course of studying the discipline the student should know:

- electrophysiologic basics of electrocardiography
- basic principles of functional diagnostics in cardiology
- electrocardiographic symptoms and syndromes in various;
- mechanisms of rhythm and conduction disorders;
- the technique of ECG recording;
- the technique of deciphering electrocardiograms

Be able to:

- prescribe the diagnostic method necessary in a particular case
- interpret the results
- apply electrodes on the patient and record an electrocardiogram;
- be able to decipher an electrocardiogram;
- be able to distinguish electrophysiologic syndromes and symptoms in various diseases;
- assess the severity of electrocardiographic symptoms and syndromes in patients with various diseases;
- evaluate the results of electrocardiographic studies.

### **Course topics**

#### **Calendar plan of lectures**

1. Anatomy and physiology Conduction System of the Heart
2. ECG for cardiac hypertrophy
3. Ventricular Conduction Disturbance
4. ECG signs of ischemia, injury, necrosis.
5. ECG in supraventricular tachycardia and tachyarrhythmias
6. Ventricular preexcitation syndromes and canalopathies
7. ECG for ventricular rhythm disturbances

#### **Calendar plan of practical classes**

1. Anatomy and physiology Conduction System of the Heart. Normal ECG.
2. ECG for cardiac hypertrophy.
3. Ventricular Conduction Disturbance. ECG in sinoatrial and atrioventricular blocks
4. ECG signs of ischemia, injury, necrosis. Locations of myocardial infarction
5. Signs of infarction without ST-segment elevation.
6. ECG signs in infarct-like diseases
7. Ectopic rhythms. ECG in supraventricular tachycardia and tachyarrhythmias. Ventricular preexcitation syndromes and canalopathies
8. ECG for ventricular rhythm disturbances
9. Methods of functional diagnostics in cardiology. Indications. Features of interpretation.

#### **Text books and required supplies:**

1. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson J. eds. Harrison's Principles of Internal Medicine, 21e. McGraw-Hill Education; 2022. Accessed October 10, 2024. <https://accesspharmacy.mhmedical.com/content.aspx?bookid=3095&sectionid=259856983>
2. Kusumoto F. ECG Interpretation: From Pathophysiology to Clinical Application. Springer; Cham, Switzerland: 2020. pp. 1–355.

#### **INTERNET RESOURCES**

1. Electronic catalog of the scientific library of Kazan State Medical University. [http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=521&lang=en](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=521&lang=en)
2. Electronic library system of KSMU <https://lib-kazangmu.ru/english>

3. Student electronic library Student's Konsultant, Books in English [https://www.studentlibrary.ru/ru/catalogue/switch\\_kit/x2018-207.html](https://www.studentlibrary.ru/ru/catalogue/switch_kit/x2018-207.html)
4. Electronic medical library Doctor's Konsultant <http://www.rosmedlib.ru>
5. Scientific Electronic Library Elibrary.ru <http://elibrary.ru>

### **Evaluation and grading:**

*Routine performance assessment* (**interview, case study, ECG interpretation, testing**) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. Rework for missed lectures can be done on the Education Portal. Teachers will inform you of specific deadlines for opening resources. Making up missed practical classes will require completion of all types of practical assignments according to the discipline.

The cycle of discipline “Emergency Cardiology” is completed by *midterm assessment* in the form of a module. The module includes:

- 100% attendance of both lectures and practical classes or work them out to the end of the course;
- during the course of the discipline the student should not have unsatisfactory marks in the journal of practical classes or they should be reworked;
- interview, case study and ECG interpretation.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

Students should have a phonendoscope, workbook, pens, textbooks, scientific literature, lecture materials. At the lecture: pen, lecture materials.

When attending lectures and practical classes it is obligatory to have a clean, ironed white coat and second shoes. When visiting intensive care units, it is obligatory to have a cap, mask, phonendoscope.

During the study of the discipline, the student must keep a workbook. In it the student should make notes of lectures, practical classes, record the results of independent training and work.

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

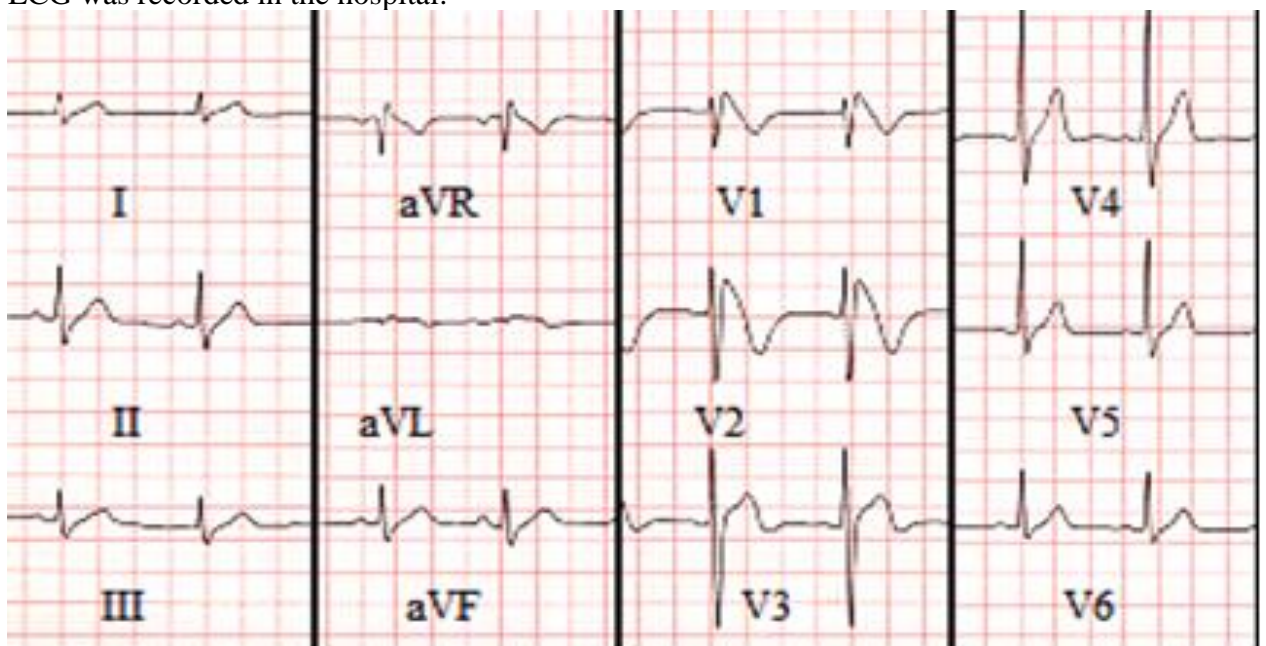
### **Example of Testing**

1. When the electrical axis of the heart is horizontal, the maximum vector is located along the axis of:
  - 1 I LEAD
  - 2 II LEAD
  - 3 III LEAD
  - 4 AVF
  - 5 AVR
  - 6 AVL

2. When recording an ECG, the I lead uses the potential difference between electrodes applied to:
  - 1 LEFT ARM AND RIGHT ARM
  - 2 RIGHT ARM AND LEFT LEG
  - 3 LEFT ARM AND LEFT LEG
  - 4 LEFT LEG AND RIGHT LEG
  
3. The second lead of the ECG records the potential difference between the electrodes applied to:
  - 1 LEFT ARM AND RIGHT ARM
  - 2 RIGHT ARM AND LEFT LEG
  - 3 LEFT ARM AND LEFT LEG
  - 4 LEFT LEG AND RIGHT LEG
  
4. The third lead of the ECG reflects the potential difference between the electrodes applied to:
  - 1 LEFT ARM AND RIGHT ARM
  - 2 RIGHT ARM AND LEFT LEG
  - 3 LEFT ARM AND LEFT LEG

#### **Example of Case study**

A young 25-year-old man lost consciousness while jogging. The ambulance doctor arrived in time and recognized ventricular fibrillation. Resuscitative measures were successful. The following ECG was recorded in the hospital:



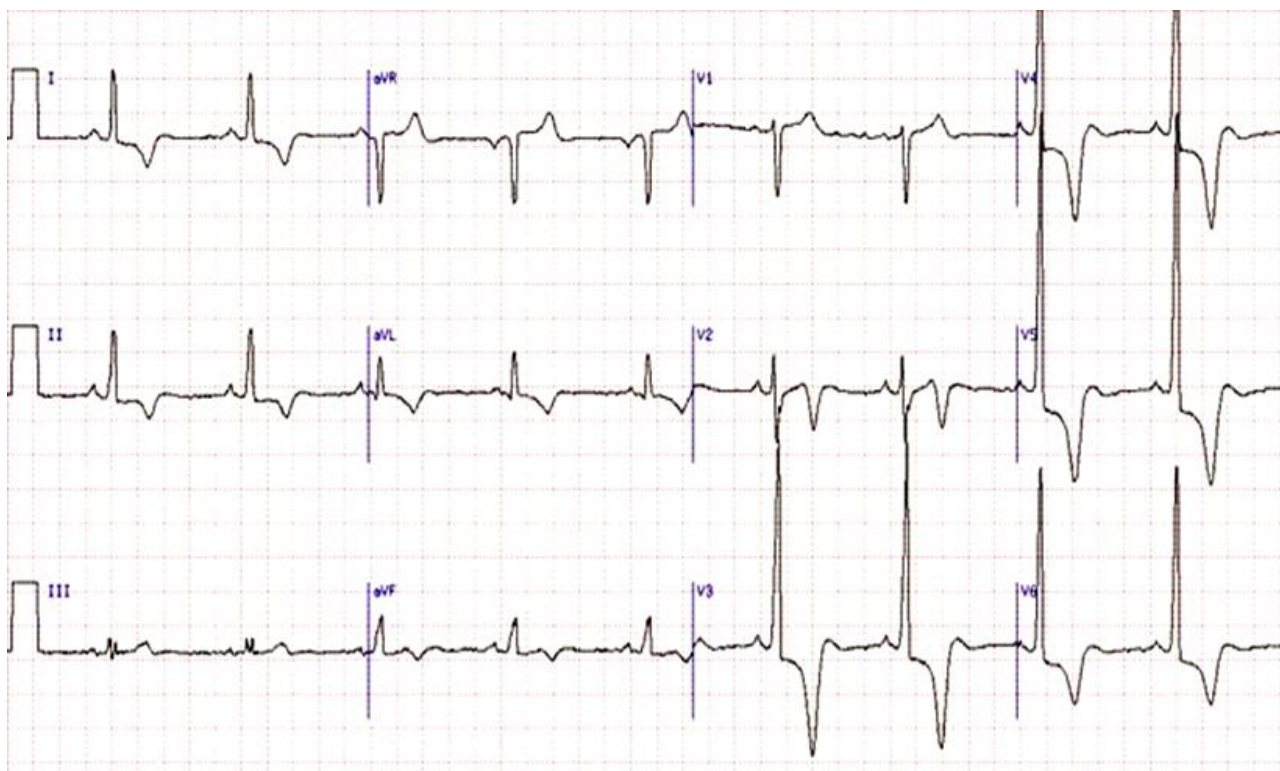
1. Describe the ECG
2. Make a diagnosis.
3. Prepare examination and treatment plan.

#### **Example of Interview of practical class «Methods of functional diagnostics in cardiology. Indications. Features of interpretation»**

1. Indications for functional diagnostic methods.
2. 24-hour ECG monitoring.
3. Functional tests.
4. Ultrasound diagnostic methods
5. Interpretation.

#### **Example of ECG interpretation**





ECG analysis includes:

1. Assessment the heart rhythm and HR
2. Assessment of duration of intervals that characterize the duration of the phases of cardiac activity.
3. Assessment of the axis
4. Assessment the QRS complex
5. Description the ST segment, T wave

## EXTRAGENITAL PATHOLOGY IN PREGNANT WOMEN

**Teachers:** Prof. Abdulganieva D.I., MD, PhD, Head of Hospital Therapy Department, Prof. Maksudova A.N., MD, PhD, Assistant Prof. Muhametova D.D., MD, PhD, Assistant Prof. Nuriahmetova T.Y., MD, PhD, Assistant Prof. Kosterina A.V., MD.

**Building, Department, classroom #** RCH, teaching block, 6 floor, classrooms 1-9

**Contact details:**

Telephone number: +7(843)2373261

E-mail address: med.laborant@mail.ru

Office and working hours: RCH, teaching block, 6 floor, 9-15

**Total 72 hours**

Lectures 10 hours

Practical training 30 hours

Self-study 32 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.



**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://safe.sur.ly/o/e.kazangmu.ru/AA000014?pageviewId=desktop-302e353132313031303020313732393130363234302031323431393137393138>).

### **Course objectives:**

#### **The purpose of mastering the discipline**

The purpose of mastering the discipline "Extragenital pathology in pregnant women" is to improve the student's professional knowledge necessary for professional activities in the management of pregnant patients with extragenital pathology.

#### **Tasks of the discipline:**

To form knowledge in the field of mastering the discipline "Extragenital pathology in pregnant women":

- Formation of knowledge on the organization of health care and legal issues in the context of health care reform.
- Improving knowledge on the interpretation of modern methods of examination of extragenital pathology during pregnancy.
- Improving professional competencies in organizing and providing medical care to pregnant women with therapeutic problems.
- Improving professional competencies in the management of pregnant women from the position of a therapist.

### **Attendance Requirements**

You are expected to attend all academic events. Attendance will be recorded in lecture and seminar logs. In case of illness or other reasons why you will not be able to attend classes, you must notify the dean's office and department, provide a medical certificate or permission from the dean's office to miss classes for a valid reason.

Missed lectures can be made up on the educational portal. Teachers will inform you of the specific dates for opening the educational portal.

Missed seminar classes will require completing all types of practical assignments according to the course program in these classes.

Students who miss more than 50% of classes will have to retake the course.

Students who believe that their work assessment was affected by extraordinary circumstances can write a reasoned explanation to the head of the department or the dean's office.

Necessary equipment for lectures and practical classes

During classes, the student must have a phonendoscope, a workbook, pens, textbooks, scientific literature, lecture materials. During a lecture: a pen, lecture materials.

### **Current control**

Types of current control:

- Oral survey;
- Testing;
- Solving situational problems;

Oral survey

This is a dialogue between a teacher and a student, the purpose of which is to systematize and clarify the student's existing knowledge, check his individual ability to assimilate the material, completeness of knowledge of the theoretical controlled material, ability to communicate in public (demonstration of public speaking skills and conducting a discussion on professional topics, mastery of the norms of literary language, professional terminology).

### **Description of the assessment scale.**

Less than 7 points are awarded if the student demonstrates a lack of knowledge in the section being studied; shows low activity in the discussion; gives incorrect answers to the teacher's leading questions.

7 points are awarded if the student demonstrates knowledge of more than half of the required material; shows low activity in the discussion; gives positive answers to most of the teacher's leading questions.

8 points are awarded if the student demonstrates knowledge of the material in the section based on familiarization with the required literature; participates in the discussion; gives clear answers to the teacher's leading questions.

9 points are awarded if the student demonstrates knowledge of the material in the section based on familiarization with the required literature and additional modern publications; actively participates in the discussion; gives logical, reasoned answers to the questions posed without leading questions; is fluent in scientific terminology.

10 points are awarded if the student demonstrates brilliant knowledge of the material in the section based on familiarization with the required literature and additional modern publications; actively participates in the discussion; gives logical, reasoned answers to the questions posed without leading questions; is fluent in scientific terminology.

### **Midterm assessment**

The course cycle "Extragenital pathology in pregnant women" ends with midterm assessment in the form of a credit. The credit includes:

- 100% attendance of both lectures and practical classes or their completion by the end of the course of the discipline;
- during the course of the discipline, the student should not have any unsatisfactory grades in the practical classes journal or they should be completed;
- oral questioning on a theoretical issue, situational task. The assessment criteria are specified above.

### **Course topics:**

#### **Calendar plan of lectures**

1. Tactics of managing pregnant women with extragenital pathology
2. Physiological changes in the gastrointestinal tract, hepatobiliary system of a healthy pregnant woman.
3. Anemia and coagulopathy during pregnancy
4. Pathology of the urinary system during pregnancy. Pregnancy and kidneys.
5. Syndrome of arterial hypertension in pregnant women.

#### **Calendar plan of practical training**

1. Physiological changes in the body of a healthy pregnant woman. Cardiovascular system. Gastrointestinal tract, hepatobiliary system.
2. Physiological changes in the body of a pregnant woman. Hematopoietic organs. Urinary system. Pulmonary system. Endocrine system. Musculoskeletal system.
3. Pathological conditions in pregnant women (diseases caused by pregnancy itself, anemia, gastrointestinal tract pathology).
4. Pathological changes in pregnant women (urinary system, arterial hypertension, heart rhythm disturbances)
5. Clinical pharmacology in pregnant women. Emergency conditions.

### **Text books and required supplies:**

1. Medical care for women with gynecological diseases at different periods of life: textbook [Electronic resource] / Dzigua, M. V. - M.: GEOTAR-Media, 2014. - <http://www.studmedlib.ru/book/ISBN9785970430965.html>

2. Practical skills for a graduate of a medical university [Electronic resource] / Bulatov S.A., Anisimov O.G., Abdulganieva D.I., Akhmadeev N.R., Bikkineev F.G., Gorbunov V.A., Orlov Yu.V., Petukhov D.M., Sadykova A.R., Sayapova D.R. - Kazan: Kazan State Medical University. - <http://www.studmedlib.ru>
3. Some therapeutic problems in obstetrics: a series of lectures / [I. G. Salikhov et al.]; Kazan. State Medical University of the Ministry of Health of the Russian Federation, Department of Hospital Therapy. - Kazan: KSMU. Part 1: Physiological changes in the body of a healthy pregnant woman; diseases caused by the pregnancy itself, 2012. - 94 p.
4. Abdulganieva D.I., Abdulkhakov R.A., Galyautdinov G.S. et al. Outline of a medical history for students. Study guide. - Kazan: MedDoc Publishing House, 2021. - 38 p.
5. Abdulganieva D.I., Galyautdinov G.S., Bodryagina E.S., et al. Emergency care for diseases of internal organs. Study guide. - Kazan: MedDoc Publishing House, 2021. - 72 p.
6. Kollef, Marin H.-Washington University (Saint Louis, Mo.).-Isakow, Warren The Washington Manual of Critical Care, 2018
7. [http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
8. Shital Gandhi-Dan Farine Obstetric Medicine : The Subspecialty at the Intersection of Internal Medicine and Obstetrics, 2020  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)
- a. Gerald G Briggs-Roger K Freeman-Craig V TowersAlicia B Forinash Briggs Drugs in Pregnancy and Lactation: A Reference Guide to Fetal and Neonatal Risk, 2021  
[http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=108&lang=ru](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=108&lang=ru)

### **Evaluation and grading:**

Monitoring progress is carried by the end of each class day.

*Routine performance assessment* is carried out using 10point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt, the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

### **Example of case for practical training No. 1.**

A 33-year-old G1P0 at 35 weeks' gestation by first-trimester sonography presents with a 3-day history of malaise, anorexia, nausea, and vomiting. Her prenatal course has been uncomplicated to date. She denies a history of medical problems and surgeries. On physical examination, the patient appears ill, with jaundice. Vitals: temperature, 98.9°F; BP, 120/78 mm Hg; pulse, 105 bpm; respiratory rate, 18 breaths per minute, lungs clear, cardiac regular rhythm. HR, 99 beats per minute with grade 2/4 systolic ejection murmur. Fundal height is 33 cm; epigastric tenderness is noted without guarding or rebound. Extremities are without edema or tenderness. The fetal heart rate tracing shows a baseline of 150 seconds, moderate variability, positive accelerations, no decelerations. Irregular contractions every 10 to 25 minutes are noted on tocodynamometer, although the patient does not perceive them. Her cervix is closed and long on digital examination.

Bedside ultrasound shows fetal biometry consistent with 34 weeks, anterior placenta, and normal amniotic fluid. During the evaluation, the patient has three episodes of emesis. Intravenous fluids with potassium repletion are started and antiemetics are administered. Laboratory results are as follows: Hgb 12 mg/dL, Hct 33%, WBC  $19 \times 10^3/\mu\text{L}$ , platelet count 127,000/mm<sup>3</sup>, AST 482 IU/L, ALT 402 IU/L, conjugated bilirubin 5.2 mg/dL, total bilirubin 6.0, LDH 302, serum creatinine 1.1 mg/dL, serum glucose 51 mg/dL, K<sup>+</sup> 3.0 mEq/L. Amylase, lipase, ammonia, uric acid, and coagulation studies are within normal range. Urine analysis is only remarkable for specific gravity 1.03 and large ketones but otherwise negative.

- What is the differential diagnosis?
- What is the most likely diagnosis?
- What are the maternal risks associated with this diagnosis?
- What are the fetal risks associated with this diagnosis?

### **Example of answer to case for practical training No. 1.**

This is a 33-year-old G1 at 35 weeks gestation with malaise, nausea, vomiting, abdominal tenderness as well as clinical and laboratory evidence of liver dysfunction.

Differential diagnosis: In the second and third trimester, acute fatty liver of pregnancy (AFLP), intrahepatic cholestasis of pregnancy (IHCP), and severe preeclampsia with HELLP (hemolysis, elevated liver enzymes, low platelets) should be considered in a patient with evidence of liver dysfunction. Other conditions that may occur at any gestational age include viral hepatitis, pancreatitis, drug toxicity, cholelithiasis or rarely, malignancy.

Conditions associated with nausea, vomiting, and abdominal pain that should also be considered in the differential include pyelonephritis, appendicitis, and hyperemesis gravidarum (HEG), however, these are less likely in this case.

Most likely diagnosis: The most likely diagnosis is AFLP given this patient's symptoms, evidence of liver dysfunction, and hypoglycemia.

Maternal risks associated with this diagnosis: Maternal complications include pulmonary edema, coagulopathy, acute renal failure, infection, pancreatitis, diabetes insipidus (DI), hepatic encephalopathy, coma, liver transplantation, and maternal death.

Fetal risks associated with this diagnosis: Fetal demise is a potential complication with AFLP if the diagnosis is delayed and delivery is not expedited. Prematurity complications are increased due to risk of both spontaneous and iatrogenic preterm birth. The fetus may also be affected with a fatty acid oxidation disorder

## **EMERGENCY CARDIOLOGY**

**Teachers:** Prof. Svetlana Mayanskaya, PhD Irina Fairushina

**Building, Department, classroom** Republic Clinical Hospital, Department of Hospital Therapy, 6<sup>th</sup> floor, 1-9 rooms

### **Contact details:**

- Telephone number: 8(843)237-32-61
- E-mail address: irina.fayruschina@kazangmu.ru
- Office and working hours: assistant room (9-17)

### **Total hours — 72:**

- Lectures 10 hours;

- Practical classes 30 hours;
- Independent work 32 hours.

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practical classes** are usually devoted to detailed study of specific topics and it is being held in each academic group separately. It involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<http://www.kgmu.kcn.ru:40404/moodle/login/index.php>).\_\_

**Interview** is a dialogue between the teacher and the student, the purpose of which is to systematize and clarify the student's knowledge, check his/her individual capabilities of mastering the material, completeness of knowledge of theoretical controlled material, ability to public communication (demonstration of skills of public speaking and discussion on professional topics, knowledge of literary language norms, professional terminology).

**Case study** is a problem task in which the student is offered to comprehend a real clinical patient-oriented situation necessary to solve the tactical, diagnostic or therapeutic problem. The student independently formulates the goal, finds and collects information, analyzes it, puts forward hypotheses, looks for options to solve the problem, formulates conclusions, justifies the optimal solution to the situation.

**Testing** is a tool with the help of which a teacher assesses the degree of student's achievement of the required knowledge, skills and abilities. Test preparation includes the creation of a verified system of questions, the actual procedure of testing and the method of measuring the results obtained. The test consists of tasks with a choice of one answer out of five offered: for a correct answer - 1 point, for an incorrect or unspecified answer - 0 points.

### **Course objectives: The purpose of mastering the discipline**

The purpose of mastering the discipline “**Emergency Cardiology**” is to systematize and expand the holistic understanding of emergency cardiology as a section of emergency medicine, which is one of the foundations of medical education, the acquisition of key competencies in the diagnosis, treatment and prevention of emergency conditions of cardiology.

### **Tasks of the discipline**

Objectives of mastering the discipline “Emergency cardiology” include:

- gaining knowledge about etiology, pathogenesis, classification, clinic, treatment of emergency conditions in cardiology;
- consolidation and improvement of professional medical skills of examination of cardiologic patients, construction of diagnostic hypothesis;
- formation of medical judgment (ability to identify the leading syndromes in various emergency conditions on the basis of own information about the patient, to make a detailed clinical diagnosis);
- teaching students to substantiate diagnostic ideas about the patient using the anamnesis, physical examination, laboratory and instrumental methods;
- mastering the method of differential diagnosis of emergency conditions in cardiology;
- mastering the basic principles of emergency care for typical urgent conditions in cardiology;
- acquisition of skills of independent management of patients using theoretical knowledge and propaedeutic techniques.

### **Course topics**

#### **Calendar plan of lectures**

1. ACS with ST-segment elevation.

2. Non ST-elevation acute coronary syndrome.
3. Hypertensive crisis and differential treatment.
4. Atrial fibrillation. Paroxysmal supraventricular tachycardia. Paroxysmal ventricular tachycardia. Ventricular fibrillation. Conduction disorders.
5. Acute left- and right-sided heart failure.
6. Pulmonary embolism.

#### **Calendar plan of practical classes**

1. ACS with ST-segment elevation.
2. Non ST-elevation acute coronary syndrome.
3. Hypertensive crisis and differential treatment. Pulmonary embolism.
4. Atrial fibrillation. Paroxysmal supraventricular tachycardia. Paroxysmal ventricular tachycardia. Ventricular fibrillation. Conduction disorders.
5. Acute left- and right-sided heart failure. Decompensation of chronic heart failure.

#### **Text books and required supplies:**

1. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson J. eds. Harrison's Principles of Internal Medicine, 21e. McGraw-Hill Education; 2022. Accessed October 10, 2024. <https://accesspharmacy.mhmedical.com/content.aspx?bookid=3095&sectionid=259856983>
2. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Acute-and-Chronic-Heart-Failure>
3. 2023 ESC Guidelines for the management of acute coronary syndromes <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Acute-Coronary-Syndromes-ACS-Guidelines>
4. 2019 Guidelines on Acute Pulmonary Embolism (Diagnosis and Management of) <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Acute-Pulmonary-Embolism-Diagnosis-and-Management-of>
5. 2024 ESC Guidelines for the management of elevated blood pressure and hypertension <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Elevated-Blood-Pressure-and-Hypertension>
6. 2024 ESC Guidelines for the management of atrial fibrillation <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Atrial-Fibrillation>
7. 2019 Guidelines on Supraventricular Tachycardia (for the management of patients with) <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Supraventricular-Tachycardia>
8. 2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Ventricular-Arrhythmias-and-the-Prevention-of-Sudden-Cardiac-Death>

#### **INTERNET RESOURCES**

1. Electronic catalog of the scientific library of Kazan State Medical University. [http://lib.kazangmu.ru/jirbis2/index.php?option=com\\_irbis&view=irbis&Itemid=521&lang=en](http://lib.kazangmu.ru/jirbis2/index.php?option=com_irbis&view=irbis&Itemid=521&lang=en)
2. Electronic library system of KSMU <https://lib-kazangmu.ru/english>
3. Student electronic library Student's Konsultant, Books in English [https://www.studentlibrary.ru/ru/catalogue/switch\\_kit/x2018-207.html](https://www.studentlibrary.ru/ru/catalogue/switch_kit/x2018-207.html)
4. Electronic medical library Doctor's Konsultant <http://www.rosmedlib.ru>
5. Scientific Electronic Library Elibrary.ru <http://elibrary.ru>

#### **Evaluation and grading:**

*Routine performance assessment* (**interview, case study, ECG interpretation, testing**) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. Rework for missed lectures can be done on the Education Portal. Teachers will inform you of specific deadlines for opening resources. Making up missed practical classes will require completion of all types of practical assignments according to the discipline.

The cycle of discipline “Emergency Cardiology” is completed by *midterm assessment* in the form of a module. The module includes:

- 100% attendance of both lectures and practical classes or work them out to the end of the course;
- during the course of the discipline the student should not have unsatisfactory marks in the journal of practical classes or they should be reworked;
- interview, case study and ECG interpretation.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

Students should have a phonendoscope, workbook, pens, textbooks, scientific literature, lecture materials. At the lecture: pen, lecture materials.

When attending lectures and practical classes it is obligatory to have a clean, ironed white coat and second shoes. When visiting intensive care units, it is obligatory to have a cap, mask, phonendoscope.

During the study of the discipline, the student must keep a workbook. In it the student should make notes of lectures, practical classes, record the results of independent training and work.

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of Testing**

1. Select the main feature that can be used to make the diagnosis of advanced angina pectoris:
  - A. a. increased frequency and worsening severity of attacks of angina pectoris
  - B. a typical painful attack first occurred a month ago
  - C. a typical painful attack is accompanied by changes of the ventricular end-systolic complexes on the ECG
  - D. pain attacks occur at night at rest
2. Which of the following conclusions about Prinzmetal's angina are true?
  - A. ST-segment elevation on ECG during an attack
  - B. the attack is triggered by physical activity
  - C. is a variant of unstable angina pectoris
  - D. the cause of pain is coronary spasm
3. Select the main features on the basis of which the diagnosis of a special form of angina pectoris is made:
  - A. the painful attack occurs at night
  - B. the attacks are associated with physical activity



- C. painful attacks are accompanied by ST-segment elevation
  - D. pain attacks are accompanied by ST segment depression
  - E. the main cause of pain is stenotic atherosclerosis of the coronary arteries.
4. Unstable angina refers to the following forms of CHD:
- A. first-onset angina pectoris
  - B. angina pectoris (3 FC)
  - C. early postinfarction angina pectoris
  - D. special form of angina pectoris
  - E. progressive angina
  - F. recurrent myocardial infarction

### **Example of Case study**

During a home visit by a doctor to 62 years old patient S., the patient complained of intense compressive retrosternal pain, accompanied by a sense of fear of death, sharp weakness, heart palpitations. The condition worsened sharply this morning, sharp retrosternal pain lasted more than 40 minutes, there was marked weakness, cold clammy sweat, shortness of breath, palpitations. Nitroglycerin orally was with weak effect.

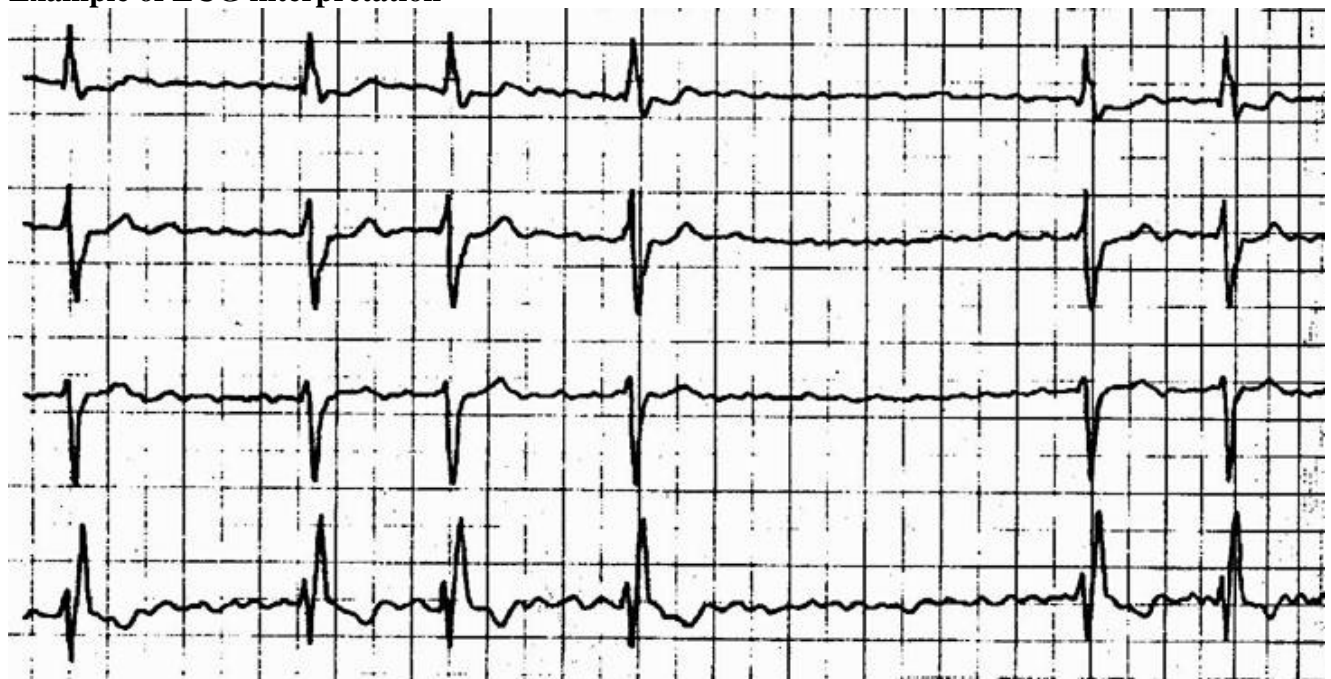
Physical examination: the condition is severe. Lies motionless in bed. Skin with a pale grayish shade, moist, cold. HR 22 per minute. Breathing sounds in the lungs are stiff, no wheezing. Heart tones are muffled, arrhythmic with single extrasystoles. Pulse - 100 per minute, arrhythmic, weak filling and tension. BP 100/70 mm Hg. The abdomen is soft, painless. Liver is palpable at the edge of the rib arch. Last urinated 4 hours ago.

1. Make a diagnosis.
2. Make and write down the sequence of actions of the district doctor, ambulance doctor, emergency room doctor and intensive care unit doctor after diagnosis.

### **Example of Interview of practical class «Acute left- and right-sided heart failure. Decompensation of chronic heart failure»**

1. Clinical manifestations of heart failure and their pathogenesis
2. The concept of acute cardiac and vascular insufficiency.
3. Principles of emergency care of acute left and right ventricular failure

### **Example of ECG interpretation**



ECG analysis includes:



1. Assessment the heart rhythm and HR
2. Assessment of duration of intervals that characterize the duration of the phases of cardiac activity.
3. Assessment of the axis
4. Assessment the QRS complex
5. Description the ST segment, T wave

## ABDOMINAL EMERGENCY SURGERY

**Teachers:** PhD Aidar Shakurov.

**Building, Department, classroom** # Orenburgskiy trakt Street, building 138, 6 floor

**Contact details:**

- Telephone number: +79046601139 (PhD Aidar Shakurov)
- E-mail address: aydarsha@gmail.com
- Office and working hours: 8-16

**Total hours – 72:**

Lectures 10 hours

Practice classes 30 hours

Independent work 32 hours

**Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Practice classes** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Independent work** is working with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/>).

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **Abdominal Emergency Surgery** discipline are formation of systematic knowledge and skills of management of patients with acute surgical pathology of abdominal viscera.

**Tasks of the discipline:**

- to form basic knowledge of etiology, pathophysiology and clinical presentation of surgical diseases, of laboratory and instrumental diagnostic studies and management of surgical patients
- to form knowledge of most common urgent conditions related to abdominal pathology

**Course topics:**

**Calendar plan of lectures**

1. Provision of healthcare to patients with emergent abdominal pathology.
2. Care in preoperative and postoperative periods in patients with abdominal emergency.
3. Basics of enteral and parenteral nutrition in abdominal emergencies.

4. Basics of infusion therapy in abdominal emergencies.
5. Diagnosis and management of different types of shock in patients with abdominal emergency.

#### **Calendar plan of practice classes**

1. Provision of healthcare to patients with emergent abdominal pathology.
2. Care deontology in patients with emergent abdominal pathology
3. Surgical care in admission department and operating unit.
4. Basics of diagnosis of emergent abdominal pathology using physical, laboratory and instrumental investigation.
5. Care in preoperative and postoperative periods in patients with abdominal emergency.
6. Surgical infection in patients with abdominal emergency.
7. Detoxification in patients with abdominal emergency.
8. Basics of enteral and parenteral nutrition in abdominal emergencies.
9. Antibiotic prophylaxis and antibiotic treatment in urgent abdominal surgery.
10. Basics of infusion therapy in abdominal emergencies.
11. Wounds management in patients with abdominal emergency.
12. Diagnosis and management of different types of shock in patients with abdominal emergency.
13. Diagnosis and management of bleeding in patients with abdominal emergency.

#### **Text books and required supplies:**

1. Textbook of Emergency General Surgery. Federico Coccolini, Fausto Catena. 2023.  
<https://doi.org/10.1007/978-3-031-22599-4>
2. Surgery. An Introductory Guide for Medical Students. Umut Sarpel. 2021.  
<https://doi.org/10.1007/978-3-030-65074-2>

#### **Evaluation and grading:**

*Routine performance assessment* (homework, tests during classes) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

Overall student rating is build up from class attendance, routine performance assessment, midterm assessment results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of MCQ**

Life threatening conditions are except:

- 16. hectic temperature
- 17. active gastrointestinal bleeding
- 18. anaphylactic shock

### **EVALUATION OF THE MODULE ANSWER**

The grade for the test is set in proportion of correct answers:

90-100% - excellent.

80-89% - good.

70-79% - satisfactory.

Less than 70% of correct answers is "failing grade".

Evaluation criteria for case study.

"excellent" - the student freely, with deep knowledge of the material, correctly and fully solved the case study (all tasks are completed, all questions are correctly answered).

"good" - the student is quite convincing, with minor theoretical mistakes correctly answered the questions or made minor mistakes in the answer;

"satisfactory" - if the student is not confident enough, answered to the questions of a case study with significant theoretical errors and poorly mastered skills;

"failing grade" - the student has very little understanding of the subject and made significant mistakes in answering to most of the questions of the case study, incorrectly answered to additional questions.

## **FOREIGN LANGUAGE**

### **Teachers teaching the course:**

Associate Professor Fidaeva L.I., Associate Professor Chevela O.V., Associate Professor Fedotova S.I., Associate Professor Evdokimova A.G., Associate Professor Amirova R.M., Associate Professor Svetlova R.M., Associate Professor Ibragimova L.G., Associate Professor Alikova E.A., Associate Professor Kuznetsova E.G., Associate Professor Gilemshina A.G., Senior Lecturer Fomina S.E., Senior Lecturer Yakubova L.S., Senior Lecturer Nikityuk V.P., Senior Lecturer Baltaeva V.T., Senior Lecturer Yusupova L.G.

**Building, department, auditorium #.** NUC, Department of Russian and Tatar languages,

**Contacts:** S.I. Fedotova Phone number: 88432364530

Courses: 1-3

Semesters: 1,2,3,4,5

**Total 756 hours.**

Practical classes (seminars) 402 hours.

Independent work 354 hours.

Credit with grade – 1, 2, 3,4 semesters

Exam –5 semester.

Credit units of labor intensity (ZET) 21

### ***Course Description:***

Russian language is a general purpose of the discipline "Foreign language" in a medical university

has an applied, practical orientation and is designed to solve the problems of teaching Russian to foreign students of a medical specialty in order to prepare for clinical practice in Russian, to live and study in a Russian language environment, to perceive the basic values of Russian culture. To study the discipline, knowledge, skills and abilities are required in the amount of the basic level (A2) of proficiency in Russian as a foreign language, namely:

*Know:*

- methods of independent work with educational material;
- didactic units for study and (or) repetition (reinforcement);
- educational and methodological materials (textbooks, teaching aids, electronic training programs, etc.) necessary for effective independent and scientific work;
- the main communicatively significant grammatical categories of the Russian language (independent parts of speech, prepositions, conjunctions), syntax of simple and complex sentences in accordance with the profile being studied;
- the main methods of combining lexical units and the main word-formation models;
- elementary norms of Russian speech etiquette;
- 2,300 units of common vocabulary;
- terminological vocabulary in the medical specialty;
- lexical and grammatical models of scientific style of speech.

*Be able to:*

- deepen and expand theoretical knowledge and practical skills in the discipline;
- perform current work on educational material; tests and assignments in practical classes;
- work with banks of tasks, multimedia educational, information and reference and control programs, prepared special audio and video materials.
- activate cognitive activity;

a) in reading:

- be able to read texts taken from different sources, understand the basic and additional information of adapted texts of regional studies, informational and journalistic, social and professional nature;
- read and understand texts from the social and cultural and social and everyday communication spheres, using different types of reading.
- read texts from recommended educational literature, extract the necessary information and convey it orally and in writing with varying degrees of condensation;
- make various types of plans for the texts read;
- read and understand educational texts that correspond in difficulty to the material being studied; - read and understand (with the help of a dictionary) texts on the specialty.

b) in listening

- listen to and understand the information contained in a monologue,
- audit the information of an oral message from the social and cultural and social and everyday sphere of communication with subsequent transmission of its content with varying degrees of condensation;

c) in speaking

- understand the basic information presented in individual monologues and dialogues of a social and everyday and socio-cultural nature;
- be able to initiate a dialogue in simple situations of a standard type, maintain a conversation about oneself, a friend, family, studies, work, learning a foreign language, working day, free time, hometown, health, weather, etc., and also construct one's own statement based on the text read;
- use the acquired skills of formulating statements about one's intentions in a limited set of situations
- apply grammatical norms and a minimum vocabulary in speech.
- independently generate a text according to a specified model, construct a coherent detailed statement on a given topic, be able to conduct dialogues of various types;

- express one's own attitude to the facts, events set out in the text, the characters and their actions.
- understand the content of the interlocutor's statements;
- adequately respond to the interlocutor's remarks;
- establish and maintain social contacts with other people (acquaintance, greeting, addressing acquaintances and strangers, expressing gratitude and apologies
- express assessments, opinions and subjective-emotional attitudes towards persons, objects, events and actions;
- receive and transmit specific information about people, facts, events.
- apply grammatical norms and a minimum vocabulary in speech;
- conduct a dialogue on educational, everyday and professional topics. - reproduce information presented orally and in writing (retelling).

d) in writing

- be able to write a short letter, note, congratulations, etc., outline the main content of the source text, based on questions
- construct a written monologue of a reproductive nature based on a read or listened to text in accordance with the communicative setting;
- understand a statement on the topic of the specialty;
- construct a written monologue of a reproductive nature based on a read or listened to text in accordance with the communicative setting.

*Have:*

- linguistic, speech and actually communicative material necessary for solving the following communicative tasks:
- master the elementary norms of the Russian literary language;
- speech genres of question and communication of information;
- oral and written speech skills.
- linguistic, speech and communicative material, necessary for mastering the elementary and basic level for solving the following communicative tasks:
- master the norms of Russian speech etiquette when meeting people, when addressing senior members of the teaching staff;
- speech genres of asking and communicating information, greetings, farewells, gratitude, requests, refusals, apologies and congratulations.
- linguistic, speech and communicative material necessary for understanding the studied specialized texts, including medical terminology.

### ***Course objectives: The purpose of mastering the discipline***

Within the framework of a given program, three learning purposes are implemented: practical, general education, and educational.

In a language environment, learning is complex, as it includes: 1) a practical (communicative) goal, i.e. the purpose of learning to communicate in Russian;

2) an educational purpose, i.e. the purpose of expanding the cognitive base of students through the formation of metalanguage, regional studies, professional and universal knowledge;

3) the educational purpose, which consists in forming a positive attitude among foreign students towards Russia, its history, culture, and people.

The general education purpose is to form for students

knowledge of regional studies (about the geography and history of Russia, about the current state of society, about material and spiritual culture);

about the Russian language in comparison with the native language — knowledge that allows you to assimilate a new system of concepts through which reality can be perceived.

The educational purpose also involves the development of:

- attention, memory and thinking;
- communication and cognitive abilities;

- general academic skills and abilities — to work with a book and a dictionary, express your thoughts in written and oral forms, etc.

Educational purpose are solved in the course of academic and extracurricular work and are aimed at forming students' commitment, tolerance, the ability to behave with fellow students, seniors and patients, to comply with the internal regulations of KSMU, the rules of stay in the territory of the Russian Federation.

Educational purpose and objectives of the course

1. Fostering tolerance towards representatives of a foreign cultural environment.
2. Teaching the basic techniques of effective intercultural interaction.
3. Fostering interest in further study of the Russian language system.
4. Education of a harmoniously developed linguistic personality.

***List of language competencies acquired by students upon completion of their studies:***

1. Pronunciation and intonation minimum:

2. Word formation and morphology:

2.1. Word composition.

2.2. Grammatical minimum.

A) Noun. Animate and inanimate nouns. Gender and number of nouns. Case system of nouns. Formation, meaning and use of cases.

B) Pronoun

C) Adjective

D) Verb

E). Numeral.

E) Adverb.

G) Service parts of speech

3. Syntax.

***The place of the discipline (module) in the structure of the educational program***

The discipline "Foreign Language" refers to the humanitarian cycle of disciplines.

The discipline "Foreign Language" in the 1st year is a new discipline and does not imply a connection with other previous courses and disciplines.

The discipline "Foreign Language" is auxiliary in the study of the following disciplines: history of pharmacy, botany, physiology with the basics of anatomy, philosophy, microbiology, etc. The peculiarity of the discipline is its applied and practical focus - preparing students for clinical practice, transferring theoretical knowledge to the sphere of professional communication in the country of their immediate residence and training.

The area of professional activity of foreign graduates who have mastered the pharmacist program includes pharmaceutical activity in the sphere of circulation of medicines in Russian, in accordance with the current legislation of the Russian Federation and professional standards.

***Learning objectives of the discipline:***

***As a result of studying the discipline, students must master the following competencies:***

**General cultural competencies:**

OK-5 (readiness for self-development, self-realization, self-education, use of creative potential).

OK-8 (readiness to work in a team, tolerant perception of social, ethnic, religious and cultural differences).

**Professional competencies:**

OPK-2 (readiness for oral and written communication in Russian and foreign languages to solve professional tasks)

***Calendar of practical classes  
1,2 semesters***

№	Sections / Topics Discipline	Total labor intensity (hours)	Types of educational activities, including independent work of students and workload (in hours)			Forms of current monitoring of academic performance
			Topics of educational activity, including independent work of students and workload (in hours)		Independent work of students	
			lectur es	Practical classes		
1.	Section 1. Introductory phonetic course (Lessons: 1-5).			54	52	
2.	Topic 1.1.  Phonetics. Vowels. Voiceless and voiced consonants. Sonants.  Intonation constructions IK-1 and IK-4. Complex sentences with connecting and adversative conjunctions.			12	16	dictation, role play, reading subtest, listening (distance course).
3.	Topic 1.2.  Phonetics. Correlation of phonemes and their letter designations. Affricates.  Category of gender. Classes of pronouns			8	12	dictation, role play, reading subtest, writing subtest, speaking subtest, listening subtest.
4.	Topic 1.3.  Phonetics. Soft consonants. Grammar. Category of number. Category of animate/inanimate. Concept of conjugation. Verbs of the first conjugation.			12	12	Vocabulary dictation, dictation with grammar task, role play, test, listening and a test (distance course).

	Concept of subject and predicate.					
5.	Topic 1.4. Meaning of the direct object. Verbs of the second conjugation. Category of adverb. Adverbs of manner.			18	12	Reading subtest, speaking subtest, writing subtest, listening subtest.
6.	Контрольное занятие по разделу 1.			4		Control lesson on section 1.
7.	<b>Section 2. Elementary level. Initial stage of learning Russian. Prepositional-case course (Lessons: 6-10)</b>			54	60	
8.	Topic 2.1. Gender and number of adjectives. Adjectives and adverbs of manner. Infinitive constructions. Future complex tense of the verb			12	12	test, reading subtest, speaking subtest, writing subtest
9.	Topic 2.2. Prepositional case in the meaning of place. Adverbs of place and time. Past tense of the verb. Cardinal numbers.			14	12	dictation, dictation with grammar task, reading subtest, speaking subtest, writing subtest, role play, test, Listening and test (distance course).
10.	Topic 2.3. Prepositional case of nouns and personal pronouns in the meaning of place and object of speech and thought. Prepositions в, на, о (об).			10	16	dictation, dictation with grammar task, reading subtest, speaking subtest, writing subtest, role play, test, Listening and test (distance course).
11.	Topic 2.4. The concept of verb types. Use of verb types in the past tense. Infinitive constructions. Demonstrative pronouns.			14	16	dictation, dictation with a grammar task, reading subtest, speaking subtest, writing subtest, role-playing game, test.
12.	Test lesson for section 2. (Lesson 10)			4	-	Grammar control-testing. Subtest



						Listening and test (distance course).
13.	Credit with grade		4			Final Grammar Test. Monologue on the topic. Dialogue
14.0.	<b>Section 3. Basic level. Intermediate stage of learning Russian (Lessons 11-15).</b>			54 -	68	oral survey, vocabulary dictation, teacher-student dialogue
15.1.	Topic 3.1. Use of verb types in the future tense. Accusative in temporal and directive meanings. Concept of verbs of motion. Complex sentence with a subordinate clause of time and condition.			16	22	dictation, role play, reading subtest, listening.
16.2.	Topic 3.2. Basic meanings of the genitive case: meanings of possessor, absence; starting point of movement.			14	22	dictation, role play, reading subtest, writing subtest, speaking subtest, listening subtest.
17.3.	Topic 3.3. Basic meanings of the genitive case (continued): genitive partitive, quantities, measures and degrees. Imperative.			12	10	Vocabulary dictation, dictation with grammar task, role play, test, listening and test.
18.4.	Topic 3.4. Accusative case of animate nouns. Infinitive constructions with the word "must". The concept of a direct and indirect object.			10	18	Reading subtest, speaking subtest, writing subtest, listening subtest.
19.5.	Test lesson for section 3. (Lesson 15.)			4		Grammar control-testing. Subtest. Listening and test.
20.6.	<b>Section 4. Basic level. General proficiency (Lessons 16-20).</b>			50	72	

21. 7.	Topic 4.1. Dative case of the addressee of nouns and personal pronouns.			8	22	dictation, role play, test, reading subtest, speaking subtest, writing subtest
22. 8.	Topic 4.2. Basic meanings of the dative case (continued). Complex sentences with a subordinate clause of purpose.			8	22	dictation, dictation with grammar task, reading subtest, speaking subtest, writing subtest, role play, test, listening and test.
23. 9.	Topic 4.3. Instrumental case, sociative. Preposition c (co).			10	20	dictation, role play, test, reading subtest, speaking subtest, writing subtest
24. 0.	Topic 4.4. Generalization of the studied grammatical material.			8	26	dictation, dictation with grammar task, reading subtest, speaking subtest, writing subtest, role play, test.
25. 1.	Test lesson for section 4. (Lesson 20.)			2		Grammar control-testing. Subtest Listening and test.
26. 2.	Final test lesson.			2		dictation, role play, reading subtest, listening.
27. 3	Credit with grade			4		Final Grammar Test. Monologue on the topic. Dialogue

**3, 4 semesters**

1	2	3	4	5	6	7
24	Lexical and grammar module	35	8	18	9	dictation, test, answering questions, completing pre-, pre- and post-text assignments
25	Speech activity module	45	—	36	9	reading, dictation, listening, test, answering questions, making questions, plan, diagram
26	Professional module	90	—	72	18	reading, dictation, listening, notes, test, writing, retelling, answering questions, completing pre-, pre- and post-text assignments, making questions, a plan, a diagram
27	Independent work module	30	—	18	12	test, notes, written work design
28	Scientific work module	10	—	4	10	notes, written work design, report presentation
<i>Credit with grade</i>		3	—	3	—	oral answer, test

<b>5 semester</b>						
<b>MODULE 1</b>						
29	<b>Section 1.</b> <b>Topic 1.1</b> Preparing students for clinical practice	4		2	6	
30	<b>Section 2.</b> Diseases of the cardiovascular system	24		18	8	
31	<b>Topic 2.1.</b> Angina pectoris	8		6	6	test, drawing up a patient's medical history
32	<b>Topic 2.2.</b> Myocardial infarction	6		4	4	Test tasks
33	<b>Topic 2.3.</b> Hypertension	6		4	4	test, compiling, defending a patient's medical history
34	<b>Tema 2.4.</b> Stroke	4		2	4	Test tasks
<b>MODULE 2</b>						
35	<b>Section 3</b> Respiratory diseases	8		4	2	
36	<b>Topic 2.1</b> Bronchitis	6		4	2	business game
37	<b>Exam</b>					
	<b>TOTAL:</b>	<b>756</b>			<b>342</b>	

***Methodological materials defining the procedures for assessing knowledge, skills, abilities and (or) experience of activities characterizing the stages of competency formation***

The procedure for assessing learning outcomes is carried out on the basis of the Regulation of Kazan State Medical University on the forms, frequency and procedure for current monitoring of academic performance and midterm assessment of students. The following types of students' educational activities in the discipline "Foreign Language" are subject to current monitoring of academic performance (hereinafter referred to as CMAP): attendance of practical classes, results of independent work. CMAP is conducted by a teacher assigned to implement the educational program in a specific academic group or a teacher responsible for the types of educational activities of students.

When conducting practical classes, it is envisaged to use active forms of classes, built in a traditional form (including a survey) and using interactive teaching methods, in combination with extracurricular (independent) work with the support of a teacher.

The current control is conducted at each lesson to check the degree of development of specific skills and the level of proficiency in the studied dose of language material, to stimulate students' academic work, and to improve the methods of teaching the discipline. It can be conducted during all types of classes in the form selected by the teacher or provided for by the subject plan. The

results of the current control are reflected in the log of academic classes and are used by the department for the operational management of the educational process.

The current control of academic performance should be organized and conducted in such a way as to identify:

the degree of development of students' skills and abilities in each section and topic;

the degree of responsibility of students for academic work, the level of development of their abilities, the reasons that prevent them from working productively;

the level of mastering the skills of independent work;

deficiencies in the organization and conduct of classes (independent work).

Based on the analysis of the results of the current control, each teacher must promptly outline measures to eliminate the identified deficiencies in the organization of the educational process in the discipline of the department. Well-organized and methodically competently conducted current control should stimulate students' interest in studying the Russian language, increase their activity in learning, and also develop the habit of systematically working independently on the educational material.

Students' work is assessed during practical classes, which involves doing exercises (orally and in writing), oral answers.

The student's answer is estimated at 10 points.

Current control of the results of independent work in workbooks, written tests, oral surveys, and test control is carried out in the form of assessing the results of independent work in workbooks, completing written tests, oral surveys, and testing. Current control of the results of independent work is carried out at each lesson for all students. At the end of each section of the thematic plan (module), the current control is carried out for all students in the group. During practical classes, the teacher evaluates any, especially successful action (for example, participation in a discussion), only the solution of a full-fledged problem is marked. Teachers will strive to determine the assessment in the dialogue (external assessment of the teacher + external assessment of students + self-assessment). The student has the right to challenge the grade given. A separate mark is given for each academic task or group of tasks demonstrating mastery of a separate skill.

The assessment of students' academic performance on a separate topic is expressed on a 10-point scale, where 0-6 – "bad", 7 - "satisfactory", 8 – "good", 9 – "very good" and 10 - "excellent".

Module on a 100-point scale. The assessment must be reflected in the academic journal.

69 (unsatisfactory):

- Non-attendance of practical classes or a large number of absences.
- Incorrect response or refusal to respond
- Lack of activity in class
- Low level of material proficiency.
- Independent work: Tasks for independent work are not completed, either they contain a lot of errors, or there is a high percentage of plagiarism.
- Lexical and grammatical errors in tasks.

70-79 (satisfactory):

- Attend most of the practical classes
- The answer is correct, but not sufficient
- Low activity in the classroom
- Low level of material proficiency.
- Independent work:
- Tasks for independent work are completed, but with errors or with an average level of borrowing
- Lexical and grammatical errors in tasks.

80-89 (good):

- Attending all practical classes, skipping only for a valid reason

- Correct, sufficient answer.
- Average activity per class
- Average level of material proficiency.
- Independent work:
- Tasks for independent work are mostly performed without errors and with a small amount of borrowing.
- There are no lexical or grammatical errors.

90-100 (excellent):

- Attending all practical classes, skipping only for a valid reason
- Regular correct answers, including using additional literature
- High activity in the classroom
- Fluent knowledge of the material.
- Independent work:
- Tasks for independent work are completed without mistakes or borrowing
- There are no lexical or grammatical errors.

90-100 points – the student demonstrates knowledge of the minimum vocabulary of a conversational nature, the ability to understand elementary questions by ear (conversation), correctly use grammatical forms, good command of all types of speech activity, possession of both productive and reproductive speech skills.

80-89 points - the student has sufficient command of all types of speech activity, mainly correctly uses the lexical minimum and the studied grammatical and syntactic material in oral and written forms of expression, demonstrates sufficient competence in the socio-cultural and socio-everyday spheres of communication with native speakers. The mistakes made are not of a communicative nature, reproductive speech skills prevail.

70-79 points – the student has a poor command of all types of speech activity, has a limited vocabulary and does not always use it correctly, has significant difficulties in using the studied grammatical and syntactic material in oral and written forms of expression, makes a significant number of communicative errors, demonstrates only reproductive speech skills, has low competence in the socio-cultural and social-everyday spheres of communication with native speakers.

less than 70 points - the student has practically no command of the main types of speech activity, the lexical minimum and lexical and syntactic material, finds it difficult to use the studied material in both forms of expression. The mistakes are of a communicative nature, competence in the socio-cultural and socio-everyday spheres of communication with native speakers has not been formed. The final (rating) grade is made up of grades for modules (maximum 100 points per module), the current grade (maximum 10 points). Assessment and evaluation criteria:

***List of primary and secondary educational literature required for mastering the discipline (module)***

Primary educational literature

List of primary literature Number of copies

1. Moskovkin L.V., Silvina L.V. Russian language. Elementary course for foreign students. Publishing house SMIOPress, 2014. – 528 p.
2. Shustikova T.V., Kulakova V.A. Russian language is my friend. Basic level.- 6th ed., corrected. And add.- Moscow: RUDN, 2014. – 849 p.

Additional educational literature

1. Evdokimova A.G., Baltaeva V.T. Phonetics: from A to Z: a teaching aid for foreign students. – Kazan, KSMU, 2011. – Part 1.
2. Evdokimova A.G., Baltaeva V.T. Phonetics: from A to Z: a teaching aid for foreign students. – Kazan, KSMU, 2011. – Part 2.

3. Evdokimova A.G., Baltaeva V.T. Russian language in stories and dialogues: a teaching aid for foreign students. – Kazan, KSMU, 2012. – Part 1.
4. Evdokimova A.G., Baltaeva V.T. Russian language in stories and dialogues: a teaching aid for foreign students. – Kazan, KSMU, 2012. – Part 2.
5. Evdokimova A.G., Baltaeva V.T. Cases: a teaching aid for foreign students. – Kazan, KSMU, 2011. – Part 1.
6. Kuznetsova E.G. Verb: a teaching aid for foreign students. – Kazan, KSMU, 2011.
7. Yakubova L.S., Kuznetsova L.G. Preparing for the final exam in Russian: a teaching aid for foreign students. – Kazan, KSMU, 2012. – Part 1.
8. Yakubova L.S., Baltaeva V.T., Nikityuk V.P. Russian-Hindi educational dictionary: for foreign first-year medical students studying in an intermediary language: more than 3190 units. – Kazan, KSMU, 2014. – 116 p.
9. Anikina M.N. Stairs: a textbook on the Russian language for beginners. For English-speaking students. – M.: Russian language. Courses, 2015. – 463 p.
10. Akishina T.E. Learn Russian in 10 days in a new way (for English speakers). – M.: Russian language. Courses, 2015. – 223 p.
11. Koprov V.Yu. Syntax of the Russian language for doctors and biologists. Object and adverbial relations. M.: Russian language. Courses, 2017. – 327 p.
12. Babalova L.L. Workshop on Russian grammar: 2 hours – Part 2. – M.: Russian language. Courses, 2017. – 351 p.
13. . Khavronina S.A. Russian in exercises: a tutorial. – M.: Russian language. Courses, 2018. – 328 p.

***List of resources of the information and telecommunications network "Internet" (hereinafter referred to as the "Internet") required for mastering the discipline (module***

1. Fedotova S.I., Chevela O.V. Russian as a Foreign Language. Part 1. Elementary Level. – Distance Course. – <http://www.kgmu.kcn.ru:40404/moodle/course/view.php?id=467>
2. Portal on Russian as a Foreign Language “RussNet” (in English).  
<http://www.russnet.org>
3. Resources for Students of Russian Language and Culture of Russia (Russian Studies Department, Bucknell University) (in English).  
<http://www.departments.bucknell.edu/russian>
4. Evdokimova A.G., Baltaeva V.T. Russian Language in Stories and Dialogues: A Teaching Aid for Foreign Students. – Kazan, KSMU, 2012. – Part 2.
5. Russian for everybody (Russian language for everyone) – Russian as a foreign language course RUDN 2000 (Russian and English versions).  
<http://www.LinguaRus.com>
- 6 Russian Web Tutor (Interactive materials on Russian as a foreign language)  
<http://www.auburn.edu/~mitrege/RVT>
7. . Materials on Russian as a foreign language by Professor T. Bayer (Middlebury College).  
<http://www.middlebury.edu/~bayer/mapryal/>  
<http://www.gramota.ru>
8. Electronic catalog of the scientific library of KSMU [Electronic resource].  
URL: <http://library.kazangmu.ru>
9. Electronic library system of KSMU Copyright holder: scientific library of KSMU (FS on intellectual property No. 2012620798, registration date 17.08.2012) [Electronic resource]. URL: <http://old.kazangmu.ru/lib/>
10. Electronic library system elibrary.ru — electronic versions of Russian scientific and technical journals. Current agreement No. D-3917 dated 14.02.2017. Access period: 14.02.2017 — 14.02.2018. Unlimited access from university computers [Electronic resource]. URL: <http://elibrary.ru>
11. Culture of written speech [Electronic resource]. URL: [www.grammar.ru](http://www.grammar.ru), free.

12. Encyclopedic Dictionary of Medical Terms [Electronic resource].  
URL: <http://studentmedic.ru>
- 13 Russian dictionaries [Electronic resource]. URL: [www.slovari.ru](http://www.slovari.ru)
14. National Corpus of the Russian Language [Electronic resource]. URL: [www.ruscorpora.ru](http://www.ruscorpora.ru)
- 15 Practical skills for a graduate of a medical university [Electronic resource] / Bulatov S.A., Anisimov O.G., Abduganieva D.I., Akhmadeev N.R., Bikkineev F.G., Gorbunov V.A., Orlov Yu.V., Petukhov D.M., Sadykova A.R., Sayapova D.R. - Kazan: Kazan State Medical University.  
– Access mode: <http://www.studmedlib.ru>, free.

#### **Information reference system:**

1. National Corpus of the Russian Language
2. <http://www.ruscorpora.ru/index.html> - The Corpus of the Russian Language is an information and reference system based on a collection of Russian texts in electronic form. The corpus is intended for anyone interested in a variety of issues related to the Russian language: professional linguists, language teachers, schoolchildren and students, foreigners studying Russian.
3. online translators and dictionaries with the Russian language:
4. <http://online.multilex.ru/> - English-Russian online translator "Multilex"
5. <http://www.rambler.ru/dict/enru/> - New English-Russian dictionary
6. <http://slovari.yandex.ru/> - translation from/into Russian, German, French, Italian, Spanish, Latin, Ukrainian
7. <http://www.multitrans.ru/> - database of multilingual dictionaries.
8. Databases of Russian language dictionaries on the Internet
9. [http://www.martindalecenter.com/Language\\_3\\_Russian.html](http://www.martindalecenter.com/Language_3_Russian.html) – database in English
10. <http://www.gramota.ru/slovari/online/> – database in Russian

#### ***Methodological guidelines for students on mastering the discipline (module)***

##### Requirements for completing the test.

The test is aimed at identifying the level of students' mastery of lexical and grammatical knowledge, skills and abilities on the topics covered. The work indicates the topic and the student's full name, without a title page. The work is done on a computer or by hand in neat, clear handwriting. When completing the work, it is not allowed to use a textbook, dictionaries, or other reference materials. If necessary, you can use a draft. Entries in the draft will not be checked or assessed.

##### Requirements for conducting an individual interview

The interview is conducted according to a list of questions known to students in advance, individually with each student. The latter must, having received the questions, explain the concepts that are given in these questions. The student does not receive additional time for preparation. No more than 5 minutes are allocated for working with one student.

##### Requirements for written answers to questions

The work is submitted in writing, no more than 15 to 20 minutes are allocated for them. The work must be individual in nature, if several works coincide, the teacher has the right to cancel them.

##### Requirements for tasks for assessing skills and abilities

The tasks are completed in the classroom, during practical classes. The tasks are individual in nature, the teacher has the right to decide whether to give them orally or in writing.

##### Requirements for test tasks

Tests for elementary and basic levels are used by the teacher to check the residual knowledge of students. Test tasks are designed for independent work without the use of auxiliary materials. To complete a test task, the student must carefully read the question. After reading the question, you should start reading the proposed answer options. You must read all the options and choose only one index (digital designation) as an answer, corresponding to the correct answer. In each test, only one of the options is correct. The choice must be made in favor of the most correct answer. A limited time is allocated for completing the test. It may vary depending on the level of the test

takers, the complexity and volume of the test. As a rule, the time for completing a test task is determined based on the calculation

Requirements for situational tasks (role-playing games) - case method:

Case method is a form based on the study, analysis, and comprehensive consideration of a problem that is relevant for a given group of students. They must analyze the situation, understand the essence of the problem, propose possible solutions, and choose the best one. The essence of this method is that students are asked to find a solution to a situation that relates to real-life problems and the description of which reflects a practical task. A distinctive feature of this method is the creation of a problem situation based on facts from real life. Tasks are given in the form of special problems (cases), students gain knowledge as a result of analytical and creative activities. This method has a number of features that distinguish it from other interactive forms, for example: the central point is the problem, not the subject, the case must deal with a specific object, and not just with general theory, students are required to actively participate in the learning process, and not just be passive listeners.

The purpose of the elementary and basic levels of proficiency in the Russian language is the formation and further development of speech skills and abilities in all types of speech activity (reading, listening, speaking and writing), the formation and development of regional studies and socio-cultural competence.

To achieve this purpose, the main study time is allocated to practical work on the skills and abilities of speech communication, including: 1) teaching the language system; 2) developing speech skills of speaking, listening, reading, writing; 3) familiarization with the culture of the country of the language being studied (Russian as a foreign language, Russian as a foreign language, Russian as a native language); 4) educational tasks.

When studying the academic discipline, it is necessary to use active forms of learning and master practical skills to generate oral and written texts that are correct from the point of view of various norms of the Russian language, and adequately understand oral and written texts created by native speakers for native speakers in the conditions of natural speech communication (authentic texts). Language and speech material is selected and distributed taking into account its communicative significance - first, students are taught the grammar and vocabulary most necessary for communication. New linguistic phenomena are presented as part of speech samples that are related to one or several communication situations. The learning process itself is to a certain extent similar to the process of real communication, since the basis of learning is communicative practice, the constant implementation of conditional communicative and genuine communicative exercises. All actions of the teacher and students are directed/

***Rules of student conduct in classes on the subject "Foreign language":***

- attend classes regularly;
- do homework;
- be prepared for class;
- not be late;
- listen carefully to the teacher's explanations;
- actively participate in discussions on a given topic;
- do not talk about abstract topics;
- be polite to others, observe the rules of etiquette of speech communication;
- use a mobile phone only with the teacher's permission and only for educational purposes;
- do not eat or drink;
- do not use obscene expressions, gestures;
- do not make noise;
- have a neat appearance, wear a white coat.



*Standard control tasks or other materials necessary for assessing knowledge, skills and (or) experience of activities that characterize the stages of competence formation in the process of mastering an educational program*

**Letter dictation.**

А, Д, Ж, З, Я, Х, С, Т, П, Р, Н, Ф, Ц, Ё, Ю, У, К, Т, Ш, Щ, О, Ъ, И, Й, Ы.

**Syllabic dictation.**

ма-па-на

та-да-ба-па

шо-жо-со-зо

ду-му-ну

лэ-гэ-кэ

**Task 1. Write the plural form.**

Страна, аудитория, словарь, подруга, окно, картина, студент, студентка, карандаш, ручка.

**Task 2. Fill in the table:**

ОН	она	ОНО

**Слова для справок:** группа, журнал, тетрадь, стол, яблоко, сыр, масло, шарф, шкаф, семья, подруга.

**Task 3. Complete the exercise according to the example:**

**Образец:** Это я, а это мой друг.

1. Это ты, а это ... дом. 2. Это вы, а это...класс. 3. Это Анвар, а это...комната. 4. Это мы, а это...группа. 5. Это студенты, а это... институт. 6. Это Нина, а это... сумка. 7. Это я, а это... папа и мама.

**Task 4. Insert possessive pronouns instead of periods:**

– **мой, моя, мое:**

Это...друг. Это... тетрадь. Это...яблоко. Это...мама.

– **твой, твоя, твое:**

Это ... ручка. Это ... дом. Это ... молоко. Это ... папа.

– **наш, наша, наше:**

Это ... класс. Это ... столовая. Это ... окно. Это ... институт.

– Это ... город. Это ... столица. Это...журнал. Это ... страна. Это ... окно.

**Task 5. Answer the questions according to the example:**

**Образец:**

– Чей это карандаш? – Чей это карандаш?

– (я) – Это **мой** карандаш.

1. – Чья это тетрадь? 2. – Чей это класс? 3. Чье это яблоко?

– (я) – (мы) – (она)

1. – Чья это сумка? 2. – Чье это молоко? 3. Чей город?

– (ты) – (он) – (вы)

*Intermediate module assessment criteria:*

*The control work has 5 tasks.*

*Completion time: 60 minutes.*

*70-79 points – satisfactory*

80-89 points – good

90-100 – excellent

1 correct answer – 2 points. 15 incorrect answers – 70 points. 16 or more errors – fail.

### **Test**

*Instructions for completing the test*

*Time to complete the test - 50 minutes. You can use a dictionary when completing the test.*

*You have received a test. It consists of 3 parts and 30 test tasks. Choose the correct answer and mark the corresponding letter on the matrix.*

*PART I Tasks 1-5. Read the announcements. Say what a person should do if he understood them correctly.*

1. В пятницу и субботу библиотека не работает. Вы можете взять книги в библиотеке ... .  
(А) в понедельник (Б) в среду и субботу (В) в пятницу
2. Единый билет на все виды транспорта можно получить 25-27 марта. Вы можете получить билет в ... месяца. (А) начале (Б) середине (В) конце
3. Всем студентам необходимо получить в деканате студенческие билеты. Все студенты должны ... . (А) купить билеты на самолёт (Б) взять студенческий билет (В) получить студенческую визу
4. Расписание занятий по русскому языку висит на втором этаже. Вы хотите посмотреть расписание, поэтому Вам нужно ... . (А) спуститься на первый этаж (Б) пойти на второй этаж (В) подняться на третий этаж
5. Пожалуйста, не курите в коридоре. (А) В коридоре нельзя курить. (Б) Курить можно только в коридоре. (В) Все курят в коридоре.

Задания 6-10.

Прочитайте фразу и найдите ту, которая является продолжением прочитанной.

6. Мой друг отдыхает. (А) Он говорит только по-китайски. (Б) Будьте добры, говорите медленнее. (В) Прошу вас, не разговаривайте так громко.
7. Здесь так холодно. (А) Закройте, пожалуйста, окно. (Б) Включите, пожалуйста, свет. (В) Не курите, пожалуйста, здесь.
8. Извините, я сегодня опоздал. (А) В автобусе было много народа. (Б) Долго ждал автобуса. (В) На улице шёл дождь.
9. Я очень плохо себя чувствую. (А) Кабинет врача находится на втором этаже. (Б) Лекарство можно купить в любой аптеке. (В) Мне надо пойти к врачу.
10. Прекрасный костюм! Но он мне мал. (А) У вас есть другой размер, больше, чем этот? (Б) К сожалению, он слишком дорогой для меня. (В) Сколько стоит этот костюм?

*The purpose of the test is to check the level of development of speech skills. The following skills are the objects of control: - predict a response based on what has been read (tasks 1-5); - predict the content that may be a continuation of the message read (tasks 6-10); - understand the basic information contained in the text, as well as some details that carry an important semantic load.*

### **Credit (certification) materials – 2nd semester**

Approximate topics for a monologue:

1. Россия (Russia)
2. Моя страна (My home country).
3. Праздники в России (Holidays in Russia).
4. Праздники в моей стране (Holidays in my country).
5. Город, в котором я учусь (The city where I study).
6. КГМУ (KSMU)
7. Великие люди России (Great people of Russia).

8. Древняя Русь (Ancient Rus' \_
9. Великие люди моей страны (Great people of my country).
10. Мой родной город (My hometown).

Approximate topics for a dialogue:

1. Знакомство в общежитии (Acquaintance in a hostel).
2. В поликлинике (In a clinic).
3. У врача (At the doctor's).
4. В деканате (In the dean's office).
5. В столовой (In the canteen).
6. Разговор по телефону (Conversation on the phone).
7. Наше расписание (Our schedule)
8. В аэропорту (At the airport).
9. Друг болен. Вызов врача (A friend is sick. Calling a doctor).
10. В библиотеке (In the library).

***Example of an examination ticket***

	<i>Answer standards</i>
<p style="text-align: center;">Ticket No. 1</p> <p>1. <u>Монологическое высказывание по теме «Нервная система»</u></p> <p>2. <u>Диалог «У больного стенокардия»</u></p>	<p>1. Работу всех органов контролирует нервная система. Нервная система состоит из центральной и периферической. Центральную нервную систему составляют головной и спинной мозг. К периферической нервной системе относятся черепные и спинномозговые нервы, нервные узлы (ганглии). Спинной мозг располагается внутри позвоночного столба. Его длина — 45 см (сорок пять сантиметров), толщина — около 1 см (одного сантиметра), масса — 33–34 г (тридцать три — тридцать четыре грамма). Спинной мозг содержит серое и белое вещества, а также спинномозговую жидкость. От спинного мозга отходит 31 (тридцать одна) пара спинномозговых нервов, которые направляются к мышцам, костям, суставам, коже. Спинной мозг выполняет две функции: рефлекторную и проводниковую. Головной мозг — это главный орган ЦНС. Он контролирует всю деятельность нашего организма и отвечает за процессы мышления, память, чувства и речь. Мозг взрослого человека весит 1 кг, 400 г (один килограмм, четыреста граммов) и содержит более 14 млрд (четырнадцать миллиардов) нервных клеток. Головной мозг имеет 2 (два) отдела: мозговой ствол с мозжечком и большой мозг. Мозговой ствол управляет функциями дыхания и</p>

	<p>пищеварения. Мозжечок координирует движения тела. Большой мозг состоит из 2 (двух) полушарий: правого и левого. Он определяет интеллект человека.</p> <p>2. - Здравствуйте, доктор!</p> <p>- Здравствуйте, проходите, садитесь. На что вы жалуетесь?</p> <p>- Доктор, у меня болит сердце.</p> <p>- Какого характера боли Вас беспокоят?</p> <p>- Сжимающие боли, сердце колит, на грудь давит.</p> <p>- Боли приступообразные или постоянные?</p> <p>- Приступами.</p> <p>- Куда отдает боль?</p> <p>- В левую руку, плечо, даже зубы.</p> <p>- Сколько времени продолжается боль?</p> <p>- Недолго, минут 10.</p> <p>- Сколько раз в день продолжаются боли?</p> <p>- До 20 раз в сутки</p> <p>- Какие лекарства Вы принимаете?</p> <p>- Во время приступа рассасываю валидол или принимаю нитроглицерин.</p> <p>- Вам нужно сдать анализы крови, сделать УЗИ сердца и ЭКГ. Возьмите направление на обследование.</p> <p>- Хорошо, доктор, спасибо. До свидания.</p> <p>- До свидания.</p>
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## RUSSIAN LANGUAGE IN PROFESSIONAL COMMUNICATION

**Teachers:** Associate Professor Elena Kuznetsova, Candidate Of Philological Sciences;  
Associate Professor Albina Evdokimova, Candidate of Pedagogical Sciences; Senior lecturer  
Venera Baltaeva, Senior lecturer Lily Yakubova

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Office and opening hours: 431 (9-17)

### **Total 108 hours**

Class time: 40 hours

Self-study: 68 hours

### **Course Description:**

The discipline "Russian language in Professional Communication" is included in *the variable part* of the Work Curriculum 2019/2020.

The previous courses on which the discipline "Russian language in professional communication" is directly based are: "Foreign language", I-II courses (basic level-A2, first level-B1), as well as the disciplines "Practice in a hospital (assistant to a junior nurse)",

The discipline "Russian language in professional communication" is fundamental for studying the following disciplines: "Practice in a hospital (assistant to a junior nurse)", etc.

*The field of professional activity of graduates* who have mastered the specialty program includes protecting the health of citizens by ensuring the provision of medical care in accordance with established requirements and standards in the field of healthcare.

*The objects of professional activity of graduates* who have mastered the specialty program are:

- individuals (patients);
- the population, a set of tools and technologies aimed at creating conditions for protecting the health of citizens.

*Types of professional activities* that graduates who have completed the specialty program are preparing for:

- medical;
- organizational and managerial;
- scientific research.

### **Course objectives: The goal of mastering the discipline**

*The objectives* of mastering the academic discipline "Russian language in professional communication" are:

- achieving the required level of culture of educational and professional communication in Russian;
- solving professional and communicative tasks of future doctors in the industrial and practical sphere.

### **Objectives of the discipline:**

*contribute to:*

- foreign students' mastery of language, speech and communication skills;
- practical implementation of various types of language intentions;

*teach international students to:*

- use the language tools correctly.
- to orient and implement communicative intentions according to social status in various situations and spheres of communication, including professional ones;
- be proficient in oral and written forms of the Russian language.

### **Calendar of practical classes**

#### **Module 1. Speech Activity Module**

##### **Topic 1. Speech activity module: Hospital.**

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* synonymous constructions; compilation of adjectives + nouns; formation of verbs, adjectives; plural formation; translation of terms, etc. *Professional minimum:* The concept of the hospital, reading the text, making notes, retelling the text, answering questions, performing a test; performing current control.

##### **Topic 2. Speech activity module: Reception and treatment department of the hospital.**

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* composing phrases adjectives + nouns; forming nouns; forming единственного singular; insert suitable verbs; repeating prepositions; translating terms, etc. *Professional minimum:* The concept of reception and treatment departments of a hospital. correct reading of the text; understanding the text, listening, answering questions on the text,

drawing up questions, a plan, a scheme of the admission department; performing current control.

Topic 3. Speech activity module: Treatment room.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* composing phrases adjectives + nouns; forming nouns; case numerals; making sentences by construction; changing the constructions of phrases; translating terms, etc.

*Professional minimum:* The concept of a treatment room. Correct reading of the text; understanding the text, listening, answering questions on the text, drawing up questions, plans, text diagrams about the treatment room; performing current control.

Topic 4. Speech activity module: Hospital ward.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* category of antonyms; construction of the imperative mood; formation of adverbial turns; formation of single-root words; case forms of adjectives; translation of terms, etc.

*Professional minimum:* The concept of a hospital ward. Correct reading of the text; understanding the text, listening, answering questions on the text, drawing up questions, plans, text outlines; performing current control.

Summary of TT 1-4.

Written task completion, test.

Total Module 1.

**Module 2. Professional module/ Practice module.**

Topic 1. Professional module / Practice module: Methods of patient research.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* formation of adjectives and nouns; formation of adverbial turns; formation, interpretation of abbreviations; translation of terms, etc. *Professional minimum:* The concept of research methods. Correct reading and understanding of the text; listening skills; making notes; making presentations of the report.

Topic 2. Professional module / Practice Module: Enteral administration of drugs.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* formation of participles from verbs; synonyms; definition of the type of verbs; compilation of sentences based on constructions; use of adverbs; translation of terms, etc.

*Professional minimum:* Concept of enteral drug administration. Correct reading and understanding of the text; listening; drawing up a scheme for the correct enteral administration of medicines; drawing up a dialog with a nurse, with hospital medical staff and with patients.

Topic 3. Professional module / Practice Module: Parenteral drug administration.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* formation of adjectives, verbs; definition of the type of verbs; complex words; compilation of complex sentences with conjunctions; compilation of phrases; translation of terms, etc. *Professional minimum:* The concept of parenteral drug administration. Correct reading and understanding of the text; listening comprehension; drawing up a scheme for correct parenteral drug administration; drawing up dialogues with a nurse, with hospital medical staff, dialogues with patients.

Topic 4. Professional module / Practice module: External drug administration.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words.

*Grammatical minimum:* writing antonyms; formation of nouns; definition of the gender of nouns; definition of part of speech; single-root words; formation of participles; commands of a nurse to a patient; translation of terms, etc. *Professional minimum:* The concept of external use of medicines. Correct reading and understanding of the text; listening; drawing up a scheme for correct external use of medicines; drawing up dialogues with the nurse, with the hospital medical staff, dialogues with patients, drawing up commands of the nurse to the patient.

Topic 5. Professional module / Practice module: Measurement of temperature, pulse and blood pressure.

*Lexical minimum:* thematic vocabulary; dictation, meaning and translation of new words. *Grammatical minimum:* formation of complex words; concept of numerals, writing numbers in words; formation of adverbs; definition of part of speech; commands of a nurse to a patient; translation of terms, etc. *Professional minimum:* Concept of measurement of temperature, pulse, and blood pressure. Correct reading and understanding of the text; listening; drawing up a diagram of the correct measurement of temperature, pulse and blood pressure; drawing up dialogues with the nurse, with the hospital medical staff, dialogues with patients, drawing up commands from the nurse to the patient.

Summary of TT 1-5.

Written task completion, test.

Total Module 2.

### **Independent work of the student**

A mandatory element of study is the student's independent work. Tasks for independent work are included in the teaching aids: 1. Let's go to practice in the hospital: a collection of texts and tasks in the Russian language for independent work of foreign students of the 2nd year of the medical faculty studying in the intermediary language / comp. by L. S. Yakubova. Kazan: KSMU, 2008. 34 p. 2. Methods of examination and patient care: a collection of texts and tasks in the Russian language for foreign students of the 2nd year of the medical faculty studying in the intermediary language / comp. by L. S. Yakubova. Kazan: KSMU Publ., 2008, 42 p. (in Russian)

The requirements for each type of independent work of the student are clearly formulated in the relevant sections of the above-mentioned teaching aids. The results of the student's independent work should be written in a workbook.

### **Textbooks and necessary workbooks:**

1. Russian language for foreign medical students: textbook. manual for medical faculty students. L. V. Lukyanova, St. Petersburg: Zlatoust Publ., 2001, 120 p. (in Russian)
2. Explanatory dictionary of the Russian language: 80,000 words and phrases logical expressions/ S.I. Ozhegov, N.Y.Shvedova. M.: Azbukovnik, 2002. 940 p.
3. English-Russian medical dictionary /I.Markovina, E.Ulumbekov. GEOTAR-Media, 2013. 496p.
4. Russian language in professional medical communication: a textbook / E. G. Kuznetsova, L. S. Yakubova. Kazan: Kazan State Medical University, 2018. 130 p.
5. Biology: human. Introduction to the scientific style of speech: a collection of texts on the Russian language for foreign students of the second year of the medical faculty studying in English / comp. by L. I. Fidaeva, I.B.Vagapova, L.S.Yakubova, L.G.Yusupova. Kazan: KSMU Publ., 2015, 96 p. 63-76.
6. Let's go to practice in the hospital: a collection of texts and tasks in the Russian language for independent work of foreign students of the 2nd year of the medical faculty studying in the intermediary language / comp. by L. S. Yakubova. Kazan: KSMU Publ., 2008, 34 p.
7. Methods of examination and patient care: a collection of texts and tasks in the Russian language for foreign students of the 2nd year of the medical faculty studying in the intermediary language / comp. by L. S. Yakubova. Kazan: KSMU Publ., 2008, 42 p. (in Russian)

### **Academic performance monitoring and grading:**

As a result, the student must study the theoretical part of the course in an audience, work out the theory in practical classes, use this knowledge to study a block of topics for independent work, and then pass certification, that is, test the acquired knowledge, consolidate the acquired skills and relevant skills.

### **Current monitoring:**

**Practical exercises** — (see: 1) We go to practice in the hospital: a collection of texts and tasks in the Russian language for independent work of foreign students of the 2nd year of the medical faculty studying in the intermediary language / comp. by L. S. Yakubova. Kazan: KSMU, 2008. 34 p.; 2) Methods of examination and patient care: a collection of texts and tasks in the Russian language for foreign students of the 2nd year of the medical faculty studying in the intermediary language / comp. by L. S. Yakubova. Kazan: KSMU, 2008. 42 p.

**Evaluation criteria:**

- independence when performing work (0 points — the work was not performed independently; 5 points — partially the work was performed independently; 10 points-completely independent work);

- correct execution and literacy in the design of written works (less than 70 points — the work was performed with errors, illiterate; 70-79 points — there are errors, shortcomings in the work, carelessness in the design; 80-89 points — the work was done correctly, designed according to the rules, inaccuracies are allowed; 90-100 points — the work was performed flawlessly);

- competent, logical presentation of oral material, free retelling, answers to questions (less than 70 points — can't retell, present their work; 70-79 points — presents the work uncertainly, answers some questions; 80-89 points-correctly presents the material, retells, minor errors, inaccuracies are allowed; 90-100 points-fluency in the language, perfect presentation of the material).

- active work in the audience (0 points — not active; 5 points — shows interest and answers 2-3 questions; 10 points — active, shows interest, asks questions himself and searches for answers);

- level of preparation for the practical lesson (0 points — not ready for the lesson; 10 points — ready for the lesson).

**Independent work**

**Evaluation criteria:**

- level of preparation for the practical lesson (0 points — not ready for the lesson; 10 points-ready for the lesson).

- correct execution and literacy in the design of written works (less than 70 points — the work was performed with errors, illiterate; 70-79 points — there are errors, shortcomings in the work, carelessness in the design; 80-89 points — the work was done correctly, designed according to the rules, inaccuracies are allowed; 90-100 points — the work was performed flawlessly).

- oral response (less than 70 points — it is difficult to reproduce the dialog; 70-79 points — the answer is satisfactory, but with flaws; 80-89 points — the answer is competent, inaccuracies are allowed; 90-100 points — confidently and competently reproduces the text).

**Intermediate certification: Offsetting**

**Evaluation criteria:**

- reading (5 points — reads slowly, with errors; 10 points-reads at a satisfactory pace).

- composing a dialog (0 points — can't compose a dialog; 5 points — composes a dialog correctly).

The result of the work is written and oral forms of certification. After each topic studied, a test paper, a block of questions and a test task are offered, which check the knowledge of the text, vocabulary, grammar, and syntax. Tasks for independent work are checked in the classroom.

Final tasks — tests of the professional module.

Test assignment — text material on the topics studied, preparation of an oral retelling plan, retelling of the text, answers to the teacher's questions.

**Requirements for oral answers to questions:** the purpose of this type of assignment is to determine the depth of student knowledge on the subject. The student must verbally answer the teacher's questions on the topic studied.



**Requirements for skills assessment tasks (retelling):** tasks are performed in the classroom, in practical classes. Tasks are individual in nature.

**Requirements for performing the control work:** the control work is performed in the classroom. The paper specifies the FI, the student's group, and records the task. The work should clearly answer the question posed. The completed work must be submitted to the teacher at the end of the lesson. The teacher has the right not to accept the work if the task is performed carelessly, as well as if there is a large percentage of incorrect borrowings/write-offs in it.

**Requirements for completing the test:** test work is performed in the classroom. The paper specifies the FI, the student's group, the task number and the answer in the form of a letter. The completed work must be submitted to the teacher at the end of the lesson.

### **Rules for conducting classes:**

Appearance. In the classroom, the student should be wearing a white ironed dressing gown, a hat, and a second pair of shoes. Must be present in all practical classes, including working off missed classes. A student is not allowed to take practical classes without a proper form of clothing.

Maintaining work and control notebooks. In the course of studying the discipline, the student should keep a work and control notebook. In them, the student must make notes of practical exercises, the results of independent training and work, and perform tasks of intermediate and final certification.

If you attend classes and actively work during classroom hours, the implementation of homework (independent) work is significantly simplified and consists mainly in consolidating what you have learned during the lesson in practice. This is what exercises are aimed at, the composition of which is determined according to the plan of practical classes.

Homework. It is recommended to divide homework into two parts: perform tasks immediately after the classroom session, and before a new lesson, double-check them and answer questions for self-control on the completed topic.

When performing exercises, translating text, or translating terms, it is recommended to actively use the dictionary. When learning lexical minima, it is mandatory to write out words and memorize them in dictionary form. It is recommended to read the terms contained in texts, exercises, aloud, so as not to lose the reading skill.

When preparing for test papers and test tasks, it is mandatory to repeat all the completed material and lexical minimums, even if the teacher allows you to use reference materials during the test work: without repeating and systematizing the material, you may not meet the time frame set aside for the test work and test task.

Meals are only allowed during the break.

mobile phone You are only allowed to use the phone during a break.

### **Standard control tasks or other materials necessary for assessing knowledge, skills and (or) experience of activities that characterize the stages of competence formation in the process of mastering the educational program**

#### **Examples of tasks:**

#### **Примеры заданий:**

Задание 1. Прочитайте и выучите «Диалог в больнице»:

Что это? — Это *больница (клиника, госпиталь)*.

Кто работает в больнице? — В *больнице* работают врачи, медсёстры, лаборанты и санитары.

Что делают врачи? — *Врачи* осматривают больных, ставят диагноз, назначают лечение.

Что делают медсёстры? — *Медсёстры* измеряют больным температуру, раздают таблетки, делают инъекции и перевязки.

Что делают лаборанты? — *Лаборанты* берут кровь на анализ из пальца или из вены.

Что делают санитары? — *Санитары* убирают палаты и коридоры, помогают транспортировать тяжелобольных пациентов.

Задание 2. Прочитайте и выучите «Диалог в приемном отделении больницы»:

Что это? — Это *регистратура*.

Кто здесь работает? — Здесь работает *медсестра*.

Что она делает? — Она заполняет *карточки больных*.

Что это? — Это *смотровой кабинет*.

Кто здесь работает? — Здесь работает *врач*.

Что он делает? — Он *осматривает* больных и *назначает* лечение.

Что это? — Это *процедурный кабинет*.

Кто здесь работает? — Здесь работает *медсестра*.

Что она делает? — Она делает внутривенные и внутримышечные *инъекции*.

Что это? — Это *перевязочный кабинет*.

Кто здесь работает? — Здесь работает *медсестра*.

Что она делает? — Она делает *перевязки*.

Что это? — Это *операционная*.

Кто здесь работает? — Здесь работают *хирурги*.

Что они делают? — Они делают *операции*.

Что это? — Это *палата*.

Кто здесь лежит? — Здесь лежат *больные*.

Задание 3. Составьте диалоги по модели:

**Модель 1:**

— Скажите, пожалуйста, где находится кардиологическое отделение?

— Кардиологическое отделение находится во 2 (втором корпусе) на 3 (третьем) этаже.

*Слова для справок:* терапевтическое, гастроэнтерологическое, урологическое, хирургическое отделение.

**Модель 2:**

— Скажите, пожалуйста, где находится кабинет УЗИ?

— Кабинет УЗИ находится на первом этаже.

*Слова для справок:* рентген-кабинет, лаборатория, кабинет ФГДС.

Задание 4. Прочитайте «Диалог двух студентов». Составьте свой диалог по образцу:

— Радж Кумар, вы уже были на практике в больнице?

— Да, мы были на практике в РКБ (Республиканской клинической больнице).

— В каком отделении вы были на практике?

— Мы были в *травматологическом* отделении.

— Какие больные лежат в этом отделении?

— В этом отделении лежат больные с *травмами* рук или ног.

— Что вы делали на практике?

— Мы помогали медсёстрам и больным.

— Врачи, медсёстры и больные говорили с вами по-английски?

— Нет, только по-русски.

— Вам понравилось на практике?

— Да, нам было очень интересно. Мы поняли, что работа врачей и медсестёр очень трудная, но очень важная и нужная.

Задание 5. Прочитайте «Диалог медсестры и студента-практиканта». Составьте свой диалог по образцу:

— Здравствуйте, Галина Ивановна! Меня зовут Радж Кумар. Что я сегодня должен делать?

— Здравствуйте, Радж Кумар. Сначала вы должны отвезти больного Иванова из палаты № 3 на рентген, а потом вымыть пол в коридоре.

— Хорошо. А где находится рентген-кабинет?

— Рентген-кабинет находится в диагностическом отделении на 2 (втором) этаже.

— А где взять ведро и тряпку?

— Найдите санитарку, она покажет вам, где находится уборочный инвентарь.

— Вы всё поняли?

— Да, всё.

Задание 6. Выучите «Команды медсестры студентам-практикантам».

Отведите больного в рентген-кабинет!

Отвезите больную в операционную!

Проводите пациента в перевязочную!

Измерьте больному температуру!

Измерьте больному давление!

Помогите больному сесть (встать, лечь)!

Отнесите биксы в перевязочную!

Вымойте пол в коридоре!

Переложите больного с каталки на кровать!

## RESEARCH WORK (OBTAINING PRIMARY RESEARCH SKILLS)

**Teachers:** PhD, associate professor A. R. Sadykova; PhD, associate professor M. A. Makarov; PhD; assist. prof. E.N.Ivantsov; PhD, assist. prof. V.M. Gazizyanova, PhD, assist. prof. F.A. Magamedkerimova,

**Building, Department, classroom:** Clinical hospital #7, Clinical hospital #11 Department of Introduction to internal diseases

### **Contact details:**

- Telephone number: 89172922241 (associate professor M. A. Makarov)
- E-mail address: KPVBol@yandex.ru
- Office and working hours: Clinical hospital #11 (8-17)

### **Total hours — 36:**

Practice 24 hours;

Self-study 12 hours

### **Course description:**

The purpose of mastering practice: – the formation of universal and general professional competencies for carrying out scientific research to solve professional problems.

The main task of higher education is to prepare comprehensively developed specialists who are capable of continuously replenishing and deepening their knowledge, raising their ideological, theoretical and professional level. For these purposes, universities are implementing measures aimed at increasing the efficiency of the educational process and research work in universities, which has created conditions for the widespread involvement of students in scientific research.

The modern “concept of student research work” includes two interrelated elements:

- teaching students the elements of research work, instilling in them the skills of this work;
- actual scientific research conducted by students under the guidance of a supervisor.

### **Course objectives:**

Objectives of mastering practice:

- mastering the theoretical aspects of searching scientific literature in modern databases;
- formation of theoretical knowledge about the basic principles of evidence-based medicine and their application in practice;
- determination of the area of scientific research and analysis of the state of the issue in the subject area under study;
- mastering methodological approaches to planning, organizing and implementing scientific research;
- processing and analysis of the results of literature study;
- mastering the skill of writing scientific publications (thesis) based on the results of a literature review;
- acquisition of other knowledge, skills and abilities necessary for carrying out research work, including the use of Internet resources to check text documents for the presence of borrowings from open sources on the Internet and other sources.

### **Course topics:**

**The literature review suggests:**

1. study of the theory and history of the issue, theoretical analysis of basic concepts; information about the standards of the studied parameters of a healthy person and their changes in a number of pathological conditions;
2. use of the most well-known works on the research topic (including journal publications of recent years, recent recommendations of professional communities, etc.).
3. generalization and presentation of conclusions containing the answer to the tasks posed in the introduction

### **Writing abstracts**

**Name:**

**Introduction:** Very briefly about the issue/topic being studied

**Relevance.** Why is this topic relevant?

**Purpose of the study:** Formulating a new aspect of a known problem in establishing new connections (interdisciplinary, integration);

**Object and methods of research.** Work with research, scientific literature, systematization and structuring of material; mastery of terminology

**Results.** A brief summary of the results of our own work with scientific literature.

**Conclusions.** Reflect the solution to each of the tasks posed in the introduction. Own attitude to the described problem, manifestation of the author’s position, independence of assessments and judgments.

**References:** Correctly formatted references to the literature used, list of references.

The volume of text (not including the title) is no more than 3500 characters with spaces. References to literary sources are allowed in the amount of no more than three. The list of references and bibliographic references must be prepared in accordance with GOST R 7.0.100-2018.

The inclusion of tables, figures, underlining and other illustrative materials in the thesis is not allowed. It is acceptable to use generally accepted abbreviations that are understandable to the reader. Other abbreviations must be deciphered the first time they are mentioned in the text. Decimals must use commas (for example, 0.1). The following characters are written without interruption from the previous ones: “%”, “<”, “>”, “+”.

Required before submitting abstracts! Pass an anti-plagiarism check. The uniqueness of the thesis must be at least 75% !!! Link <https://e.kazangmu.ru/mod/url/view.php?id=234288>

**The topic can be anything. In addition, you can choose one of the following:**

- Changes in the sense of smell in patients with Covid 19 infection
- Iron deficiency in patients with heart failure
- SGLT2 inhibitors in patients with heart failure
- Risk of death from myocardial infarction during semaglutidum therapy in patients without diabetes mellitus
- Resistance to antibiotic therapy by *Helicobacter Pylori*
- Correction of iron deficiency in patients with heart failure
- Modern approaches to anticoagulant therapy in patients with non-valvular atrial fibrillation
- Modern approaches to anticoagulant therapy in patients with valvular atrial fibrillation
- Modern approaches to anticoagulant therapy in patients who have suffered pulmonary embolism
- Frequency of thromboembolic complications in patients undergoing chemotherapy for cancer  
..... (something)
- Features of the organization of care in a dispensary-type medical institution
- Complications during cleansing enemas
- Complications with intramuscular injections
- Possibilities of digital medicine in the practice of a doctor-.....(specialty of interest)
- Features of the use of physical examination methods in emergency care
- Aseptics and antiseptics rules in the medical institutions
- Ethical and deontological principles in the patient-student relationships

**Evaluation and grading:**

Monitoring progress is carried by the end of each module (colloquia/written papers/oral examination/test/laboratory works assessment/abstracts/reports/medical records, reports or other).

*Routine performance assessment* (homework, laboratory work, tests during classes, etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of test, problem cases, practical exercises, oral and written questions or their combination. Grading: 0–69 – “poor”, 70-79 – “satisfactory”, 80-89 – “good”, 90-100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

**Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

**Control questions:**

1. Define the concept of "Science".
2. What is the difference between fundamental and applied scientific research?
3. List the stages of research work.
4. What is a scientific problem?
5. Define the concept of "Scientific research method"
6. How are the methods of scientific knowledge classified depending on the level of knowledge.
7. List the methods of empirical research.
8. List the methods of theoretical research
9. What are the requirements for scientific theory?
10. Define the concept of "Scientific research topic".
11. Define the object and subject of the study.
12. What are the research plans?
13. List the main sources of scientific information.
14. What are the key questions that need to be answered before starting work on abstracts?
15. What is the standard structure of abstracts?
16. What information should be included in the introduction of the abstracts?
17. What should be stated in the section "

**Sample of abstracts**

KAZAN STATE MEDICAL UNIVERSITY  
DEPARTMENT OF INTRODUCTION TO INTERNAL DISEASES  
DISTRIBUTION OF REPRODUCTIVE FACTORS IN HYPERTENSIVE WOMEN

**Objective:** to study distribution of reproductive factors (number of pregnancies, deliveries, abortions and miscarriages) in hypertensive women.

**Methods.** 322 women – citizens of Kazan-city aged 21–59 y were examined. 56 virtually healthy normotensive volunteers (blood pressure (BP)<130/85 mm Hg) without history of BP elevation constituted control group (CG). 63 patients with high normal BP (HNBP) and 203 patients with essential hypertension (EH) (EH groups I–III) according to ESC/ESH (2010) with EH duration  $12.8 \pm 9.7$  y (61 patients with EH I, 66 patients with EH II, 76 patients with EH III) were enrolled. Patients with secondary hypertension were excluded from survey. A survey included some data of gynecological history (a number of pregnancies, deliveries, abortions, and miscarriages), office BP was measured according to ESC/ESH recommendations (2008). Gradation (in per cent) and average group values of reproductive factors were estimated. Chisquare criterion ( $\chi^2$ ) was used

for assessment of significant differences in distribution of factors between groups, and t criterion – between variational series.

**Results.** Significantly (according to  $\chi^2$ ) the major share of women having pregnancies, abortions, and miscarriages was found in EH III group (98.7% vs 80.4%,  $p<0.001$ ; 96.1% vs 75%,  $p<0.01$  и 84.2% vs 55.4%,  $p<0.001$ , correspondingly, comparing with CG). Significant differences in factors incidence according to  $\chi^2$  were found between the following groups: deliveries – CG – HNBP ( $p<0.05$ ), EH I – EH III ( $p<0.02$ ); abortions – CG – HNBP ( $p<0.01$ ), CG – EH I ( $p<0.05$ ), CG – EH II ( $p<0.01$ ). Significantly (according to  $\chi^2$ ) the major share of women having 2 and more pregnancies (89.5% vs 64.3%;  $p<0.001$ ), 2 and more deliveries (96.1% vs 75%;  $p<0.05$ ), 2 and more abortions (67.1% vs 35.7%;  $p<0.001$ ) was found in the EH III group comparing with CG. Among all the examined women significantly higher average values of pregnancies, deliveries, and abortions number (according to t criterion) was found in the EH III group ( $5.6\pm4.1$  vs  $3.3\pm3.0$ ,  $p<0.001$ ;  $1.8\pm0.8$  vs  $1.2\pm0.9$ ,  $p<0.001$  and  $3.4\pm3.7$  vs  $1.8\pm2.4$ ,  $p<0.01$ , respectively) comparing with CG. Significant differences (according to t criterion) were also found between the following groups of patients: number of pregnancies – CG – EH II ( $p<0.01$ ), EH I– EH III ( $p<0.05$ ), number of deliveries – CG – HNBP ( $p<0.02$ ), CG – EH I ( $p<0.05$ ); number of abortions – CG – EH II ( $p<0.05$ ).

**Conclusion.** Among 21–59 years old women high values of BP are associated with significantly higher incidence of pregnancies, deliveries, and abortions ( $p<0.05$  according to  $\chi^2$  criterion) and more high mean values of their number ( $p<0.05$  according to t criterion).

## MYSTERIOUS ACUTE ENCEPHALITIS SYNDROME (AES) IN MUZAFFARPUR

Introduction To Internal Diseases Department

Kazan State Medical University, Kazan

**Background.** One among three long-standing mystery diseases listed in Wikipedia is acute encephalitis syndrome (AES) in Muzaffarpur, Bihar. This disease has remained for over two decades without determining a cause for it; hence it is called mystery disease. It occurs as annual seasonal outbreaks during the months of April – July, affecting hundreds of children with 40–60% mortality. Studies documented that cases coincided spatially and temporally with lychee cultivation. My investigation suggests that lychee consumption is the main cause of acute encephalitis syndrome.

**Objective.** There are hundreds of children deaths due to acute encephalitis syndrome in Muzaffarpur due to lack hospital facilities, illiteracy, poor mental health and inadequate nutrient supply.

**Material and Methods .** Study design In 2014, NCDC and US CDC investigated this syndrome, using hospital-based clinical surveillance, an epidemiological case-control study, and comprehensive and novel laboratory testing methods on human biological and environmental specimens to determine risk factors associated with this illness, assess the aetiological role of naturally occurring toxins such as MCPG and hypoglycin, and exclude the role of novel infectious pathogens, selected pesticides, and toxic elements. Hospital-based clinical surveillance. Surveillance was done at the SKMCH and the KDKMH, the chief referral medical centers in Muzaffarpur, India. Demographic and clinical data were collected with standardised questionnaires. Case-control study. For each Case and controls were asked about consumption of food items, food washing, water sources, and other exposures, including time spent in agricultural fields. Calculate a socioeconomic index according to the methods of the National Family Health Survey, A child was defined as wasted if the Z score was more than 2 SD below WHO Child Growth Standard. Environmental specimen collection. Between May 19, and June 13, 2014, litchi fruit samples were collected from orchards in the five blocks of Muzaffarpur. Laboratory testing. Specimens from 2013 and 2014 for metabolites of hypoglycin A and MCPG using liquid chromatography-tandem mass spectrometry. In a collaboration between the US Department of

Agriculture (USDA) and the US CDC, a quantitative assay was designed to assess MCPG and hypoglycin A content in soapberry arils.

**Results.** In animal experiments, MCPA and MCPG have been shown to induce encephalopathy and hypoglycaemia. The encephalopathy is explained by the mitochondrial inhibition of fatty acid-oxidation and accumulation of toxic metabolites. Our hypothesis is that the Muzaffarpur AES is caused by MCPG in lychee. **Conclusion.** Knowing that fatty acid metabolism is deranged, treatment modalities are possible to save lives. Ensuring adequate nutritional status in young children will prevent this disease. If and when the lychee connection is confirmed, children's behaviour modification can further help prevention

**Criteria for evaluation:**

An "excellent" (90-100) grade is given to a student if the abstract (presentation) is formatted in accordance with established requirements, the topic is fully covered, specific examples are given, the material studied is summed up, and a well-formatted list of modern literature is provided.

A "good" (80-89) grade is given to a student if the abstract (presentation) as a whole is designed in accordance with the established requirements, but the topic is not fully disclosed, the material studied is partially summarized, and there are shortcomings in the design of the list of references.

A "satisfactory" (70-79) grade is given to the student if the abstract (presentation) is generally designed in accordance with the established requirements, but the topic is not fully disclosed, the material studied is partially summarized, and there are shortcomings in the design of the list of references.

An "unsatisfactory" (60-69) grade is given to a student if the established requirements are not met when preparing an abstract (presentation), the topic is not fully covered, the material studied is not summarized, and an insufficient number of literature sources is used.

## CLINICAL CLERKSHIP «GENERAL CARE OF PATIENTS OF THERAPEUTIC AND SURGICAL PROFILES»

**Teachers:** PhD, associate professor A. R. Sadykova; PhD, associate professor M. A. Makarov; PhD; assist. prof. E.N.Ivantsov; PhD, assist. prof. V.M. Gazizyanova, PhD, assist. prof. F.A. Magamedkerimova,

**Building, Department, classroom:** Clinical hospital #7, Clinical hospital #11 Department of Introduction to internal diseases

**Contact details:**

- Telephone number: 89172922241 (associate professor M. A. Makarov)
- E-mail address: KPVBol@yandex.ru
- Office and working hours: Clinical hospital #11 (8-17)

**Total hours — 72:**

Practice 48 hours;

Self-study 24 hours

**Course description:**

Under the supervision of the internship supervisor, the student gets acquainted with the ethical and deontological aspects of medical activity in communication with colleagues, mid-level and junior medical personnel, patients, and their relatives. Under the supervision of the internship supervisor, the student gets acquainted with the operating mode of the admission and diagnostic



department, the work schedule, the procedure for admitting and discharging patients. The concept and principles of sorting patients depending on the profile of the departments and the need to provide assistance (planned and emergency diseases). Familiarization with the structure of the sanitary checkpoint. Familiarization with the methods of transporting a patient. The student independently gets acquainted with the concept of medical and preventive institutions, the organization of work of medical institutions. The student gets acquainted with the work of the endoscopy room, preparation and implementation of FEGDS and colonoscopy. General acquaintance with the transplant service. The student gets acquainted with the operating mode of the therapeutic department, medical documentation, record keeping by the mid-level medical personnel, the procedure for receiving and handing over shifts by a nurse, the rules for storing poisonous and potent drugs, medical instruments, the sanitary regime of the wards, the operating mode of the food block, treatment rooms, corridor and utility rooms. The student independently studies the concepts of sanitary regime, treatment regime, dietary regime. Daily routine. Familiarization with the list of measures to ensure the patient's personal hygiene. Filling out the internship diary on the educational portal.

### **Course objectives:**

**Goal:** to get a notion about the job of a nurse, the importance of patient's care, legislative bases of health protection.

### **Knowledge objectives:**

- to know the history of profession of a nurse, qualification requirements to a profession of a nurse, her official duties, a role of the general care of a patient as a medical factor, rules of behavior in a clinic, in a hospital.

### **Subject-matter:**

- 1) a history of the profession of a nurse;
- 2) importance of care of a patient as a medical factor;
- 3) relations between medical staff and patients;
- 4) moral code and norms of behavior of a nurse; the role of a nurse, her official duties;
- 5) legislative bases of health protection.

### **Course topics:**

Total amount of done manipulations

1. Anthropometric measurements (height, weight, chest circumference)
2. Count of respiration rate
3. Change of linen and bed cloths
4. Instill drops to eye, nose, ears
5. Taking temperature
6. Measuring of blood pressure
7. Count of peripheral pulse rate
8. Preparation of disinfectant solution
9. Determination of water balance
12. Transportation of patients

Characteristic and student's work evaluation by senior nurse of a department

.....

Signature of a senior nurse

Characteristic and student's work evaluation by head nurse of a hospital

.....

Signature of a head nurse

### **Required supplies:**

Educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=802>)

### **Rules of behavior:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### Test questions

( there is only one right answer. Choose it)

1. For what the emergency department of hospital is intended?
  - A. For registration and reception of patients.
  - B. For inspection and sanitization of patients.
  - C. For rendering the qualified medical aid for the patient.
  - D. All listed.
  - E. There is no right answer.
2. Duties of junior medical nurse contains:
  - A. Supervision over a sanitary regimen.
  - B. Accompany of the patient to the doctors room and sanitization of the patient.
  - C. Transportation and accompany of the patient to the specialized department.
  - D. All listed.
  - E. Any of listed above.
3. Work of an emergency department should pass in the following sequence:
  - A. Registration of patients, sanitization, medical examination.
  - B. Registration of patients, medical examination, sanitization.
  - C. Sanitization, medical examination, registration of patients.
  - D. Any way.
  - E. There is no right answer.
4. At the emergency department the following rooms are placed:
  - A. A waiting room.
  - B. Registry and information bureau.
  - C. A viewing study.
  - D. All listed.
  - E. Any of listed above.
5. Sanitization of the patient at the emergency department includes:
  - A. Desinsection.
  - B. A hygienic bath, shower or rubdown of the patient.
  - C. Changing clothes of the patient to clean hospital linen and clothes.
  - D. All listed.
  - E. Any of listed above.
6. Sanitary pass of the emergency department consists of the following rooms:
  - A. Viewing.
  - B. Cloak-room.
  - C. Shower room and a room where patients put on.
  - D. All listed.
  - E. Any of listed above.
7. In complete sanitization of the patient are used:
  - A. A bath, shower.

- B. A bath, shower, rubdown.
  - C. Rubdown, washing.
  - D. Rubdown, washing, shower.
  - E. There is no right answer.
8. The temperature of water for a hygienic bath should be:
- A. 27-29°C.
  - B. 30-33°C.
  - C. To come nearer to a body temperature (34-36°C) or to be higher (37-39°C).
  - D. 40-43°C.
  - E. 44-46°C.
9. Weighing of the patient needs to be made in conditions of:
- A. In the morning, on an empty stomach, after bowel and bladder movement, only in linen.
  - B. In the morning, on an empty stomach, with a full bladder.
  - C. In the evening, after meal, with a full bladder.
  - D. Under any conditions.
  - E. There is no right answer.
10. What kinds of transportation of patients to the department there are?
- A. On foot.
  - B. On a wheel-stretcher.
  - C. On a stretcher.
  - D. All listed.
  - E. Any of listed above.

Answers to test questions of the third lesson

The question	1	2	3	4	5	6	7	8	9	10
The answer	D	D	B	D	D	D	A	C	A	D

Control questions:

1. What is the emergency department of hospital?
2. Of what rooms the emergency department of hospital consists of?
3. What are duties of junior medical nurse at the emergency departments?
4. In what sequence work of the emergency department proceeds?
5. By what ways patients can be delivered to the emergency department?
6. What magazines the medical sister of the emergency department should fill?
7. What sanitization includes? What kinds of sanitization of patients there are?
8. Of what rooms consists sanitary pass at the emergency department of the hospital?
9. The device of a viewing room.
10. The device of a bathing room.
11. How the disinsection is made in cases of pediculosis?
12. How the disinsectization of linen of pediculosis patients is made?
13. What kinds of sanitization there are?
14. What contradictions for taking of a bath and shower there are?
15. How weighing of the patients is carried out?
16. How measurement of height of patients is carried out?
17. How the measurement of chest is carried out?
18. How the transportation of patients to the department is carried out?

### Situational problems

**Problem 1.** The patient has been delivered to the emergency department. After inspection of the scalp pediculosis was found. What must junior nurse do?

The answer. Junior nurse should process hair of the patient with soap K, comb out their with rich hair brush, then on the title page of the case history to make a mark "P" (pediculosis).

**Problem 2.** The patient delivered in a hospital (from an apartment, without accompanying), has died at the emergency department. What the medical sister, besides registration of the documentation is obliged to do?

The answer. The medical sister is obliged to give the telephone message to relatives, having made the appropriate record in « Magazine of telephone messages ». In case of absence of the phone at the patients flat the information is transferred through a police station on a residence.

**Problem 3.** The patient with a bleeding was delivered to the emergency department. Is it possible for this patient to take a hygienic bath?

The answer. No, it is impossible.

**Problem 4.** The doctor has prescribed weighing to the patient. Junior nurse has decided to make it after a dinner. Is it correct?

The answer. No its not. Weighing should be made in the morning, on an empty stomach.

**Problem 5.** The patient with a heart attack of myocardium was delivered to the emergency department. Junior nurse decided to direct the patient to department on foot, without any prescriptions of the doctor. Is it correct?

The answer. No, it is not. The doctor should determine a kind of transportation to the department. The patient with a heart attack of myocardium should be transported on a wheelchair or a stretcher.

## STANDARD ANSWERS TO EXAM TICKET QUESTIONS

for practical training to obtain professional skills and experience in professional activities

" General care of a therapeutic and surgical patients"

by specialty: General Medicine, code 31.05.01

Qualification: physician

### 1. Transportation of the patient on a wheelchair

Equipment: a wheelchair.

1. Incline wheelchair forward, having stepped on a support for legs.
2. Ask the patient to rise on a support for legs, then, supporting the patient set him in an wheelchair.
3. Put a wheelchair in a starting position.
4. Watch up so at transportation hands of the patient did not fall outside the armrests of a wheelchair (fig. 6).

### 2. Transportation of the patient on a wheel-stretcher

Equipment: a wheel-stretcher

1. Put a wheel-stretcher perpendicularly to a couch so that its head end approached to the foot end of a couch.
2. Three hospital attendants must stand near the patient from the same side: so the first bring hands under a head and shoulders of the patient, the second - under a pelvis and the top part of hips, the third - under middle part of hips and calves.
3. Having lifted the patient, turn on 90 ° with him aside wheel-stretcher.
4. Lay the patient on a wheel-stretcher and cover him.
5. Inform the nurse at the department, that the patient is directed to department (on a wheel-stretcher).
6. At the department: the head end of a wheel-stretcher is to bring to the foot end of a bed, three attendants together are to lift the patient and, having turned together with the patient on 90 ° to put him on a bed.

### 3. Transportation of the patient on a stretcher manually

Equipment: a stretcher.

1. It is necessary to carry the patient on a stretcher without hurry and shaking.
2. Downwards on a ladder the patient must be carried legs forward, it is important to rise the leg end of the stretcher and to lower the head end of it (thus is reached a horizontal position of a stretcher) (fig. 7).

**Evaluation and evaluation criteria:**

0-69 (unsatisfactory):

- Practical activities in a medical institution:
  - o Failure to attend clinical sites or a large number of absences.
  - o Incorrect completion of the diary or refusal to keep it
  - o Lack of activity based on internship
  - o Low level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are not completed, or they contain many errors, or there is a high proportion of plagiarism.
  - o Lexical and grammatical errors in assignments.

70–79 (satisfactory):

- Practical activities in a medical institution:
  - o Visiting clinical sites less than the time allowed by the regulations
  - o Not fully meeting the diary keeping criteria
  - o Low activity in clinical sites
  - o Low level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed, but with errors or with an average level of borrowing
  - o Lexical and grammatical errors in assignments.

80-89 (good):

- Practical activities in a medical institution:
  - o Visiting clinical sites in accordance with the time regulations, absences only for valid reasons
  - o Sufficient compliance with the diary keeping criteria.
  - o Average activity at clinical sites
  - o Average level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed mostly without errors and with a small proportion of borrowings.
  - o There are no lexical or grammatical errors.

90-100 (excellent):

- Practical activities in a medical institution:
  - o Visiting clinical sites in accordance with the time regulations, absences only for valid reasons
  - o Keeping a diary strictly according to the criteria
  - o High activity at clinical sites
  - o Free level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed without errors and borrowings
  - o There are no lexical or grammatical errors.

## CLINICAL CLERKSHIP "ASSISTANT OF A WARD NURSE"

**Teachers:** PhD, associate professor A. R. Sadykova; PhD, associate professor M. A. Makarov; PhD; assist. prof. E.N.Ivantsov; PhD, assist. prof. V.M. Gazizyanova, PhD, assist. prof. F.A. Magamedkerimova,

**Building, Department, classroom:** Clinical hospital #7, Clinical hospital #11 Department of Introduction to internal diseases

**Contact details:**

- Telephone number: 89172922241 (associate professor M. A. Makarov)
- E-mail address: KPVBol@yandex.ru
- Office and working hours: Clinical hospital #11 (8-17)

**Total hours — 180:**

Practice 60 hours;

Self-study 120 hours

**Course description:**

This course is designed for the teaching of the skilled care for a therapeutic patient, basic principles of the medical ethics and medical deontology, and ability to use medical equipment and instruments.

It is focused on a work of a ward nurse, rules of aseptic and antiseptic regimen in the medical institutions.

**Course objectives:**

- training of students in taking skilled care of patients;
- learning of major principles of medical ethics and deontology;
- ability to use medical equipment and instruments;
- mastering and fastening of knowledge acquired in the course of previous practices in all the time of tuition;
- carrying out performance of duties of a ward nurses of medical prophylactic institutions;
- acquiring skills of an independent care of a patient;
- implementation of an entire complex of nurse manipulations.

**Goals of practice**

- - to become acquainted with work organization of a hospital departments;
- - to know functional duties of junior and middle personnel of various departments of a hospital;
- - to know rules of medical documents management;
- - to acquire skills of a nurse in charge manipulations;
- - to perform manipulations of a patients' care;
- - to become acquainted with organization and principles of nursing patients with various somatic and surgical diseases;
- - to have a notion of a work of a hospital medical staff.

**Course topics:**

**Practice content:**

DAY 1. Introduction part. Discussing about tasks of medical practice. Measurement of a patient's height, weight a patient. Body mass index (BMI calculation)

DAY 2. Counting of respiratory movements. Measurement of a patient's chest circle

DAY 3. Patients transportation to the department, operation room by a wheelchair, wheel-stretcher and a stretcher

DAY 4. Change of a patient's bed-clothes and underwear

DAY 5. Temperature taking and results registration in a temperature chart

DAY 6. Oxygenotherapy with using different methods

DAY 7. Using pocket inhalator

DAY 8. Feeling the arterial pulse

DAY 9. Taking the blood pressure  
 DAY 10. Temperature list structure. Blood pressure and pulse rate registration.  
 DAY 11. Medicaments distribution (tablets, capsules, pouders, guttas, solutions)  
 DAY 12 Rules of aseptic and antiseptic regimen  
 DAY 13. Technique of sputum collection for microbiological investigation, for Mycobacterium tuberculosis detection, sensitivity to antibiotics.  
 DAY14. Urine collection for laboratory examination (Nechiporenko)  
 DAY15. Urine collection for examination according to Zimnitsky method  
 DAY16. Cardiopulmonary resuscitation  
 DAY17. Artificial pulmonary ventilation by "mouth to mouth breathing"  
 DAY18. Artificial breathing ventilation by "mouth to nose breathing"  
 DAY 19. Bedsore prevention  
 DAY 20. Control summing up test.

***Complete amount of practical skills***

№	Designation	Obligatory amount
1	Patients transportation to the department, operation room by a wheelchair, wheel-stretcher and a stretcher	12
2	Change of a patients position	14
3	Change of a patient's bed-clothes and underwear	10
4	Using bedpans	3
5	Medicaments distribution	30
6	Bedsore preventio)	6
7	Care of skin	12
8	Counting of respiratory movements	4
9	Care of oral cavity	4
10	Temperature taking and results registration in a temperature chart	20
11	Measurement of a patient's height, weight a patient	5
12	Feeling the arterial pulse, taking the blood pressure	15
13	Giving of cleansing enema	3
14	Urine collection for laboratory examination	10
15	Rules of aseptic and antiseptic regimen	20
16	Using pocket inhalator	5
17	Oxygenotherapy with using different methods	7
18	Artificial pulmonary ventilation by "mouth-mouth", "mouth-nose" breathing	2

Characteristic and student's work evaluation by senior nurse of a department

.....

Signature of a senior nurse

Characteristic and student's work evaluation by head nurse of a hospital

.....

Signature of a head nurse

**Required supplies:**

Educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=1699>).

**Rules of behavior:**

- Be respectful
- Be careful with equipment

- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### Tests

(Choose one correct answer)

1. Appearance of bedsore indicates:
  - A. The incorrect treatment prescribed by the doctor.
  - B. An insufficient care of the patient.
  - C. Not following a hospital regimen by the patient.
  - D. The wrong feeding of the patient.
  - E. Nothing from listed above.
2. For prevention of bedsore it is necessary:
  - A. To change position of the patient every 2 hours.
  - B. To straighten bedsheets and bed-clothes.
  - C. To wipe skin with disinfectant.
  - D. All set above.
  - E. Nothing from above.
3. It is necessary to clean patient's ears:
  - A. Once a week.
  - B. 2-3 times a week.
  - C. Once a month.
  - D. 2-3 times a month.
  - E. Daily.
4. For removal of crusts from a nose is not used:
  - A. The cotton wool moistened with water.
  - B. The cotton wool moistened with vaseline oil.
  - C. Dry cotton wool.
  - D. Tweezers.
  - E. All from above.
5. For dropping medication in eyes it's enough:
  - A. One drop.
  - B. 2-3 drops.
  - C. 4-5 drops.
  - D. 6-7 drops.
  - E. 10 drops.
6. The rubber bedpan is applied:
  - A. To the weakened patients.
  - B. To the patients with bedsore.
  - C. At incontinence of feces and urine
  - D. In all listed cases.
  - E. There is no right answer.
7. Bedsores develop because of:
  - A. Constant pressure on skin.
  - B. Incorrectly made injection.
  - C. Bad meal.
  - D. All set above.
  - E. There is no right answer.
8. At occurrence of redness of skin in sacrum area it is necessary:



- A. To wipe the skin with 10 % camphor spirit.
  - B. To wipe the skin with a damp towel.
  - C. To irradiate with a quartz lamp.
  - D. To use all listed.
  - E. Nothing from above.
9. Mouth gargling should be carried out:
- A. Only in the morning.
  - B. In the morning and after each meal.
  - C. Only before visiting dentist.
  - D. Only in the evening.
  - E. There is no right answer.
10. For taking a swab from a pharynx is used:
- A. A sterile glass stick.
  - B. The wadded tampon reeled - up a tweezers.
  - C. A sterile shaving brush.
  - D. A tweezers.
  - E. Nothing from above.

#### Theme №5 Test Keys

A question №1	2	3	4	5	6	7	8	9	10
The answer	B	D	B	B	D	A	D	B	C

#### STANDARD ANSWERS TO EXAM TICKET QUESTIONS

for practical training to obtain professional skills and experience in professional activities

"Ward Nurse Assistant"

by specialty: General Medicine, code 31.05.01

Qualification: physician

**Question 1. Measuring body temperature in the rectum. Classification of fever by the degree of temperature increase.**

#### ANSWER.

*Rectal (rectal) body temperature measurement* has always been considered the most reliable method, but several new studies have shown some limitations to its use. Rectal body temperature changes more slowly than core body temperature and remains high for a longer period of time. Correct temperature measurement also depends on the depth of insertion of the thermometer, the nature of local blood circulation, and the presence of feces. Many people find this method uncomfortable.

*Indications for measuring rectal temperature:* children under 4-5 years of age, exhaustion of the body (in patients, the thermometer in the armpit area is not tightly covered by soft tissues), general cooling of the body, skin lesions and inflammatory processes in the armpit area.

*Contraindications:* constipation (the rectal ampulla is sometimes filled with feces), diarrhea, rectal diseases (proctitis, hemorrhoids, etc.)

*Necessary equipment:* maximum medical thermometer, container with disinfectant solution, individual napkin, petroleum jelly, medical gloves, temperature sheet.

#### *The order of the procedure.*

1. Establish a trusting relationship with the patient, inform about the upcoming procedure and obtain consent to perform the manipulation.
2. Place the patient on his side with his legs tucked up to his stomach.
3. Wash and dry your hands. Put on rubber gloves.
4. Shake the thermometer until the mercury column drops below 35 °C.
5. Lubricate the mercury end of the thermometer with Vaseline.
6. Insert the thermometer into the rectum to a depth of 2-4 cm, then gently squeeze the buttocks.

7. Measure the temperature for 5 minutes.
8. Remove the thermometer, wipe it with a napkin and remember the result obtained.
9. Inform the patient of the thermometry results.
10. Place the thermometer in a container with a disinfectant solution (3% chloramine solution for 30 minutes, 3% hydrogen peroxide solution for 80 minutes, 0.1% "Dezoxon-1" for 15 minutes). The thermometer used to measure the temperature in the rectum is stored separately from other thermometers.
11. Wipe the patient's anus and help him to take a comfortable position.
12. Remove gloves, wash hands.
13. Record the thermometer readings on the temperature sheet, indicating the measurement location ("rectally").

*Normal body temperature in the rectum: 37.3-37.7 °C.*

*Classification of fever by degree of temperature increase*

There are:

- weak or subfebrile body temperature (37-38° C );
- moderate or febrile (38-39° C );
- high (39-41° C );
- excessive (above 41° C ).

## **Question 2. Methodology for measuring blood pressure.**

### **ANSWER.**

*Objective:* to assess the state of the cardiovascular system, the general condition of the patient, determine blood pressure indicators and evaluate the results of the study.

*Indications:* diseases of the cardiovascular system, kidneys, patient examination.

*Contraindications:* none.

*Equipment:* tonometer, phonendoscope, pen, temperature sheet (outpatient card, medical history), roller, napkins, 70% ethyl alcohol or disinfectant solution approved for use in a medical organization.

*Method of measuring blood pressure (BP) :*

- wash (hygiene level), dry your hands and put on gloves;
- ask the patient to lie down (sit down), free the arm from clothing and place it in an extended position (a clenched fist of the free hand or a bolster can be placed under the elbow);
- place the cuff on the patient's bare shoulder 2–3 centimeters above the elbow;
- place the phonendoscope membrane on the elbow bend area (location of [the brachial artery](#) );
- check the position of the pressure gauge arrow relative to the "0" scale and close the "bulb" valve with the other hand by turning it to the right;
- with the same hand, pump air into the cuff until the pulsation on the [radial](#) artery disappears and the blood pressure is 20-30 mm Hg higher than the estimated blood pressure;
- release air from the cuff *at a rate of 2-3 mm Hg per 1 second* by turning the valve to the left;
- note the number of the first pulse beat on the pressure gauge scale corresponding to [the systolic pressure](#) ;
- continuing to release air from the cuff, note the complete disappearance of the pulse wave, which on the manometer scale corresponds to the diastolic pressure;
- release all the air from the cuff and repeat the entire procedure after 2 minutes;
- inform the patient of the obtained measurement results;
- wipe the phonendoscope membrane with a napkin soaked in alcohol and place it in the container;
- remove gloves and place them in a container;
- wash (hygiene level) and dry your hands;
- round off the obtained data and record it as a fraction in the medical documentation.

When measuring blood pressure, you should pay attention to the following.

- During the patient's first visit, it is necessary to measure blood pressure on both arms.
- Repeated blood pressure measurements are taken at intervals of at least 2 minutes.
- If a stable significant asymmetry of blood pressure is detected in the arms (more than 10 mm Hg for systolic and 5 mm Hg for diastolic), all subsequent measurements are taken on the arm with the higher numbers.
- It is advisable to measure blood pressure on the “non-working” arm.
- Blood pressure can be measured on the thigh of young patients, in the absence of upper limbs, using a special cuff.
- For children under 18 years of age, the tonometer cuff must be age appropriate.
- You should not measure blood pressure on the arm on the side of the mastectomy, the paralyzed arm, or the arm where the intravenous needle is located.

#### **Evaluation and evaluation criteria:**

0-69 (unsatisfactory):

- Practical activities in a medical institution:
  - o Failure to attend clinical sites or a large number of absences.
  - o Incorrect completion of the diary or refusal to keep it
  - o Lack of activity based on internship
  - o Low level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are not completed, or they contain many errors, or there is a high proportion of plagiarism.
  - o Lexical and grammatical errors in assignments.

70–79 (satisfactory):

- Practical activities in a medical institution:
  - o Visiting clinical sites less than the time allowed by the regulations
  - o Not fully meeting the diary keeping criteria
  - o Low activity in clinical sites
  - o Low level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed, but with errors or with an average level of borrowing
  - o Lexical and grammatical errors in assignments.

80-89 (good):

- Practical activities in a medical institution:
  - o Visiting clinical sites in accordance with the time regulations, absences only for valid reasons
  - o Sufficient compliance with the diary keeping criteria.
  - o Average activity at clinical sites
  - o Average level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed mostly without errors and with a small proportion of borrowings.
  - o There are no lexical or grammatical errors.

90-100 (excellent):

- Practical activities in a medical institution:
  - o Visiting clinical sites in accordance with the time regulations, absences only for valid reasons
  - o Keeping a diary strictly according to the criteria
  - o High activity at clinical sites

- o Free level of proficiency in the material.
- Independent work:
- o Assignments for independent work are completed without errors and borrowings
- o There are no lexical or grammatical errors.

## CLINICAL CLERKSHIP “JUNIOR MEDICAL STAFF ASSISTANT”

**Teachers:** PhD Dilyara Akberova, PhD Tamila Khalfina

**Building, Department, classroom** Republic clinical hospital, Orenburgskii district 138, 6 floor

**Contact details:**

Telephone number: 89274115711 (Dilyara Akberova)

89196853295 (Tamila Khalfina)

E-mail address [dile4ek@mail.ru](mailto:dile4ek@mail.ru)

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Office and working hours: Republic clinical hospital, Orenburgskii district 138, 6 floor (9-17)

**Class hours: 144 h**

**Course description:**

1. **Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.
2. **Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.
3. **Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.
4. **Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=2190>).

**Course objectives:**

**The purpose of mastering the discipline**

Formation and development of student's competencies aimed at compliance with ethical norms and rules in working with patients, maintaining a sanitary and anti- epidemic regime in medical institutions. Applying this knowledge and skills in practice.

**Tasks of the discipline:**

Objectives of discipline mastering:

1. consolidation and deepening of knowledge about the main stages (content) of work, features of observation and care of patients with diseases of different organs and systems from the positions of Junior medical personnel;
2. formation of abilities to organize the work of medical personnel in medical organizations, determination of functional responsibilities and the optimal algorithm for their implementation.
3. formation of the ability to organize measures for labor protection and safety, prevention of occupational diseases, monitoring compliance and ensuring environmental safety;
4. training in basic principles of medical ethics and deontology.

**Course topics:****Auditorium work.**

1. Organizational and technological support for practice (preparatory stage).
2. Organizational meeting (introductory lecture, information).
3. Safety instructions.
4. Distribution.
5. Issuance of documents (directions).
6. Production and practical activities.
7. Sanitary and educational work, conducting conversations, lectures for the population, patients.
8. Educational and research work.
9. Creating a diary, preparing a report and creating a profile.
10. Certification based on the results of practice.
11. Testing.
12. Practical manipulation techniques.
13. The interview (tasks)

**Practical classes.**

1. Basic components and principles of practical health care. The importance of General patient care.
2. Admission department.
3. Therapeutic Department in the hospital.
4. Nutrition of patients.
5. Body temperature and its measurement in healthy and sick people.
6. Measures to ensure personal hygiene of the patient.
7. The simplest physical therapy procedures.
8. Ways to use medicines.
9. Care for patient in severe condition.
10. Basics of resuscitation care.

**Calendar plan of lectures**

1. Basic components and principles of practical health care. The importance of General patient care.
2. Admission department.
3. Therapeutic Department in the hospital.
4. Nutrition of patients.
5. Body temperature and its measurement in healthy and sick people.
6. Measures to ensure personal hygiene of the patient.
7. The simplest physical therapy procedures.
8. Ways to use medicines.
9. Care for patient in severe condition.
10. Basics of resuscitation care.

**Topics recommended for students in educational and research work:**

1. Functional duties of a ward nurse.
2. Functional duties of the nurse-barmaid.
3. The types of cleanups in the departments of therapeutic and surgical profile.
4. Basic care for the seriously ill.
5. Method of feeding a seriously ill patient.
6. Modern disinfectants.
7. Rules of asepsis and antiseptics.
8. Methods of transporting patients.

9. Sanitary maintenance of wards.
10. Classification of medical waste according to the degree of its epidemic, toxicological and radiation hazard.
11. Sanitary rules and regulations for the collection, storage and disposal of medical waste.

#### **Text books and required supplies:**

1. General care for patients of therapeutic profile [Electronic resource]: ucheb. POS. / Oslopov V. N., Bogoyavlenskaya O. V.-M.: GEOTAR-Media, 2015. - <http://www.studmedlib.ru/book/ISBN9785970433935.html>
2. Practical skills in the program" assistant of a ward nurse "[Electronic resource] / Bulatov S. A., Gorbunov V., Akhmadeev N.-Kazan: Kazan state medical University, 2012. " - <http://www.studmedlib.ru/book/skills-1.html>

#### **Evaluation and grading:**

Monitoring progress is carried by the end of each topic.

#### **Evaluation criterion:**

The grade "excellent" (90-100 points) is given if the student is well-oriented in solving specific practical problems, makes 1 mistake in solving a case problem.

Score "good" (80-89 points) - is set if the student is oriented in solving specific practical problems, but makes single mistakes (2 errors) when solving the problem.

The rating "satisfactory" (70-79 points) is given if the student is partially able to analyze when solving specific practical problems, more than 2 errors are allowed.

The rating "unsatisfactory" (69 or less points) is given if the student is not able to analyze the options for solving specific practical problems, and makes more than 3 mistakes when solving the problem.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

#### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

#### **Example of module**

##### **Cases:**

1. Medical suits of doctors of the therapeutic Department always differ in exceptional cleanliness and neatness, because all employees wash their workwear at home.

✓ Are medical professionals doing the right thing?

✓ Give your recommendations.

2. A Junior nurse from the operating room was removing class B medical waste after the operation. She was wearing a special dressing gown, mask, and rubber gloves. The surgical needles were thrown out along with the dressing material. She was injured with a needle.

✓ What measures should be taken in case of an emergency?

✓ What did the Junior nurse do wrong?

- ✓ What violations were made in the disposal of pricking medical waste?

**Evaluation criterion:**

The grade "excellent" (90-100 points) is given if the student is well-oriented in solving specific practical problems, makes 1 mistake in solving a case problem.

Score "good" (80-89 points) - is set if the student is oriented in solving specific practical problems, but makes single mistakes (2 errors) when solving the problem.

The rating "satisfactory" (70-79 points) is given if the student is partially able to analyze when solving specific practical problems, more than 2 errors are allowed.

The rating "unsatisfactory" (69 or less points) is given if the student is not able to analyze the options for solving specific practical problems, and makes more than 3 mistakes when solving the problem.

**Tests: Choose one correct answer.**

1. The current cleaning of the treatment room is carried out:

a) weekly;

**b) 2 times a day;**

c) 1 time a day;

d) after each manipulation;

e) every 8 hours

2. The purpose of normal hand washing of medical personnel before examining a patient:

a) ensuring short-term sterility;

b) creation of short-term sterility;

c) prevention of occupational infection;

**d) removal of household pollution;**

d) prevention of infections, transmitted by parenteral route.

3. Bedsores are formed due to:

a) long lying in one place;

b) exhaustion of the body;

**c) long lying in one position;**

d) lack of a hygienic shower;

e) incorrectly made bed

4. Bed and underwear of the patient must be changed:

**a) at least once a week;**

b) after discharge of the patient;

c) once every 2 weeks;

d) 2 times a month;

e) daily.

5. The most reliable, convenient and gentle way to transport the seriously ill:

a) on a stretcher;

b) on the hands;

c) walking;

**d) on a gurney;**

e) on a wheelchair.

**Evaluation criterion:**

The test score is set in proportion to the percentage of correct answers:

90-100% - «excellent» rating;

80-89% - «good» rating;

70-79% - evaluation of «satisfactory»;

Less than 70% of correct answers are rated «unsatisfactory».

**Final exam/credit:**

**List of practical skills:**

1. Sanitary treatment of patients in the emergency Department.

2. Treatment of patients with pediculosis.
3. Transportation of patients.
4. Anthropometry and its parameters.
5. Prevention and treatment of bedsores.
6. Thermometry, storage and disinfection of thermometers.
7. Setting of jars, mustard plasters, dry and wet compresses.
8. Application of an ice pack, hot water bottle.
9. Preparation of therapeutic patients for instrumental research: ultrasound, bronchoscopy, radiological methods of research.
10. Study of the pulse in the peripheral arteries, its characteristics.
11. Techniques and rules for measuring blood pressure.
12. Emergency care for vomiting.
13. Feeding of the vessel and the urinal.

**Questions for scoring with an assessment:**

1. Features of the organization and mode of the surgical hospital's reception Department.
2. Characteristics of the ward Department of a surgical hospital. Requirements for a modern ward for surgical patients.
3. Features of the organization and operation of the sanitary and epidemiological regime in the dressing and operating unit.
4. Definition of the concepts "asepsis" and "antiseptics".
5. Work Schedule and cleaning procedure in the Department.
6. Features of hygiene of personal belongings of the patient. The need for gear control and visits.
7. Main methods of transporting patients in a hospital.
8. Features of medical ethics and deontology in the care of patients.
9. Subordination of staff in the Department.
10. Features of the relationship between secondary medical personnel and relatives of the patient.
11. Features of psychoemotional status in elderly patients and related with this, the features of care.

**Level 3-skill assessment:**

The following types of interview control are used to evaluate learning outcomes in the form of skills:

- tasks for decision - making in a non-standard situation (a situation of choice, multi-alternative solutions, a problem situation);
- tasks for evaluating the consequences of decisions made;
- tasks for evaluating the effectiveness of actions performed.

**Evaluation criteria for all three types of tasks:**

"Excellent" - the answer is correct, scientifically reasoned, with links to the topics covered, the task is completed, conclusions are made.

"Good" - the answer is correct, scientifically reasoned, but without references to the topics covered; the task is completed, but one or two minor errors of a logical or factual nature are made, conclusions are drawn;

"Satisfactory" - the answer is correct, but not scientifically substantiated, or the answer is incorrect, but an attempt is made to justify it from alternative scientific positions, passed in the course; serious logical and factual errors are made, an attempt is made to formulate conclusions;

"Unsatisfactory" - the answer is incorrect and not scientifically reasoned; the content of the task is not realized, the product is inadequate to the task.



## CLINICAL CLERKSHIP "ASSISTANT OF PROCEDURAL NURSE"

**Teachers:** PhD, associate professor A. R. Sadykova; PhD, associate professor M. A. Makarov; PhD; assist. prof. E.N.Ivantsov; PhD, assist. prof. V.M. Gazizyanova, PhD, assist. prof. F.A. Magamedkerimova,

**Building, Department, classroom:** Clinical hospital #7, Clinical hospital #11 Department of Introduction to internal diseases

**Contact details:**

- Telephone number: 89172922241 (associate professor M. A. Makarov)
- E-mail address: KPVBol@yandex.ru
- Office and working hours: Clinical hospital #11 (8-17)

**Total hours — 180:**

Practice 60 hours;

Self-study 120 hours

**Course description:**

All components of a work fulfilled by a student during the work practice (WP) should be recorded in a diary. A description of a hospital department structure, work management in it, number of medical staff in charge, number of patients in a department and their profile, diagnostic abilities, and equipment of a department should be set in the very beginning of a diary.

This document should also include information of work content and particular cases of an urgent aid providing.

It is necessary to describe all the difficulties student met in the course of practice (in performing some manipulations, taking vital signs, establishing rapport with a patient and medical staff) and ways of their overcoming.

You should strictly follow these requirements in completion of a diary:

1. Fill it just after hospital practice day.
2. Fill in a table of practical skills registration with digits, in the last graph put the total number of fulfilled manipulations.
4. Every day diary should be signed by a senior nurse of a department.
5. In the last day record your own opinion of the practice efficacy for you, and your suggestions to make it more resultative for students.

After completion of practice senior nurse of a department should sign diary.

**Course objectives:**

Objectives of the III year General Medicine faculty students' work practice "Assistant of a procedural nurse" are:

- training of students in taking skilled care of patients;
- learning of major principles of medical ethics and deontology;
- ability to use medical equipment and instruments;
- mastering and fastening of knowledge acquired in the course of previous practices in all the time of tuition;
- carrying out performance of duties of procedural nurses of medical prophylactic institutions;
- acquiring skills of an independent care of a patient;
- implementation of an entire complex of nurse manipulations.

**Goals of practice:**

- to become acquainted with work organization of a hospital departments;

- to know functional duties of junior and middle personnel of various departments of a hospital;
- to know rules of medical documents management;
- to acquire skills of a nurse in charge manipulations;
- to acquire skills of a procedural nurse manipulations;
- to perform manipulations of a patients' care;
- to become acquainted with organization and principles of nursing patients with various somatic and surgical diseases;
- to have a notion of a work of a hospital medical staff.

### **Course topics:**

#### ***Obligatory amount of practical skills***

№	Designation	Obligatory amount
1	Subcutaneous injections	50
2	Intramuscular injections	60
3	Intravenous injections	30
4	Intravenous infusions with preparation of system	24
5	Urinary bladder catheterization by means of soft catheter	1
6	Haemotransfusions	1
7	Blood substitutes transfusion	1
8	Assistance in pleural puncture	1
9	Assistance in abdominal puncture	1
10	CPR attendance	1
11	Taking blood sample	10

Characteristic and student's work evaluation by senior nurse of a department

.....  
Signature of a senior nurse

Characteristic and student's work evaluation by head nurse of a hospital

.....  
Signature of a head nurse

### **Required supplies:**

Educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=505>).

### **Rules of behavior:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **Tests**

(Choose the only one correct answer)

1. What is applied rectally?
  - A. Ointments
  - B. Suppositories
  - C. Drops
  - D. Capsules
  - E. Powders
2. The most convenient site for realization of a subcutaneous injection is:
  - A. An external surface of a shoulder
  - B. Up-external quadrant of buttocks
  - C. The most superficial places of vessels
  - D. Internal surface of forearm
  - E. A forward surface of a hip
3. How frequently the current cleaning of a procedure room is made?
  - A. Weekly
  - B. 2 times per day
  - C. Once a day
  - D. After each manipulation
  - E. Every 8 hours
4. How much liquid there is in one table- spoon?
  - A. 20 g
  - B. 15 g
  - C. 25 g
  - D. 10 g
  - E 5 g
5. What is the volume of solution inserted intracutaneously?
  - A. 3-5 ml
  - B. 5-10 ml
  - C. Up to 1 l
  - D. 0,5 - 1 ml
  - E. 250 ml
6. What is the angle of inserting the needle entered at an intramuscularly?
  - A. Almost parallelly
  - B. 15 degrees
  - C. 45 degrees
  - D. 90 degrees (perpendicularly)
  - E. 30 degrees
7. What ethanol concentration is used for disinfection of medical instruments?
  - A. 90 % solution.
  - B. 100 % solution.
  - C. 96 % solution.
  - D. 40 % solution.
  - E. 70 % solution.
8. Externally are not applied:
  - A. Powders.
  - B. Ointments.
  - C. Solutions.
  - D. Suppositories.
  - E.Mixture.
9. What for the intravenous infusion is not used?
  - A. Completion of a circulating liquid volume
  - B. Administration of medications solutions
  - C. Drawing blood for analysis

- D. Dezintoxication of an organism
  - E. Normalization of the acid -base disorder
10. How the quality of presterilizing processing is tested?
- A. Amidopirin.
  - B. Burne Tests.
  - C. Mantu Tests.
  - D. Romberg Tests.
  - E. Reberg Tests.

The lesson №7. Test Keys

A question	1	2	3	4	5	6	7	8	9	10
The answer	B	A	B	B	D	D	E	D	C	A

## STANDARD ANSWERS TO EXAM TICKET QUESTIONS

for practical training to obtain professional skills and experience in professional activities  
"Procedural Nurse Assistant"

by specialty: General Medicine, code 31.05.01

Qualification: physician

### 1. Intravenous Injection

1. Wash hands.
2. Gather supplies.
3. Put on gloves.
4. Position the patient so that the vein is easily accessible and you are able to perform the venipuncture in a comfortable position. Always have the patient either lying in bed or sitting in a chair with the arm propped up.
5. Explain the procedure to the patient.
6. Apply the tourniquet around the arm approximately 10 cm above the antecubital fossa with enough tension so that the VEIN is compressed but not the ARTERY.
7. Position the patient's arm extended with little or no flexion at the elbow.
8. Locate a prominent vein by palpation. If the vein is difficult to find, it may be made more prominent by massaging the arm with an upward motion to force blood into the vein.
9. Cleanse the puncture site with a 70 percent alcohol pad or iodine solution and allow to dry.
10. The patient some times squeezes and unclenches his fist for improvement of vein filling.
11. To be convinced, that a needle in vein, it is necessary to pull the syringe plunger on itself slightly - in the cylinder of a syringe blood should appear.
12. Having blood in a syringe untie the tourniquet by the left hand, having pulled for one of the free ends of the tourniquet, and also to ask the patient to unclench his fist.
13. Not changing position of a syringe, by the second and third fingers of the right hand holding the cylinder, the thumb of the left hand presses on the plunger, entering a medicine not up to the end, leaving air bubbles in a syringe.
14. Put by the left hand a cotton balls with alcohol to a place of puncture, and by the right hand takes a needle from a vein.
15. The patient arm is bent in an elbow joint for some minutes up to a complete stop of blood.
16. Record date, time, reason for infusion, number of units infused, lot number(s) and expiration date(s) in infusion record.

### 2. Preparation of system for intravenous infusion:

1. Wash hands carefully with warm water with soap, rinse them with alcohol.
2. Rinse a metal cover of a bottle with the sterile cotton ball moistened in alcohol, and remove its with sterile tweezers. To rinse a rubber cap with the sterile cotton ball moistened with alcohol.
3. Unpack system.

4. Enter a needle of an air line into a cap of the bottle, the free end of a short tubule of an air line to arrange along a bottle so that its end was up to standard of a bottom of a bottle and fix a chemist's elastic band or a medical plaster.
5. Enter a punction needle into a bottle. Then turn and fix a bottle on a special stand.
6. Turn a dropper in horizontal position (in parallel to a floor), open a clip and to fill slowly in a dropper up to half of volume.
7. Close a clip and to return a dropper in a starting position. Thus the filter of a dropper should be completely closed by a liquid for transfusion.
8. Fill the solution in all system, to open a clip and to fill in slowly all system before full replacement of air in a tubule and appearanceces of drops from a needle for injection, to close a clip.
9. Move out the air bubbles staying in system, to take above the turned bottle the end of a tube with canule for a needle, slightly tapping on a wall of a tube while bubbles will not be separated from a wall and will not leave through an external aperture of a tube.
10. Prepare a sterile tray, putting in it the cotton balls moistened with alcohol, a sterile napkin. To prepare 2-3 strips of a narrow adhesive plaster in length of 4-5 cm (for fixing a tube and a needle to the patient's arm).

#### **Evaluation and evaluation criteria:**

0-69 (unsatisfactory):

- Practical activities in a medical institution:
  - o Failure to attend clinical sites or a large number of absences.
  - o Incorrect completion of the diary or refusal to keep it
  - o Lack of activity based on internship
  - o Low level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are not completed, or they contain many errors, or there is a high proportion of plagiarism.
  - o Lexical and grammatical errors in assignments.

70–79 (satisfactory):

- Practical activities in a medical institution:
  - o Visiting clinical sites less than the time allowed by the regulations
  - o Not fully meeting the diary keeping criteria
  - o Low activity in clinical sites
  - o Low level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed, but with errors or with an average level of borrowing
  - o Lexical and grammatical errors in assignments.

80-89 (good):

- Practical activities in a medical institution:
  - o Visiting clinical sites in accordance with the time regulations, absences only for valid reasons
  - o Sufficient compliance with the diary keeping criteria.
  - o Average activity at clinical sites
  - o Average level of proficiency in the material.
- Independent work:
  - o Assignments for independent work are completed mostly without errors and with a small proportion of borrowings.
  - o There are no lexical or grammatical errors.

90-100 (excellent):

- Practical activities in a medical institution:

- o Visiting clinical sites in accordance with the time regulations, absences only for valid reasons
- o Keeping a diary strictly according to the criteria
- o High activity at clinical sites
- o Free level of proficiency in the material.
- Independent work:
- o Assignments for independent work are completed without errors and borrowings
- o There are no lexical or grammatical errors.

## **CLINICAL CLERKSHIP “PHYSICIAN’S ASSISTANT”**

**Teachers: PhD Dilyara Mukhametova, PhD Eugeniya Bodryagina**

**Building, Department, classroom #** 6th floor of the Republican Clinical Hospital, (Orenburg tract 138), Department of Hospital Therapy, room#1-9

**Contact details:**

- Telephone number: 89047634011 (PhD Dilyara Mukhametova)
- E-mail address: muhdilyara@gmail.com
- Office and working hours: Assistants' Room of Hospital Therapy Department (8-16)

**Total hours: 108 hours:**

Clinical practice 108 hours

**Course description:**

**Clinical practice** is aimed to apply theoretical knowledge in practice in therapeutical departments. Students develop different therapeutical skills: taking history of disease, physical examination of patients, assessment of laboratory and instrumental studies.

**Course objectives: The purpose of mastering the discipline**

Discipline purpose: consolidation of knowledge and skills acquired during the training, such as clinical manifestations of the main syndromes of diseases in therapeutic patients, diagnostic methods, diagnostic capabilities of research methods for a therapeutic patient, modern methods of clinical, laboratory, instrumental examination of patients (including endoscopic, radiological methods, ultrasound diagnostics), emergency procedures, principles of treatment, indications for treatment.

**Tasks of the discipline:**

1. To study of complaints, medical history and life, physical examination of patients with major internal diseases with a justification for a preliminary diagnosis in the practice of a physician, to receive patients;
2. Interpretation of the results of additional research methods with the justification and formulation of the clinical diagnosis;
3. Forming of a laboratory, instrumental examination algorithm for a main syndrome or disease;
4. Prescribing a diet, regimen, pharmacological and non-pharmacological treatment; choose the optimal treatment plan, prescribe drug therapy according to pharmacokinetics and pharmacodynamics of drugs, prevention of their side effects;
5. Individual preventive counseling (with correction of CVD risk factors);
6. Issuing recommendations to the patient upon discharge from the hospital;

7. Registration of medical documentation (case reports, staged and discharge epicrisis);
8. To participate in the implementation and interpretation of the X-ray examination results of patients;
9. To participate in the implementation of physiotherapeutic procedures;
10. Performing subcutaneous, intramuscular injections, intravenous infusions under the supervision of a teacher (medical staff), participation in puncture of the pleural and abdominal cavities;
11. Determine the blood group under the supervision of a teacher (medical staff), take a part in blood transfusion;
12. The development of emergency care skills; carry out resuscitation measures (indirect cardiac massage, mouth-to-mouth artificial ventilation);
13. Education of the rules of medical deontology and medical ethics.

### **Course topics:**

#### **Calendar plan of clinical practice**

1. Principles of organization of work of the therapeutical department in the health care facility
2. Recording medical documents
3. Supervision of patients with various therapeutical diseases (primary)
4. Supervision of patients with various therapeutical diseases (repeated)
5. Presence at post-mortem autopsy
6. Diseases of the cardiovascular system
7. Respiratory diseases
8. Gastroenterological diseases
9. Blood diseases
10. Diseases of the connective tissue and joints
11. Kidney diseases
12. Emergency therapy in therapeutical practice
13. Preparing patients and conducting functional diagnostic methods
14. Preparing patients for endoscopic diagnostic methods
15. Interpretation of laboratory tests
16. Preparation of patients and interpretation of radiological diagnostic methods
17. Carrying out punctures
18. Determination of blood type and Rh factor and transfusion of blood components
19. Providing sanitary-educational work among patients
20. Educational research

### **Text books and required supplies:**

1. Update and Review of Internal Medicine 2001: sept. 30- Oct. 5, 2001: Vol. 1-2. - New Mexico: Flavor of Southwestern in Santa E, 2001
2. Outpatient Therapy: textbook / [F. D. Akhmatova, V. F. Benevskaya, O. V. Bykova et al.]; edited by V. N. Larina. - Moscow: GEOTAR-Media, 2023. - 450, [6] p : il. ; 21 cm. - (Textbook). ISBN 978-5-9704-7708-3 :
3. Forchheimer, Frederick. The Prophylaxis and Treatment of Internal Diseases: designed for the use of practitioners and advanced students of medicine / F. Forchheimer. - New York : D. Appleton and Company, 1907. - xvii, [1], 652, [4] p.
4. Current Medical Diagnosis & Treatment: Adult ambulatory & Inpatient Management / Ed. L. M. Tierney, S. J. McPhee, M. A. Papadakis. - 41st ed. - New York: McGraw-Hill, 2002. - 1857 p. - (a LANGE medical book). - ISBN 0-07-112443-8
5. Clinical Medicine: A textbook for medical students and doctors / Edit.: P. Kumar, M. Clark. - 6th. ed. - Edinburgh: Elsevier Ltd, 2008. - 1508 p.: il. - ISBN 9780702027635

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (mcq test/case study/ skill assessment).

### **Level 1 – mcq test**

#### **Examples of mcq test:**

1. Which of the following drugs is less likely than others to cause the development of NSAIDs-gastropathy:

- a) Indomethacin
- b) Analgin
- c) reserpine
- d) Aspirin
- e) Butadion

Correct answer is: b.

2. For pneumococcal pneumonia specific all except:

- a) weakening of voice trembling and bronchophony
- b) neutrophilic leukocytosis and accelerated ESR
- c) crepitus
- d) blunt percussion sound over the affected area
- e) radiologically detectable intense darkening in the lungs

Correct answer is: a.

3. Acute coronary syndrome includes everything except:

- a) myocardial infarction with a pathological Q wave
- b) myocardial infarction without a pathological Q wave
- c) unstable angina
- d) variant angina
- e) stable angina

Correct answer: e.

The mark of mcq test is proportion of correct answers:

90-100% - mark "excellent"

80-89% - mark "good"

70-79% - mark "satisfactorily"

Less than 70% of the correct answers are "unsatisfactory".

### **Level 2 – Case study**

#### **Examples of case study:**

Case study №1.

Patient female, 25 years old, 10 days after a sore throat noted signs of fluid retention (decreased amount of urine produced during normal drinking routine, swelling of the extremities and puffiness of the face), discoloration of the urine (color of "meat slops"), pain in the occipital region.

Objectively: a general condition of moderate severity. Body temperature 36.8°C. The skin and mucous membranes of physiological color, clean. Swelling of the legs, feet, face is determined. Lymph nodes are not enlarged. Breathing rate 17 per minute, vesicular breathing, is carried out in all departments of the lungs, no wheezing. The heart is not enlarged. Heart sounds are clear, the second tone in the II intercostal space to the right of the sternum is strengthened. Heart rate 88 per minute, the heart rate is correct. BP 160/100 mm Hg on both hands. The abdomen is soft, painless in all areas, the liver does not extend beyond the edge of the costal arch, the spleen is not enlarged. The symptom of lumbar effusion is slightly positive.

In blood tests: hemoglobin 127 g/l, RBC  $3.6 \times 10^{12}/l$ , WBC  $6.7 \times 10^9/l$ , neutrophils segments 54%, bands 2%, lymphocytes 29%, ESR 18 mm/h, platelets 234,000, total protein 73 g/l, creatinine 126  $\mu\text{mol}/l$ , urea 9 mmol/l, ASLO titer 1:640, decreased C3 complement.

Urine analysis: pH 5, relative density 1022, protein 0.099%, no sugar, no acetone, white blood cells 8-9 in the field of view, red blood cells 20 in the field of view, single cylinders 4-6 in the field of view. Daily diuresis 800-950 ml.



Choose the most correct answer.

1. What is the leading syndrome in the patient:

- Arterial hypertension syndrome
- Uric syndrome
- Nephrotic syndrome
- Nephritic syndrome \*
- Edema syndrome

2. What is the patient's presumptive diagnosis?

- Acute glomerulonephritis \*
- Chronic glomerulonephritis
- Rapidly progressive glomerulonephritis
- Lower urinary tract infection
- Acute bilateral pyelonephritis
- Amyloidosis

3. What therapy is indicated for the patient:

- ACE inhibitors
- Angiotensin Receptor Blockers
- Slow calcium channel blockers \*
- Drink plenty, limit salt
- High protein diet
- Limiting water to 1-1.5 liters per day and salt \*
- Loop diuretic \*
- Potassium-sparing diuretic
- Thiazide diuretic
- Cytostatics (cyclophosphamide)

Assessment criterias.

“Excellent” (90–100 points) is set if the task is completed, conclusions are drawn;

“Good” (80–89 points) - the task is completed, but one or two minor errors of a logical or actual nature are made, conclusions are drawn;

“Satisfactory” (70–79 points) - serious errors of a logical and factual nature were made, an attempt was made to formulate conclusions;

“Unsatisfactory” (less than 70 points) - the content of the task is not conscious; the conclusions are inadequate to the task.

### **Level 3 – Practical skills**

The following types of control are used to evaluate learning outcomes in the form of skills:

- tasks for assessing the consequences of decisions made, tasks for assessing the effectiveness of the actions in the process of solving situational tasks;
- evaluation of practical skills;
- lecture reports on health education;
- protection of educational research work.

Examples.

Task 1. A 32-year-old woman came for a routine examination. A history of disease: the first rheumatic attack that occurs with joint damage and endocarditis was in 14 years old. Complaints of weakness, rapid fatigability, shortness of breath during physical exertion, by the evening there are swelling on the back of the feet. The condition is satisfactory. The skin is clean, pale. Heart sounds are muffled. Tibia slightly edema.

What is your tactic?

Task 2. A 50-year-old male patient applied for a routine medical examination. There are no complaints. On examination: blood pressure 160/100 mm Hg, heart rate 72 p/min, rhythmic, normal body temperature. Examination of the ocular fundus vessels reveals a narrowing of the arterioles and tortuosity of the vascular pattern. Chest without features. Strengthening apical

impulse. Other physical symptoms without features. ECG: left ventricular hypertrophy. There are no changes in electrolyte and creatinine analyzes.

What is your tactic?

Task 3. A 52-year-old man was hospitalized for emergency reasons with complaints of vomiting. Loose stool during the day. Previously no such signs. Heart rate - 96 bpm, blood pressure 100/72 mm Hg. A digital examination of the rectum revealed traces of black feces.

Suggest an optimal method of research and treatment?

Criteria for evaluation:

“Excellent” (90-100 points) - the answer is correct, scientifically reasoned, with links to topics covered.

“Good” (80-89 points) - the answer is correct, scientifically reasoned, but without links to topics covered.

“Satisfactory” (70-79 points) - the answer is correct, but not scientifically substantiated, or the answer is incorrect, but an attempt is made to substantiate it from alternative scientific positions passed in the course.

“Unsatisfactory” (0-69 points) - the answer is incorrect and not scientifically reasoned.

The student's assessment of the implementation of practical skills is carried out during the practical training, the student receives supervision of the patient, collects complaints, medical history, physical examination, formulates a preliminary diagnosis based on the information received, assigns a laboratory and instrumental examination plan, treatment plan (regimen, diet, drug therapy). During the supervision of the patient, the student must daily evaluate the consequences of decisions on the results obtained during the examination of the patient and the effectiveness of treatment.

Topics of lecture reports on health education:

1. The dangers of smoking.
2. Obesity, its prevention and treatment methods.
3. The hardening of the body and its role in the prevention of diseases.

Each presentation is a logically finished text, prepared in advance and presented in the form of a presentation. At the end of the report, the results of independent work are summarized, the main conclusions are formed.

Criteria for assessing the demonstrated knowledge and skills during the report:

1. Compliance of the content with the stated topic, fluency in the material, completeness of the disclosure of the topic (maximum – 20)
2. Clear, clear structuring of the material, the logical sequence in the presentation (maximum – 20)
3. The use of illustrations, visual materials (maximum– 20)
4. The culture of speech, oratory (maximum – 20)
5. Argumentation of answers to questions (maximum – 20)

Total – 100.

Criteria for evaluation:

Demonstrated knowledge, abilities, skills are evaluated on a 100-point scale, the points are translated into grades as follows.

The mark "excellent" deserves the student who received from 90-100 points.

Assessment of "good" deserves the student who received from 80-89 points

Assessment "satisfactory" deserves the student who received from 70-79 points.

The grade “unsatisfactory” is given to the student with less than 70 points.

**Exams** The final grade in practice is set by the head of practice based on the results of the interview, student characteristics, quality assessment of the practice diary, points obtained in the course of solving tasks on the remote portal, and the results of the term paper. Evaluation of providing of health education is necessarily.

The mark "excellent" (90-100 points) is put on the basis of the following criteria:

- the program of practice, including the student research and sanitary enlightenment, was completed in full and without comment;
- the student did not have violations of labor discipline;
- the diary gives a clear idea of the content of the work performed, the entries in the diary are literate;
- the notebook of manipulations reflects the entire course of the procedure and is completely filled;
- the student has at least 90 points of distance learning;
- the student during the interview answered all the questions of the teacher correctly;
- the student has an excellent characteristic of the direct supervisor of the practice.

Mark "good" (80-89 points):

- the practice program is fully implemented;
- the student made minor violations of the work schedule, for example, single delays;
- the diary is written formally; the student research is not complete;
- the notebook of manipulations reflects the entire course of the procedure, there are small inaccuracies that do not affect the care;
- student has at least 80 distance learning points;
- the student during the interview answered all the questions of the teacher correctly, there are minor inaccuracies that are not of fundamental importance and do not lead to a deterioration of the patient's condition;
- the characteristic given by the direct supervisor of the practice is good or excellent.

Mark "satisfactory" (70-79 points):

- the practice program has been generally implemented, but there are serious omissions;
- the student has mastered less than 50% of manipulations, he was casual in his attitude to work;
- committed violations of labor discipline;
- the notebook of manipulations does not reflect the entire course of the procedure; there are fundamental inaccuracies that affect the results of care;
- student has at least 70 distance learning points;
- the student during the interview did not answer all the questions of the teacher, had fundamental comments leading to worsening of the patient's condition with such care;
- the diary is messy, with errors;
- the student is characterized well or mediocre.

Mark "unsatisfactory" (less than 70 points):

- the practice program has not been completed (by content or by hour);
- the student has a negative characteristic;
- Had frequent violations of pond discipline;
- student research is not completed;
- the notebook of manipulations is not presented or there are fundamental inaccuracies that significantly affect the results of care;
- the student has less than 70 points of distance learning;
- the student during the interview did not answer all the questions of the teacher, had fundamental comments leading to worsening of the patient's condition with such care.

### **Classroom rules:**

- Be respectful
- Be careful with equipment

- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

## CLINICAL CLERKSHIP “ASSISTANT OBSTETRICIAN-GYNECOLOGIST”

**Teachers: Ass.Prof. Albina Ganeeva, Ass.Prof. Yuri Orlov, Ass. Elvira Galimyanova, Ass. Polina Kapelyushnik**

**Building, Department, classroom #** The Maternity Hospital of the State Autonomous Healthcare Institution "City Clinical Hospital No. 7 named after M.N. Sadykov", The Maternity Hospital of State autonomous healthcare Institution "Clinic of the Medical University", Department of Obstetrics and gynecology named after prof. V.S. Gruzdev

### **Contact details:**

- Telephone number: 89172531578 (Ass.Prof. Albina Ganeeva)
- E-mail address: a.v.ganeeva@gmail.com
- Office and working hours: 08.00 am-05.00 pm (Monday-Saturday)

### **Total clinical hours: 108 hours**

Practical classes: 36 hours

Independent work: 72 hours

### **Course description:**

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in discussion of the certain clinical cases. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=2179>)

### **Course objectives: The purpose of mastering the discipline**

The goal of mastering obstetrics and gynecology practice (assistant to obstetrician-gynecologist) is consolidation of knowledge and skills acquired during the learning process: pregnancy and childbirth management, clinical manifestations of the main obstetric pathologies, methods of examination of pregnant women and parturient, laboratory tests and instrumental methods used in obstetrics, the principles of treatment of obstetric pathologies and indications for their use, the emergency care in obstetrics.

### **Tasks of the discipline:**

To form knowledge in the field of:

- management of pregnancy and childbirth, collecting the anamnesis: the complaints, medical and life history, physical examination of patients in obstetric practice, the principles of formulation of the primary diagnosis;

- drawing up an algorithm for examination of a patient including laboratory tests and instrumental methods;
- interpretation of the results of additional research methods and formulation of a clinical diagnosis;
- choosing the optimal treatment plan, prescribing a diet, regimen, medicamental and non-medicamental treatment, prescribing therapy taking into account the pharmacokinetics and pharmacodynamics of drugs;
- management of medical records (case histories);
- making recommendations to patients upon discharge from the hospital;
- mastering the skills of providing assistance to women in labor and postpartum period including the emergency conditions (eclampsia, bleeding);
- learning of the principles of medical deontology and medical ethics.

### **Course topics:**

#### **Calendar plan of practical classes**

#### **Topic 1. Introduction to the discipline**

- 1.1. Principles of the organization of the maternity hospital
- 1.2. Management of medical records

#### **Topic 2. Patient supervision**

- 2.1. Supervision of pregnant women
- 2.2. Supervision of women in labor and in postpartum period
- 2.3. Participation in medical conferences and morning briefings

#### **Topic 3. Obstetrics and gynecology**

- 3.1. Pregnancy and antenatal care
- 3.2. Identification of high-risk pregnant women
- 3.3. Diseases that complicate the course of pregnancy
- 3.4. Physiological and pathological childbirth
- 3.5. Bleeding during pregnancy, labor and the postpartum period
- 3.6. Premature labor and postterm pregnancy and labour
- 3.7. Emergency care in obstetric practice

#### **Topic 4. Implementation of instrumental and laboratory diagnostic methods**

- 4.1. Preparation of patients and implementation diagnostic methods
- 4.2. Ultrasound in obstetric practice
- 4.3. Cardiotocography
- 4.4. Laboratory tests in obstetric practice

#### **Topic 5. Carrying out manipulations**

- 5.1. The main external and internal obstetric examination techniques
- 5.2. Determination of blood type and Rh factor and transfusion of blood components

#### **Topic 6. Sanitary and educational work**

- 6.1. Preparation and delivery of lectures to patients and their relatives on the relevant topic aimed at primary or secondary prevention of diseases of obstetric and gynecological profiles

#### **Topic 7. Educational and research work**

- 7.1. Collecting information.
- 7.2. Processing of information, including the use of statistical research methods.
- 7.3. Writing a thesis (an abstract) and its presentation

### **Text books and required supplies:**

1. Obstetrics / ed. by V.E. Radzinskiy, A.M. Fuks, Ch.G. Gagaev. — M.: GEOTAR-Media, 2019.
2. Klyucharov I.V. Obstetrics. Manual. Part 1. Kazan: KGMU, 2017. - 59 p.
3. Dewhurst's textbook of obstetrics and gynecology. — 7th ed. / edited by D. Keith Edmonds. — 7th ed. 2007. - 717 p.

4. Obstetrics and gynecology.—6th ed. Charles R.B. Beckmann, Frank W.Ling, Darbara M.Barzansky et al. 2010. - 497 p.
5. Johns Hopkins Handbook of Obstetrics and Gynecology. Linda M. Szymansky, Jessica L. Bienstock. 2016. - 242 p.

### **Evaluation and grading:**

The procedure for assessing learning outcomes is carried out on the basis of the Regulation of Kazan State Medical University on the current monitoring of academic performance and midterm assessment of students.

All types of students' educational activities during practice are being assessed: contact work, independent work, work on the educational portal.

Current monitoring of academic performance is conducted by a teacher responsible for the educational program in a certain academic group. Overall student rating is build up from class attendance, midterm assessment results and final test results.

The monitoring of academic performance for practice is carried out by checking the students' daily notes on the educational portal including answering the clinical cases and by estimation of the practical skills demonstrated by the students. They are rated on a 10-point scale.

At the end of the practice the students have to pass the test on the educational portal (MCQ). It is rated on a 100-point scale. All the marks are being fixed in the academic journal.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **The example of test task**

1. Which of the following cannot be used to confirm an 8-week pregnancy?
  - a) Serum pregnancy test;
  - b) Urine pregnancy test;
  - c) Transvaginal ultrasound;
  - d) PAP-test.

The standard of the answer: d.

### **The example of clinical case**

A 28-year-old woman with a normal pelvic size was admitted to the clinic. The gestational age is 38 weeks 2 days. Estimated fetal weight is 3300.0. The pelvic dimensions are normal. The head of the uterus is determined in the fundus of the uterus, the back of the fetus is palpated on the left side. The buttocks are presented. Fetal heart rate is 140 bpm, clear, on the left above the navel. The amniotic fluid is intact. Contractions are every 3 minutes for 40-45 seconds. Vaginal examination: the cervix is smoothed, the opening of the os is 7-8 cm, the buttocks are pressed to the plane of inlet. The amniotic sac is intact. Suggest the most probable diagnosis. Justify the diagnosis. Which way of delivery should be chosen? List the possible complications. Biomechanics of labor with this type of presentation.

The standard of the answer:

1. Primary diagnosis: Pregnancy I of 38 weeks 2 days, 1<sup>st</sup> stage of labor. Frank breech presentation. Left position.

2. The diagnosis is based on the external obstetric examination by Leopold's manuer: the head is determined in the bottom of the uterus, the back of the fetus is palpated on the left. The buttocks are presented, pressed to the small pelvis. The fetal heartbeat is determined on the left above the navel.
3. Obstetric tactics – vaginal delivery. In the second period of labor, Tsovyanov's manuer should be provided.
4. Possible complications during labor: uterine inertia, maternal and fetal trauma, extension of the arms; extension of the head; shoulders stuck, head stuck; fetal hypoxia, fetal death.
5. The biomechanism of labor in Frank breech presentation consists of 6 steps: 1 - internal rotation of the buttocks, 2 - lateral flexion of the spine in the lumbosacral region, 3 - internal rotation of the, 4 - lateral flexion of the spine in the cervicothoracic region, 5 - internal rotation of the head, 6 - flexion of the head.

### **The example of practical skills**

1. Measure the external diameters of the pelvis.

### **EVALUATION OF THE TEST ANSWER**

Evaluation criteria:

- Less than 70% of correct answers - unsatisfactory,
- 70-79% of correct answers - satisfactoty,
- 80-89% of correct answers - good,
- 90-100% of correct answers - excellent.

### **EVALUATION OF THE CLINICAL CASE**

- 9-10 points - the diagnosis is formulated correctly, the treatment plan is made correctly and in full;
- 8 points - the diagnosis is formulated correctly, but not in full, the treatment plan is made correctly, but not in full;
- 7 points - the diagnosis is formulated correctly, the treatment plan is made incorrectly;
- less than 7 points - the diagnosis is formulated incorrectly, the treatment plan is made incorrectly.

### **EVALUATION OF PRACTICAL SKILLS**

- 9-10 points - the practical skill is demonstrated correctly and in full, the comments are correct;
- 8 points - the practical skill is demonstrated correctly, but not in full, the comments are correct;
- 7 points - the practical skill is demonstrated but with mistakes, the comments are not completely correct;
- less than 7 points - the practical skill is demonstrated incorrectly, the comments are not correct.

## **CLINICAL CLERKSHIP “SURGEON’S ASSISTANT”**

**Teachers: PhD Arsen Kurbangaleev, PhD Aidar Shakurov, PhD Kirill Sakulin, PhD Yulia Pankratova.**

**Building, Department, classroom** # Orenburgskiy trakt Street, building 138, 6 floor

**Contact details:**

- Telephone number: +79046601139 (PhD Aidar Shakurov)
- E-mail address: aydarsha@gmail.com
- Office and working hours: 8-16

**Total hours – 108:**

- Clinical practice 108 hours

**Course description:**

**Clinical practice** is aimed to apply theoretical knowledge in practice in surgical departments. Students develop different surgical skills: taking history of disease, physical examination of patients, assessment of laboratory and instrumental studies, participation in dressings, operations.

**Course objectives: The purpose of mastering the discipline**

The goals of mastering the **clinical practice “Surgeon’s assistant”** are to consolidate the knowledge and skills acquired during the training: clinical manifestations of the main syndromes of diseases in surgical patients, diagnostic methods, diagnostic capabilities of direct examination of surgical patient, modern methods of clinical, laboratory, instrumental examination of patients (including endoscopic, radiological methods, ultrasound diagnostics), emergency procedures, treatment methods and indications for their use.

**Tasks of the discipline:**

- to form skills of physical examination of patients, of using laboratory and instrumental studies
- to form skills of making diagnosis with establishing of treatment plan including indications for surgery
- to form knowledge of steps of most common surgical interventions for acute surgical abdominal pathology
- to form knowledge of possible complications after abdominal surgery
- to form knowledge of most common urgent conditions related to abdominal pathology

**Course topics:****Calendar plan of clinical practice**

1. Visiting of hospital, acquaintance with the work of the hospital and surgical departments.
2. Working in surgical department.
3. Working in department of endoscopy.
4. Working in surgical department, in operating room.
5. Working in surgical department, in operating room.
6. Working in surgical department, in operating room.
7. Working in surgical department, in operating room.
8. Working in surgical department, in operating room.
9. Working in surgical department, in operating room.
10. Working in surgical department, in operating room.
11. Working in surgical department, in operating room. Sanitary-educational work among patients.
12. Working in surgical department, in operating room.

**Text books and required supplies:**

1. Chassin's Operative Strategy in General Surgery. An Expositive Atlas. Carol E. H. Scott-Conner, Andreas M. Kaiser, Ninh T. Nguyen, Umut Sarpel, Sonia L. Sugg. 2022.  
<https://doi.org/10.1007/978-3-030-81415-1>



2. Surgery. An Introductory Guide for Medical Students. Umut Sarpel. 2021. <https://doi.org/10.1007/978-3-030-65074-2>
3. Operative Strategy in General Surgery. An Expositive Atlas Volume I. Jameson L. Chassin. 2012. <https://doi.org/10.1007/978-1-4612-6042-4>
4. Operative Strategy in General Surgery. An Expositive Atlas. Volume 2. Jameson L. Chassin. 2013. <https://doi.org/10.1007/978-1-4757-4172-8>

### **Evaluation and grading:**

Monitoring progress is carried by the end of each module (mcq's).

*Routine performance assessment* (homework, tests during classes, case studies etc.) is carried out using 10 point scale, where 0-6 – “poor”, 7 – “satisfactory”, 8 – “good”, 9 – “excellent” and 10 – “splendid”. Unsatisfactory mark during routine performance evaluation or absenteeism (including lectures) is considered to be a student academic debt. In order to rework the debt the student can attend missed/failed class with a different academic group (the teacher is to be notified in advance) or to do the rework using e-learning or distance technologies or in other ways determined by the teacher. Abandoned academic debt is leading to dismissal from the University.

*Midterm assessment* is a form of knowledge and skills evaluation on the discipline or on a part of it (test/oral exam/paper). Grading: 0–69 points – noncredit; 70–100 points – credit. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

*Exams* are held in forms of oral answering for questions and cases. Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.

Overall student rating is build up from class attendance, module and test results, midterm assessment results.

### **Classroom rules:**

- Be respectful
- Be careful with equipment
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during brakes
- Using phone is allowed only during brakes

### **Example of MCQ**

Douglas space abscess after appendectomy is characterized by all signs, except:

1. hectic temperature
2. deep pelvic pain and tenesma
3. restricted mobility of the diaphragm
4. prolapse of the vaginal wall or the anterior rectal wall
5. painful rectal examination

### **Example of case study**

A patient operated 5 days ago for acute phlegmonous appendicitis had pain in the right upper quadrant, increasing on inspiration. The temperature increased to 38.7C. Heart rate is 100, tongue's wet. Abdominal wall is soft on palpation, but slightly painful in right side. Liver comes out from

under rib arc at 6 cm. Greco-Orner's symptom is positive. Radiological examination showed no changes in pulmonary parenchyma. Pleural sinus on the right side has a small amount of effusion. Right hemidiaphragm is flattened, mobility is limited. White blood cells  $16 \times 10^9$ .  
What kind of complication is it? What kind of study could help to clarify the diagnosis? Your management of this patient?

### **EVALUATION OF THE MODULE ANSWER**

The grade for the test is set in proportion of correct answers:

90-100% - excellent.

80-89% - good.

70-79% - satisfactory.

Less than 70% of correct answers is "failing grade".

Evaluation criteria for case study.

"excellent" - the student freely, with deep knowledge of the material, correctly and fully solved the case study (all tasks are completed, all questions are correctly answered).

"good" - the student is quite convincing, with minor theoretical mistakes correctly answered the questions or made minor mistakes in the answer;

"satisfactory" - if the student is not confident enough, answered to the questions of a case study with significant theoretical errors and poorly mastered skills;

"failing grade" - the student has very little understanding of the subject and made significant mistakes in answering to most of the questions of the case study, incorrectly answered to additional questions.

## **RESEARCH WORK**

**Teachers: PhD Elina Kirillova, PhD Tatyana Kiseleva**

**Building, Department, classroom # RCH,** Department of hospital therapy, Department of endocrinology

### **Contact details:**

- Telephone number: 89033400694 (Elina Kirillova), 89173908899 (Tatyana Kiseleva)
- E-mail address: elinarin@mail.ru
- Office and working hours: 9-15

**Total hours — 72**

### **Course description:**

**Lecture** is an oral presentation of particular branch of science or discipline by the teacher. It is usually held for the course of students at the same time.

**Workshop** is usually devoted to detailed study of specific topics and it is being held in each academic group separately. The workshop involves active participation of students in problem discussion. It requires preliminary preparation by the student.

**Practical training** is aimed to apply theoretical knowledge in practice. The skills are developed in problem solving process under the supervision of a teacher.

**Laboratory classes** contain experimental scientific research activities. It requires the use of special equipment, facilities and materials. To be held in teaching laboratories.

**Self-study** is work with the special literature or teaching materials (literary sources, video and audio material, multimedia programs and simulators) on the educational portal of the University (<https://e.kazangmu.ru/course/view.php?id=2747>).

**Course objectives: The purpose of mastering the discipline**

The goal of mastering the **research work** discipline is improving the student's knowledge and skills necessary for conducting research work.

**Tasks of the discipline:**

- Improving knowledge on the interpretation of modern methods of examination of patients with a therapeutic profile.
- Improving skills in preparing medical documentation (outpatient card, stage and discharge summary).
- Improving professional competencies in management of internal diseases.

**Course topics:**

1. General principles of scientific research work. Medical science publication. Data processing. Statistical research methods.
2. Clinical case. Case reports will be considered for publication only if they describe extremely unusual cases or are of particular interest to the clinician. Case reports focus on a topic as it relates to a single patient case. The cases are often unusual or noteworthy, typically a classic presentation of a very rare disease or an unusual presentation of a more common disease. Other cases, such as an unusual disease course or a rare complication of a procedure might also be included.
2. Medical review. Review articles gather and synthesize the existing published material on a specific topic. They vary in length, depth, structure, and sophistication depending on the type of review article.
3. Original articles. New and original work or descriptions of a consolidated body of experience in a given field. Original research articles are those that involve the collection, analysis, and presentation of data, typically using the scientific method.

**Text books and required supplies:**

1. Update and Review of Internal Medicine 2001 : sept. 30- Oct. 5, 2001: Vol. 1-2. - New Mexico : Flavor of Southwestern in Santa E, 2001
2. Outpatient Therapy : textbook / [F. D. Akhmatova, V. F. Benevskaya, O. V. Bykova et al.] ; edited by V. N. Larina. - Moscow : GEOTAR-Media, 2023. - 450, [6] p. : il. ; 21 cm. - (Textbook). ISBN 978-5-9704-7708-3 :
3. Forchheimer, Frederick. The Prophylaxis and Treatment of Internal Diseases : designed for the use of practitioners and advanced students of medicine / F. Forchheimer. - New York : D. Appleton and Company, 1907. - xvii, [1], 652, [4] p.
4. Current Medical Diagnosis & Treatment : Adult ambulatory & Inpatient Management / Ed. L. M. Tierney, S. J. McPhee, M. A. Papadakis. - 41st ed. . - New York : McGraw-Hill, 2002. - 1857 p. - (a LANGE medical book). - ISBN 0-07-112443-8
5. Clinical Medicine : A textbook for medical students and doctors / Edit.: P. Kumar, M. Clark. - 6th. ed. - Edinburgh : Elsevier Ltd, 2008. - 1508 p. : il. - ISBN 9780702027635

**Evaluation and grading:**

Research work includes 3 parts:

- Literature review
- Clinical case
- References

Case must include:

- complaints
- medical history
- physical examination
- lab tests
- instrumental tests
- diagnosis
- treatment

### **Classroom rules:**

- Be respectful
- Be disciplined
- Be prepared for the classes
- Be involved, do not hesitate to ask questions
- Look professional: you have to wear clean white coat and change shoes
- Eating is allowed only during breaks
- Using phone is allowed only during breaks

### **Example of topics**

- Giant hypertrophic gastritis
- Hereditary spherocytosis
- Interstitial lung disease with estimated aetiology: drugs
- Iodine-deficiency-related diffuse (endemic) goitre
- Pulmonary embolism
- Rapidly progressive nephritic syndrome
- Seropositive rheumatoid arthritis

### **Grading: 0-100 points**

Grading: Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”. Student is given not more than 2 attempts to pass midterm assessment within one year. Failure is leading to dismissal from the University.

The assessment takes into account:

novelty of the text; validity of the choice of source; degree of disclosure of the essence of the issue; compliance with design requirements.

Novelty of the text: a) relevance of the research topic; b) novelty and independence in setting the problem, formulation of a new aspect of a known problem in establishing new connections (interdisciplinary, integrative); c) ability to work with research, critical literature, systematize and structure the material; d) manifestation of the author's position, independence of assessments and judgments; d) stylistic unity of the text.

Degree of disclosure of the essence of the issue: a) completeness and depth of knowledge on the topic; b) validity of the methods and techniques of working with the material; c) ability to generalize, draw conclusions, compare different points of view on the problem under study.

Validity of the choice of sources: a) assessment of the literature used: whether the most well-known works on the research topic were involved (including journal publications of recent years, the latest recommendations of professional societies, etc.). Compliance with design requirements: a) availability of a list of references; how correctly the references to the literature used and the list of references are formatted; b) assessment of literacy and presentation culture (including spelling, punctuation, stylistic culture), proficiency in terminology; c) compliance with the requirements for the volume of the report.

Grading 90–100 – “excellent”.

all requirements for writing and defending a report have been met: the problem under consideration has been identified and one's own position has been logically stated, conclusions have been

formulated, the topic has been fully disclosed, the volume has been maintained, and the requirements for external design have been met.

Grading 80-89 – “good”

the main requirements for the report and its defense have been met, but some shortcomings have been made. In particular, there are inaccuracies in the presentation of the material; there is no logical consistency in the judgments; the volume of the report has not been maintained; there are omissions in the design.

Grading 70-79 – “satisfactory”

there are significant deviations from the requirements for the report. In particular: the topic is covered only partially; there are factual errors in the content of the report, there is no conclusion.

Grading 0–69 – “poor”

the topic is not covered, a significant misunderstanding of the problem is revealed.

## CLINICAL CLERKSHIP “ASSISTANT OF A PRIMARY CARE PHYSICIAN”

**Teachers:** Prof. Albina V. Sineglazova, Asst. Swapnil D. Parve, Asst. Albina R. Nurieva, Asst. Zemfira R. Asatullina, Asst. Aliya S. Fakhrutdinova, Asst. Svetlana V. Vantyaeva.

**Building, Department, classroom:** Department of Primary Care and General Practice, Republic of Tatarstan, Kazan, str. Butlerova, 49.

### **Contact details:**

- Telephone number: +7-987-414-92-28 (Swapnil D. Parve)
- E-mail address: drswapnilparve@gmail.com
- Office and working hours: Mon-Sat from 08:00 – 17:00; Sunday off

**Total hours: 144 hours (16 days).**

### **Course description:**

- **Clinical rotations**, also known as clerkships, are training periods in which medical students practice medicine under the supervision of established physicians. Apart from clinical visits during classes, during clinical postings/rotations, students interact with patients and master the art of clinical examination, evaluation, and treatment.
- **Practical classes** are usually devoted to detailed study of specific topics and it is being held in each academic group separately. It involves active participation of students in problem/case-based discussion and requires preliminary preparation (flipped classroom approach).
- **Self-study** is independent work with teaching materials (literature, video and audio material) on the educational portal of the University.

**The goal** of mastering the course "Primary Care" encompass the education of specialists in the field of human health, with the aim of establishing conditions for health maintenance, providing preventive care, diagnosis, and treatment at the outpatient level.

### **Objectives of the course:**

- Implementing measures for health education and disease prevention among the adult and elderly populations;
- Implementation of long-term monitoring and follow-up of adults, considering their age, sex, and initial health status, conducting interventions aimed at enhancing the efficacy of long-term monitoring among specific cohorts (employees of various organizations, pregnant women, etc.) and patients with chronic disease conditions;

- Collection and analysis of medical and statistical information (e.g., disease burden) related to health indicators of the population of various age and sex groups, with respect to their health status;
- Diagnosis of diseases and pathological conditions in adults based on anamnesis, physical examination, laboratory and instrumental tests;
- Diagnosis of emergency conditions and provision of first aid to adults;
- Management of adults using non-pharmacological and pharmacological approaches;
- Conducting rehabilitation activities for adults who have experienced physical disease, injury or surgery;
- Evaluating temporary and permanent disability/fitness;

### **Calendar plan of the discipline "Clerkship - Assistant of a Primary Care Physician"**

#### **Day 1:**

- Topic: organization of outpatient and other medical care
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal / Study of resources on the educational portal of KSMU
- Populating the Logbook

#### **Day 2:**

- Topic: preventive medicine – general. Screening. Dispensarization. Long-term monitoring and follow-up
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

#### **Day 3:**

- Topic: preventive medicine – specific. CVD prevention
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

#### **Day 4:**

- Topic: preventive medicine – specific. Immunization
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

#### **Day 5:**

- Topic: temporary disability
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

#### **Day 6:**

- Topic: preventive medicine – specific. Cancer screening
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

#### **Day 7:**

- Assignment at the choice of the teacher: make a case or presentation
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 8:**

- Topic: emergency medicine: general topics. Cardiovascular emergencies and shock
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 9:**

- Topic: respiratory emergencies
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 10:**

- Topic: abdominal and genitourinary emergencies
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 11:**

- Topic: trauma (emergency medicine)
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 12:**

- Topic: toxicologic and environmental emergencies
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 13:**

- Topic: endocrine and electrolyte emergencies
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 14:**

- Assignment at the choice of the teacher: Designing a case or presentation
- Clinical rotation
- Tests on the educational portal
- Assignments on the educational portal
- Populating the Logbook

**Day 15:**

- Checking and grading the Logbook.

- Tests on the educational portal

#### **Day 16:**

- Final test on the educational portal of KSMU (Graded credit (ZACHET))

#### **Textbooks and required supplies:**

1. Educational portal of KSMU, course: "Clerkship - Assistant of a Primary Care Physician". URL: <https://e.kazangmu.ru/course/view.php?id=2744>
2. Приказ Министерства здравоохранения РФ от 15 марта 2022 г. N 168н "Об утверждении порядка проведения диспансерного наблюдения за взрослыми"
3. URL: <https://base.garant.ru/404523658/>
4. Приказ Министерства здравоохранения РФ от 27 апреля 2021 г. N 404н "Об утверждении Порядка проведения профилактического медицинского осмотра и диспансеризации определенных групп взрослого населения"
5. URL: <https://ivo.garant.ru/#/document/401414440/paragraph/1/doclist/384/1/0/0/404%D0%BD:1>
6. Multiple choice question bank in the discipline "Primary Care" Sineglazova A.V., Parve S.D., Nurieva A.R., Kim T.Yu. a teaching manual for students studying in the specialty 31.05.01 "General Medicine" / Kazan, 2023.
7. Clinical case: an essential tool in teaching primary care to medical students, A. V. Sineglazova, S. D. Parve, Z. R. Asatullina, A. R. Nurieva, A. S. Fakhrutdinova. guide for students studying in the specialty 31.05.01 General Medicine / Kazan, 2024.
8. Primary care medicine: office evaluation and management of the adult patient / Allan H. Goroll, Albert Mulley. — Seventh edition.
9. Family medicine: principles and practice / Paul M. Paulman, Robert B. Taylor, Audrey A. Paulman, Laeth S. Nasir. — Seventh edition.
10. Министерство здравоохранения Российской Федерации (Клинические рекомендации) URL: [https://cr.minzdrav.gov.ru/clin\\_recomend](https://cr.minzdrav.gov.ru/clin_recomend)
11. Российское научное медицинское общество терапевтов [website]. URL: <https://rnmot.org/?ysclid=lzcn34uk7u719105857>
12. Федеральная электронная медицинская библиотека [website]. URL: <https://femb.ru/?ysclid=lzcn48s006541784455>
13. Национальный медицинский исследовательский центр терапии и профилактической медицины Министерства здравоохранения Российской Федерации [website]. URL: <https://www.gnicpm.ru/>
14. Справочная правовая система "КонсультантПлюс" [website]. URL: <https://student2.consultant.ru/cgi/online.cgi?req=home>
15. Электронная библиотека "Консультант студента" [сайт]. URL: <http://www.studentlibrary.ru/>
16. Электронная медицинская библиотека "Консультант врача" [website]. URL: <http://www.rosmedlib.ru/>
17. European Federation of Internal Medicine Academy [website]. URL: <https://www.efimacademy.org/>
18. American college of physicians. Clinical guidelines & recommendations [website]. URL: <https://www.acponline.org/clinical-information/clinical-guidelines-recommendations>
19. European society of cardiology [website]. URL: <https://www.escardio.org/>
20. American college of cardiology [website]. URL: <https://www.acc.org/>

#### **Evaluation and grading:**

##### **Forms of ongoing progress monitoring:**

- oral discussion
- assignment at the choice of the teacher: make a case or presentation



- activity on the educational portal
- logbook

Routine performance assessment is carried out using a 10 points scale, where 0-6 – “unsatisfactory”, 7 – “satisfactory”, 8 – “good”, 9 - 10 – “excellent”.

#### **Forms of final testing:**

- multiple choice test in English (70%). Must be completed at 70%
- multiple choice test in Russian (20%). Must be completed at 70%
- clinical vignette with 12 multiple choice questions (10%). Must be completed at 70%

The final rating, which is recorded in the progress book/credit book (Zachetnaya knizhka), is calculated in the rating system of the university (BRS), considering all other criteria (attendance, class assignments, rating of final attestation, assessment of the supervision logbook, etc.) by the Regulations on the monitoring of current academic performance and intermediate attestation of students.

The discipline rating is expressed on a 100-point scale, where 0-69 corresponds to “unsatisfactory”, 70-79 points - “satisfactory”, 80-89 - “good”, and 90-100 means “excellent”. The discipline rating is calculated accurately to one decimal place.

#### **Rules of educational process and behavior in the cycle of primary care and at the department of primary care and general practice.**

##### **1. According to the student’s contract with the university:**

- Item 3.1.2 states that learners/students must conscientiously complete the educational program and master all types of professional activities according to the relevant qualification characteristics of the specialist, including attending classes stated in the curriculum and independently preparing for classes.
- Item 3.1.3 states that learners/students must comply with the requirements and internal regulations and all other normative statements, respect academic discipline, and generally accepted norms of behavior.
- Item 3.1.5 states that learners/students must respect the university’s properties.

**2. Department webpage for announcements:** <https://kazangmu.ru/general-practice/foreign>;  
<https://kazangmu.ru/general-practice>

**3. Program information:** <https://kazangmu.ru/general-practice/foreign>

**4. Marking scheme:** [https://kazangmu.ru/files/ovp/International/Grading\\_a\\_case.pdf](https://kazangmu.ru/files/ovp/International/Grading_a_case.pdf)

##### **5. Attendance:**

- Attending all classes and lectures is mandatory.
- Absences for valid reasons must be proven with appropriate documentation or spravka.
- A lecture is considered attended if, after attending the lecture online and the student has solved the test on the education portal  $\geq 70\%$  marks for that day. If a student was absent during live-online lecture, and wants to rework, he/she must watch the video lecture on the portal and solve the test by 18:00 on same day and obtain mark  $\geq 70\%$ .
- Subsequently, ratings would be entered into the university rating system (BRS), considering these nuances.

**6. Do not be late.** Arrive for the class on time. In case the student is late and is entering the classroom/clinical center after the faculty member has started teaching/clinical visits, means missed class/clinical visit needs to be reworked.

##### **7. Do’s during final tests/exams:**

- Arrive in the allocated time slot.
- Students should take a pen with them besides the identification document, zachetnaya knizhka (progress book/credit book).

- Before entering the hall, the student should leave all gadgets, bags, cheat sheets, notes, and books in the designated area.
- Respect the honor and dignity of other students and employees of the KazanSMU.
- Stay quiet on the premises and respect others who are taking the test.

#### **8. Don'ts during final tests/exams:**

- Do not talk, whisper, or prompt to fellow students during the class test, final test, or exams. Such behavior will result in immediate dismissal from the auditorium with an act of malpractice being documented and submitted to the university leadership. Such behavior will result in the student forfeiting his/her attempt and attract negative result.
- Engaging in malpractice, such as using phones, watches, headphones, books, cheat sheets, or any resources is considered an academic dishonesty, and is prohibited. Engaging in any sort of malpractice will result in immediate dismissal from the auditorium.
- Discussing or conveying questions, tickets, and answers to fellow students immediately after the test on the premises is prohibited.

#### **9. Rules on tests/assignments/final tests/exams and reworks:**

- All final tests and exam attempts would be audio and/or video recorded. If the student feels he/she was unfairly evaluated, the head of the department and/or appeal committee will revisit these recordings along with the student's written answer to make a final decision. The appeal committee decision may have three outcomes: it may keep the same marks or reduce marks or increase the marks.
- All missed classes/lectures if not reworked would result in a negative coefficient.
- Information about the rework schedule will be posted on the department's webpage.
- The scheduled date and time of the final test will be considered the first attempt, even if the learner/student does not appear. Exceptions can be made for valid reasons with appropriate documentation or spravka.
- In case the student received unsatisfactory mark, he/she has the right to two reattempts during the semester (for module that was taught in the current semester) on the date and time assigned by the faculty member. In case of absence during the reattempt, previously obtained mark stays in force and is entered into the university rating system (BRS). Marks obtained in the last attempt/reattempt will be considered final and would be entered in the rating system. For example, during the scheduled final test at the end of the cycle, a student received 60%; in the first reattempt - 65% and in the final reattempt - 63%. Then, 63% will be entered into the university rating system (BRS).
- The marks obtained in the final attempt/reattempt will be entered into the university rating system (BRS) at the end of each semester. The fall/autumn semester entries close in December; and spring semester entries closes in May. Please ensure the academic debts have been cleared before the end of the semester so that appropriate corrections can be made in the university rating system (BRS).

#### **10. Contacting faculty members:**

- Contact faculty members only during office hours.
- Do not bother faculty member on holidays, unless extremely necessary.
- When sending a note to the faculty member, please greet, introduce yourself, and concisely write your question and wait for the response patiently. The faculty member will respond as time permits.

#### **11. Classes and Clinical visits:**

- Students are required to put on their white lab coat (apron) during classes and while visiting clinical centers.
- Students' white lab coats (aprons) coats should be spotless and ironed.
- Students must wear their second pair of shoes during the classes and while visiting clinical centers.
- Students are required to carry their stethoscopes while visiting clinical centers

- During clinical visits, classes, tests, or breaks, do not yell or talk loudly, resulting in a nuisance for others on the premises.

**12.** Educational/research or other resources and intellectual property: Any resources, including, but not limited to, slide sets, videos, or articles hosted on a department website or education portal, can be used for study purposes, of course, and do not require permission to use. However, it should be noted that resources, including, but not limited to, lectures, videos, slide decks, etc., are considered intellectual property. Any student who utilizes and/or plagiarizes materials taken from the course for non-course uses or their personal gain is subject to legal action. Their unauthorized use for commercial purposes is considered an infringement and attracts legal action. For example, one can download and use the slide set to annotate the slides and prepare for classes. However, using the slide set or even a portion or a single slide for one's own presentation at the department or other places is not permitted without obtaining a written permission. Such action implies that the student has consciously stolen someone else's work and presented it as theirs. This offense attracts legal action.

**13. Academic honesty should be maintained at all times.**

**14.** Students bear material responsibility for damage caused to the property of the KazanSMU and clinical centers, per the norms of the current legislation of the Russian Federation.

**15.** Respect the honor and dignity of other students and employees of the KazanSMU and clinical centers.

**16. Prohibited:**

- All course videos, PowerPoints, course materials, and course assessments are not to be used by students outside the classroom, including posting materials on social media platforms.
- Do not create obstacles in the education/learning process of other students.
- Illegal storage, manufacture, processing, consumption, sale, or promotion of narcotic drugs, psychotropic substances, or their analogs, as well as plants containing narcotic drugs or psychotropic substances, or parts thereof, containing narcotic drugs or psychotropic substances.
- Drinking alcoholic beverages, as well as being under the influence of alcoholic, narcotic, or other toxic intoxicating substances.
- Smoking (including hookah and electronic cigarettes).
- Carrying, using, storing explosive, chemically dangerous substances or firearms (including traumatic), pneumatic, gas, and other weapons.
- Violation of anti-terrorist and public health and fire safety rules.
- Do not use physical force and other actions that entail dangerous consequences for others.
- Do not talk using mobile phones, or other communication devices during classes, intermediate and final tests, and exams.
- Use of obscene language on the premises and the campus (obscene expressions, including vulgar, rude, bawdy expressions).
- Do not talk loudly or make noise.
- In case of symptoms of infectious illness, please stay at home and call the precinct physician and inform the group leader, faculty member and the university leadership.

### **Example of Clinical Vignette**

A 32-year-old man consulted a primary care physician with **complaints of:**

- severe, pressing, retrosternal chest pains, which lasted for about 2 hours from midnight, ibuprofen had no effect;
- pressing and constricting retrosternal chest pain and shortness of breath on the way to the clinic, which resolved at rest; because of frequent stops the patient had to make, the road to the clinic took half an hour instead of 10 minutes.

**Medical history:** Over the past 2 years, he notes an increase in blood pressure up to 180/100 mm Hg, for which he consulted a doctor, but does not take the recommended drugs. Random

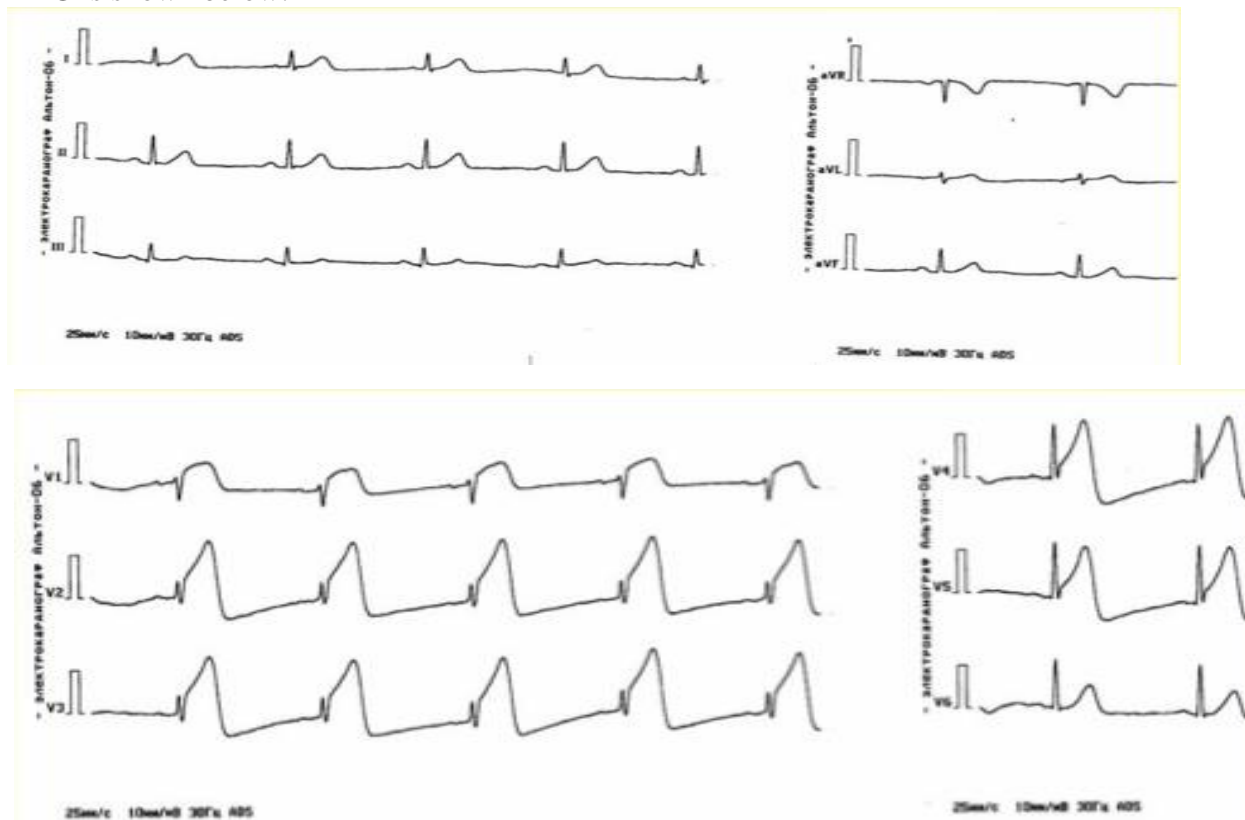
measurements of BP reveal BP in the range of 140-150 / 80-90 mm Hg. At the same time, the work-up revealed an increase in the level of total cholesterol up to 7.4 mmol/L and LDL 4.0 mmol/L, pharmacological treatment for this was not prescribed - he was following a diet. For 4 years he has been suffering from type 2 diabetes mellitus, is being followed-up by an endocrinologist, takes metformin 500 mg, 2 times a day. During therapy, fasting glycemia is 6.0-7.0 mmol/L, glycated hemoglobin is 6.7%.

**Other history:** He grew and developed normally. Works as a salesman in a men's clothing store.

**Past diseases:** myocarditis in childhood; chronic gastritis, exacerbations in spring / autumn no more than once a year; appendectomy at age 18. **Family history:** father died of myocardial infarction at 52 years old, mother is suffering type 2 diabetes. **Allergies:** there is no history of allergic reactions. **Psychosocial history:** smokes from the age of 15 (20-30 cigarettes a day).

**Physical exam:** General condition is serious. Patient looks well nourished, height 1.89 m, weight 112 kg, BMI 31.35 kg/m<sup>2</sup>, body temperature 36.6°C. The skin and visible mucous membranes are normal in color, peripheral lymph nodes are not enlarged, there is no edema. On comparative percussion of the lungs – resonant note, on auscultation - vesicular breathing, small bubbling wet rales in a small amount in the lower parts of both lungs (below the angle of the scapula), respiratory rate - 22 per minute. Heart sounds are muffled and rhythmic, heart rate 50 per minute. BP 120/70 mm Hg. The abdomen is soft and non- tender. The liver does not protrude from the costal margin.

EKG is shown below:



**Answer the following questions:**

10. What is the diagnosis?
11. What justifies the diagnosis?
12. Provide a plan of differential diagnosis with at least three diseases having similar presentation.
13. What is/are the indication(s) for hospitalization in this patient?
14. Which test or tests would you order next? When would you schedule them?
15. Which non-pharmacological approaches would you recommend?
16. Which medications (with doses, forms of administration, and frequency) would you prescribe? What are the side effects that you would monitor?

17. What goals would you set for primary/secondary prevention and how would you achieve them?
18. What should be done during follow up (short-term and long-term)?

**Criteria for evaluating clinical cases**

№	Question	Criteria for obtaining maximum points	Points
1.	Preliminary/provisional diagnosis	The diagnosis is fully formulated according to the International Classification of Diseases, indicating the code, in accordance with clinical guidelines, taking into account concomitant pathology and functional disorders.	0-10
2.	Substantiation of preliminary/provisional diagnosis	The diagnosis is fully substantiated by comparing the diagnostic criteria with the signs and symptoms of the patient.	0-10
3.	DDx with the most probable disease	The most suitable diseases were selected for differential diagnosis. The differential diagnosis is structured. A thorough analysis of the patient's clinical picture and physical examination was conducted. Conclusions are logical.	0-20
4.	Whether hospitalization is indicated for the patient. If any, list out the indications for hospitalization	The correct answer does not add points. An incorrect answer decreases by 5 points.	-5 / 0
5.	Schedule an outpatient examination required for diagnosis	Complete response in accordance with the standards of care and clinical guidelines.	0-10
6.	Non-pharmacological management	The triage was carried out appropriately and the type of medical care that the patient requires was determined (emergency and life threatening, emergency but not life threatening, planned). A correct plan of non-pharmacological measures was prepared at the time of examination. All types of non-pharmacological management indicated in this clinical situation are offered.	0-10
7.	Prescribe pharmacotherapy indicating the name of the drug (generic name), form, dose, frequency and duration of use	Drugs are prescribed using generic names with the indication, form, doses, frequency and duration of use. The most appropriate option of therapy (drug) has been prescribed. When prescribing, the patient's condition, features of the course of the disease, the effectiveness and tolerability of previous therapy, and the presence of comorbid pathology were taken into account.	0-20

8.	Goals for primary/secondary prevention	Setting the goals for primary and secondary prevention. List out the interventions for particular preventions	0-10
9.	Outpatient follow-up	The duration and frequency of outpatient follow-up are indicated correctly. All health indicators that are supposed to be monitored are listed with target values. All types of examinations within the framework of outpatient follow-up, types of non-pharmacological management and pharmacotherapy are offered.	0-10

**Example of MCQ's** (Each MCQ carries one point)

- West Nile virus is transmitted by  
**A. Culex mosquitoes**  
 B. Bats  
 C. Rat droppings  
 D. Pet birds
- A 57-year old man is evaluated for a 6-month history of day-time sleepiness. his wife complains of his loud snoring and has observed breathing pauses; he sometimes awakens with a gasp. He has nocturia twice per night. He takes no medications. On physical examination, vital signs are normal. Oxygen saturation is 96% breathing ambient air. BMI is 33. He has a crowded oropharynx with low lying soft palate; his neck is 46 cms. in circumference; he has trace edema at the ankles. Cardiovascular and neurologic examinations are normal. Which of the following is the most appropriate management?  
 A. Auto adjusting positive airway pressure  
**B. Home sleep testing**  
 C. Multiple sleep latency testing  
 D. Overnight pulse oximetry
- A 22-year-old woman comes to the office with her husband because of nausea, vomiting, and a 7-kg weight loss over the last 3 months. According to her husband, she seems "stressed out" about eating food and spends time researching her diet. The patient says, "Just after eating a couple bites, I feel like I've had Thanksgiving dinner. I get relief after throwing up, but I'm worried about my weight loss." She has had no changes in bowel movements. The patient's only medical condition is type 1 diabetes mellitus, diagnosed when she was age 5. She uses bolus-prandial insulin. BMI is 20 kg/m<sup>2</sup>. Temperature is 37 C, blood pressure is 104/70 mm Hg, pulse is 80/min, and respirations are 14/min. On examination, the abdomen is soft with active bowel sounds; there is no distension. The remainder of the examination demonstrates no abnormalities. Complete blood count, serum electrolytes, and serum TSH are normal. Her hemoglobin A1c is 8.3%. Which of the following is the most appropriate next step in management of this patient?  
**A. Gastric-emptying study**  
 B. ACTH stimulation test  
 C. Cognitive behavioural therapy  
 D. Trial of a selective serotonin reuptake inhibitor
- A 51 year-old man is evaluated in the office for chest discomfort. Over the past week, the patient has had a burning sensation in the center of his chest after eating heavy meals and when walking fast. He also gets "winded" easily. This morning, he had the same discomfort that persisted for 30 minutes while he was sitting on the couch. The patient has not seen a

physician for 5 years. His wife says that he snores loudly in his sleep. The patient has a 15-pack-year smoking history and quit 2 years ago. He drinks 2 or 3 beers on the weekends. Blood pressure is 165/90 mm Hg and pulse is 90/min and regular. BMI is 34 kg/m<sup>2</sup>. Heart and lung examinations are unremarkable. ECG is unremarkable. Which of the following is the most likely diagnosis in this patient?

- A. **Unstable angina**
- B. Cor pulmonale
- C. Esophageal spasm
- D. Hiatal hernia
- E. Pulmonary embolism

5. A 70-year-old woman comes to the office with her daughter for an annual examination. The daughter says that her mother has seemed increasingly unsteady over the past year. She fell 2 months ago while getting up in the night to use the bathroom. The patient has a history of mild cognitive impairment and atrial fibrillation and has been taking an anticoagulant medication for several years. She lives alone in a single-story home; her daughter helps with meals and shopping. Vital signs are normal without orthostasis. BMI is 22 kg/m<sup>2</sup>. The patient is fully oriented and remembers 2 of 3 objects after 5 minutes. Visual acuity is 20/40 bilaterally; motor strength is mildly decreased throughout. The patient requires extended time to rise from a chair; gait is slow without ataxia. The remainder of the examination is normal. Blood testing shows no abnormalities. The physician discusses fall prevention measures and arranges a home safety assessment. The patient's daughter expresses concern because her maternal uncle died due to complications following a fall and asks if anything can reduce the risk of injury in case her mother falls again. Which of the following additional interventions is most effective in reducing the risk of serious fall-related injury in this patient?

- A. **Assessment and optimization of bone density**
- B. Discontinuation of anticoagulation medication
- C. Provision of a call alarm to summon assistance if she falls
- D. Use of a wearable hip protector at all times
- E. Use of an assistive device such as a cane

## EVALUATION OF THE MODULE ANSWER

MCQs: 100 questions, 1 point for each correct answer. Totally – 100 points maximum

Task (case):

0-4: no correct answer or there are correct parts in in some answers

5-7: partly correct answers

8-10: correct answers

## Example of an exam ticket

### ***Ticket №12***

1. Mixed feeding. Reasons, technique, the need for basic ingredients and calories, the timing of the introduction of complementary foods.
2. Chronic gastritis in children. Etiology, pathogenesis, classification, clinical picture, diagnosis, differential diagnosis, treatment, prevention.

### ***Case №4***

A child is 7 months old, born from the first pregnancy on 39th week. Baby is breastfed and receives 2 complementary foods - vegetable puree and rice porridge.

The skin is pale and dry. The mucous membranes are pale. There is no hyperemia in the throat. In the lungs, during auscultation, puerile breathing is heard, wheezing is absent. The heart sounds are slightly muffled, at the apex in the IV intercostal space, a soft, gentle systolic murmur is heard that does not extend beyond the heart. The borders of the heart are not expanded. The abdomen is soft and painless on palpation. The liver protrudes from under the edge of the costal arch not more than 2 cm, elastic consistency, smooth surface. The spleen is not palpable. Stool and diuresis are normal.

CBC: hemoglobin – 80 g / l, RBCs- $3.6 \times 10^{12}$  /l, color index -0.67, reticulocytes -0.9%, anisocytes, poikilocytes.

Biochemical panel: Serum iron – 8 mmol/l.

Questions:

1. Your diagnosis.
2. What is the cause of the disease in this patient?
3. What laboratory data can confirm the diagnosis?
4. Prescribe diet therapy.

### ***Feeding task №23***

The child is 2 months old. The body weight at birth is 3000 g. Baby is fed with breast milk.

1. Calculate the proper actual weight.
2. Calculate the amount of breast milk for 1 day.
3. Create a menu for one day.

Grading: 0–69 – “poor”, 70–79 – “satisfactory”, 80–89 – “good”, 90–100 – “excellent”.