**AL-FARABI KAZAKH NATIONAL UNIVERSITY**

**Medicine and Health Care Faculty**

**Higher School of Medicine**

**Department of Fundamental Medicine**

**SYLLABUS**

Fall semester, academic year 2022-2023

  **Academic course information**

| **Discipline’s code** | **Discipline’s title** | **Type** | **No. of hours per week** | **Number of credits** | **ECTS** |
| --- | --- | --- | --- | --- | --- |
| Lect. | Pract. | Lab. |
| MiF1206 | Morphology and human physiology | CD OC | 0 | 4 | 0 | 4 | 4 |
| **Lecturers** | - | **Office hours** | - |
| **e-mail** | - |
| **Phone number** | - | **Auditorium** | - |
| **Assistant**  | Aitbayeva Elmira | **Office hours** | According to schedule |
| **e-mail** | elmira.aitbayeva@med-kaznu.com |
| **Phone number** | +77012941817 | **Auditorium** | Offline |

| **Academic presentation of the course** | **Course type**: Core Discipline, University Component, part of Basics of BiomedicineDiscipline forms students' knowledge of the morphology and physiology of organs and systems of the human body (respiratory, cardiovascular, hematopoietic, digestive, urinary, reproductive, endocrine, musculoskeletal and skin as an organ, nervous, sensory organs) in age and sex aspects of organ systems rights for understanding life processes and maintaining homeostasis.During the study of the discipline students will learn following aspects:1. demonstrate knowledge of anatomy, topography and visualization in the age and sexual aspects of human organ systems: respiratory, cardiovascular, hematopoietic, digestive, urinary, reproductive, endocrine, musculoskeletal, and skin as an organ, nervous, sensory organs;
2. be able to identify cellular and non-cellular structures that make up the tissues of organ systems on microscopic specimens with an understanding of their formation and function;
3. demonstrate knowledge of the physiological processes that determine the activity and mechanisms of regulation of human organs and systems (blood circulation, respiration, digestion, excretion, movement, blood formation, functioning of the senses);
4. understand and apply knowledge of the neuro-endocrine regulation of homeostasis, metabolism in different situations;
5. understand the processes and anatomical and physiological processes during pregnancy, development and growth, involutional changes, with various physiological stress variants;
6. demonstrate knowledge of the physiology of higher nervous activity and the cognitive process;
7. be able to conduct research on basic physiological functions;
8. Demonstrate analytical skills in the integration of knowledge of the anatomy, histology and function of the human body to understand and evaluate normal life processes.
9. Demonstrate the ability to identify learning gaps and create strategies to enhance one’s own knowledge and skills.
10. Communicate effectively with other students and teachers regarding medical and scientific information, articulate their opinions clearly when discussing the morphological structure and physiological processes, and work effectively as a member of the team.
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| **Prerequisites** | - |
| **Post requisites** | - |
| **Information resources**  | **Basic literature**:1. Saladin, Kenneth S: Essentials of Anatomy & Physiology. (2018, McGraw-Hill Education)
2. Costanzo, Linda S.: BRS Physiology. Board Review Series.7 edition. -Wolters Kluwer Health, 2018.- 307p. - ISBN 1496367693, 9781496367693
3. Leslie P. Gartner: Color Atlas and Text of Histology. - 7th Edition. - Wolters Kluwer, 2017. ISBN 1496346734, 9781496346735
4. Russell K. Hobbie, Bradley J. Roth: Intermediate Physics for Medicine and Biology. - Springer, 2015. - ISBN 3319126822, 9783319126821
5. Andersson D, Medical Terminology: The Best and Most Effective Way to Memorize, Pronounce and Understand Medical Terms: Second Edition, ISBN-13 : 978-1519066626, 2016

**Additional literature:**1. Standring, Susan: Gray's Anatomy: The Anatomical Basis of Clinical Practice. - 41 Elsevier Limited, 2016
2. Elaine N. Marieb, Lori A. Smith: Human Anatomy & Physiology Laboratory Manual, Main Version. - 11 edition. -  Pearson Education,2015. - ISBN 9780133999143
3. Scanlon V. C, Essentials of Anatomy and Physiology 8th Edition, F.A. Davis Company, 2018
4. Victor P. Eroschenko,  Atlas of Histology with Functional Correlations 13th Edition, LWW, 2017
5. William Bialek: Biophysics: Searching for Principles. -Princeton University Press, 2012. - ISBN 0691138915, 9780691138916

**Online resources**:1. [https://app.lecturio.com/#/](https://app.lecturio.com/%23/)
2. <https://3d4medical.com/>
3. <https://www.youtube.com/channel/UCc_I2c2bUtO0p4DVeo6-Kxg>
4. <https://sites.google.com/a/umich.edu/bluelink/curricula/anatomy-403?authuser=0>
5. <https://histologyknmu.wixsite.com/info/gistologicheskie-sajty>
6. <https://histologyknmu.wixsite.com/info/gistologicheskie-sajty>
7. <http://www.histology-world.com/contents/contents.htm>
8. http://www.histologyguide.com/slidebox/02-epithelium.html
9. https://histology.medicine.umich.edu/resources
10. https://web.duke.edu/histology/
11. http://virtualslides.med.umich.edu/Histology/view.apml?listview=1&

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| **Academic policy of the course in the context of university moral and ethical values** | *Academic honesty*We adhere to the principle of intolerance to violations of academic integrity. Academic dishonesty includes plagiarism, fraud, falsification, unauthorized cooperation, the use of cheat sheets during exams and classroom work and other forms. A student found guilty of any form of academic dishonesty will receive an unsatisfactory grade (F).*Tolerance and non-discrimination*We have zero tolerance for unsafe behavior during seminars and / or additional research activities, discrimination on ethnicity, gender and other grounds.*Attendance policy*Attending lectures and seminars is a must. At least 50% of attendance is required. In the case of missing more than 50% of the classes, the student automatically receives for discipline (F) and remains on the repeated passage of the discipline (recycle) on a paid or free (if there is a good reason for missing) basis.If you are late for classes for more than 5 minutes without a good reason, the student can attend the lesson, but gets 0 points for this lesson.*Activity in the classroom*All students must participate in group and individual assignments and discussions. The course involves solving cases in the classroom or outside the classroom as an indispensable part of the training. Additional research is not required, but very useful for a better understanding of the course.*Passes of midterm controls and exams*Students can retake the intermediate controls with an official certificate approved by the Keremet doctor. Failure to appear at the final control (exam) is made out in accordance with the rules of the academic policy of the university.*Deadline for assignment*Tasks, projects, reports, etc., not delivered on time without explanation, are not accepted.*Appeal policy*Students can appeal teacher decisions directly with the teacher. If no solution is found, turn to the head of the department for advice.*Appearance and dress code*You need to come to classes in neat clothes in white medical gowns. In the absence of a dressing gown, the teacher has the right to prevent him from taking classes.*Electronic resources*Students are expected to regularly check their email and departmental website [www.med-kaznu.com](http://www.med-kaznu.com) for updates and course announcements. |
| **Evaluation and attestation policy** | **Criteria assessment**: assessment of learning outcomes in relation to descriptors, verification of the formation of competencies (learning outcomes specified in the goal) is carried out by the following methods:1) testing using video, drawings, photographs, diagrams, microphotographs or micropreparations - as part of the current / midterm / final control: learning outcomes No 1-9; 2)  solution of situational problems, analysis of cases - within the framework of the current / midterm / final control - learning outcomes № 1-9; 3) interview / oral interview - within the framework of the current / milestone / final control – learning outcomes № 1-9; 4) assessment by direct observation in the framework of current control and IWS - learning outcomes №9-10; **Summary assessment:**In the course, 3 midterm controls are planned, within the framework of which the development of the material of one section is evaluated.For the semester, admission rating points are set: RD = (CC1 + MT (Mid-Term) + CC2) / 3, where CC1 / CC2 / MT = the sum of all points for classes + points for overseas control and IWS of the corresponding period. CC1 - 1-5 weeks, MT - 6-10 weeks, CC2 - 11-15 weeks. The final control (exam) is carried out in 2 stages. You will be given tickets for written exam (100%). The final grade for the discipline = RD \* 0.6 + Exam \* 0.4 |

**Calendar (schedule) of the implementation of the course content**

*Coursework calendar*

| **№****п/п** | **Week** | **Topic title** | **Number of hours** | **Max. grade** |
| --- | --- | --- | --- | --- |
| 1 | 1 | **Practical lesson 1** **Introduction to anatomy and physiology** **The Human Body Plan** -Anatomical Position- Anatomical Planes- Directional Terms- Major Body Regions (Axial and Appendicular Region)- Body Cavities and Membranes- Organ Systems | 4 | 7 |
|  |  | **IWST: Consultation on the implementation of IWS**  | **2** |  |
| 2 | 2 | **Practical lesson 2** **The integumentary system**Structure and functions of the skinStructure and functions of the Cutaneous Glands, dermal circulation; | 4 | 10 |
|  |  | **IWST: Consultation on the implementation of IWS**  | **2** |  |
| 3 | 3 | **Practical lesson 3** **The skeletal system** Overview of skeletal system and Osseous Tissue; Gross Anatomy of Bones Bones associated with the Skull (Cranial and Facial Bones)General Features of the Vertebral Column, General Structure of a Vertebra, Intervertebral Discs; The upper and lower limbsJoints and Their Classification. | 4 | 7 |
|  |  | **IWST: Consultation on the implementation of IWS**  | 2 |  |
| 4 | 4 | **Practical lesson 4** **The muscular system** The Functions of MusclesThe Nerve–Muscle RelationshipPhysiology of Skeletal Muscle Cardiac and Smooth Muscle.Muscle metabolism | 4 | 7 |
|  |  | **IWST: Consultation on the implementation of IWS**  | 2 |  |
| 5 | 5  | **Practical lesson 5****Circulatory system Blood** Introduction, Blood Types.ErythrocytesLeukocytesPlatelets Hemostasis | 4 | 7 |
|  |  | **IWST: Consultation on the implementation of IWS**  | **3** |  |
| 6 | 6 | **Practical lesson 6****Circulatory system II Heart** Overview of the Cardiovascular System.Systematic and pulmonary circuitGross Anatomy of the heart.Cardiac cycle and heart soundCardiac output | 4 | 7 |
|  |  | **IWST: Consultation on the implementation of IWS**  | 2 |  |
| 7 | 7 | **Practical lesson 7****Circulatory system III- Vessels**General Anatomy of the Blood Vessels Capillary Exchange. Physiology of Circulation.Circulatory Routes and Blood Vessels of Axial and Appendicular Region**Current Control-1** | 3+1 | 7+45 |
|  |  | IWS with teacher **Presentation of IWS** **Regularities of the location of the superficial elbow veins.** | **2** | 6 |
| 8 | 8 | **Practical lesson 8****The lymphatic and immune system** The Lymphatic System Overview of immune system | 4 | 7 |
| 9 | 9 | **Practical lesson 9****The Respiratory System** General Anatomy of the Respiratory System Gas Exchange and Transport Pulmonary Ventilation | **4** | 7 |
| 10 | 10 |  **Practical lesson 10****The Urinary System** Functions of the Urinary System Anatomy of the Kidney, ureters, urinary bladder, and urethra. Functions of the Urinary System. Fluid, electrolyte and acid balance . | **4** | 7 |
| 11 | 11 |  **Practical lesson 11****The digestive system . Nutrition and Metabolism** NutritionMetabolic States and Metabolic Rate General Anatomy and Digestive Processes The Mouth Through EsophagusThe Liver, Gallbladder, and Pancreas Chemical Digestion and Absorption | 4 | 7 |
| 12 | 12 |  **Practical lesson 12****The Nervous System** Overview of nervous systemThe basic structure and Physiology of Neurons The Spinal Cord Somatic ReflexesOverview of the brain. Multiregional Brain Functions The Cranial NervesThe Autonomic Nervous System | **4** | 7 |
| 13 | 13 | **Practical lesson 13****Sense organs** Properties and Types of Sensory ReceptorsThe General Senses; The Chemical Senses organsReceptors and Sensations The General SensesChemical sensation -taste | **4** | 7 |
| 14 | 14 |  **Practical lesson 14****The Endocrine System** Overview of the Endocrine System Endocrine Physiology The Hypothalamus and Pituitary Gland Other Endocrine Glands  | **4** | 7 |
| 15 | 15 | **Practical lesson 15****The Reproductive System** The male and female reproductive system.Functions of the male and female reproductive system.**Current control-2** | **3****1** | 744 |
|  |  |  |  | 100 |

Head of the Department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ L. Sarsenova

Chairman of the Faculty Methodical Bureau \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dzhumasheva R.T.