**AL-FARABI KAZAKH NATIONAL UNIVERSITY**

**Higher School of Medicine**

**Department of Fundamental Medicine**

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|  | **AFFIRM**  **Dean of the Faculty**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (signature)**  **Kalmatayeva Z.A.**  **"\_\_\_\_\_\_" \_\_\_\_\_\_\_\_ 2019** |

**EDUCATIONAL AND METHODICAL COMPLEX OF DISCIPLINE**

MiF2203"Morphology and physiology of human body"

**Specialty "B086"**

**Educational program “General medicine”**

**Course – 2**

**Semester – 3**

**Number of credits – 11**

**Аlmaty 2020**

Educational and methodical complex of discipline was compiled by

doctor of medical sciences, professor **Tashenova Gulnara**, doctor of medical sciences, professor **Yui Rudolf,** master of medical sciences **Kasenova Gulzhan**, master of medical sciences **Oralkhan Jebeke,** master of medical sciences **Seidinova Aigerim,** MD **Mulkibayeva Sholpan,** master of physical sciences **Nurtayeva Galiya**

Based on the working curriculum in the specialty B086 General medicine

Considered and recommended at a meeting of the department fundamental medicine

from "\_\_\_" \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2019, protocol No. ...

Head of the department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Sarsenova L.K.

(signature)

Recommended by the faculty methodical bureau

"\_\_\_\_" \_\_\_\_\_\_\_\_\_\_\_ 20 ..., protocol No.

Chairman of the method bureau of the faculty \_\_\_\_\_\_\_\_\_\_\_ Ualieva A.E. (signature)

**Al-Farabi Kazakh National University**

***Higher School of Medicine***

*Department of Fundamental Меdicine*

**SYLLABUS**

Fall semester, academic year 2020-2021

**Academic course information**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Discipline’s code | Discipline’s title | | Type | No. of hours per week | | | | Number of credits | | ECTS |
| Lect. | Pract. | | Lab. |
| MiF2203 | Morphology and  physiology of human body | | BD  UC | 0 | 11 | | 0 | 7 | | 11 |
| Teacher of Anatomy and Physiology | |  | | | | Office hours | | | - | |
| e-mail | |  | | | |
| Phone number | |  | | | | Auditorium | | | Faculty of Medicine and Health, auditorium 3a/3b | |
| Teacher of histology | |  | | | | Office hours | | | According to the schedule | |
| e-mail | |  | | | |
| Phone number | |  | | | | Auditorium | | | Faculty of Medicine and Health, auditorium 3a/3b | |
| Teacher of biochemistry | |  | | | | Office hours | | | According to the schedule | |
| e-mail | |  | | | | Auditorium | | | Faculty of Medicine and Health, auditorium 3a/3b | |
| Phone number | |  | | | | Office hours | | | According to the schedule | |

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| Academic presentation of the course | **Course type:** basic discipline of the university component, “Body structure and function in norm and pathology”module. The concepts of anatomy and physiology are exemplified by medical cases so as to engage students in analytical thinking, and promote independent, as well as collaborative, work on the study material.  **The aim of the course:** to teach how to apply knowledge of morphology (anatomy and histology) 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 the sexual aspect of human organ systems for understanding vital processes and maintaining homeostasis.  **After completing this course students will**:   1. demonstrate knowledge of anatomy, topography and visualization in the age and sexual aspects of human organ systems; 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. |
| Prerequisites | The Human Body (Medical terminology include) |
| Post requisites | General Pathology |
| Information resources | **Basic Literature:**   1. Kenneth S. Saladin, Robin K. McFarland,Christina A. Gan, Heather N. Cushman. Essentials of Anatomy &amp; Physiology -2nd ed.- Penn Plaza, McGraw-Hill Education, New York, NY 2018, -786 p. 2. Mazumdar, Sibani. Anatomy at a Glance: An Exam-Oriented Text / S. Mazumdar ; Calcutta National Medical College [et al.]. - 2nd ed. - New Delhi ; London ; Philadelphia : Jaypee, 2014. - 534 p. 3. James S. Lowe and Peter G. Anderson. Stevens & Lowe's Human Histology (Fourth Edition) Book ( 4th Edition ), P.-429. 2015. 4. Concise Medical Dictionary [Text] : monograph. - Oxford : Oxford University Press, 1996. - 719 с. - ISBN. 5. Computational Biochemistry and Biophysics [Electronic resource] : textbook / O. M. Becker et al.. - New York : Marcel Dekker, Inc., 2001. - 525 p. - ISBN. 6. Essentials of Medical Physiology [Text] : [monogr.] / K. Sembulingam, P. Sembulingam; Madha Medical College [et al.]. - 7th ed. - New Delhi ; London ; Philadelphia : Jaypee, 2016. - 1112 p. : il. - Ind.: p. 1069-1112. - ISBN.   **Additional literature:**   1. USMLE Step 1 [Electronic resource] : Physiology: lecture notes / B. Wilson. - Electronic text data 10.4 Mb. - New York : Kaplan Medical, 2017. - 421 p. - The Main Page Title. - ISBN 978-1-5062-0876-3. 2. USMLE step 1 [Text] : lecture notes 2017 / ed.: J. White, D. Seiden. -New York: Kaplan medical, 2017. - 2714 p. - ISBN. 3. Wilson, Britt. USMLE Step 1 [Electronic resource] : Physiology: lecture notes / B. Wilson. - Electronic text data 10.4 Mb. - New York : Kaplan Medical, 2017. - 421 p. - The Main Page Title. - ISBN. 4. Human Anatomy [Text] : For Students / B. D. Ghosh ; [Anatomical Society of India (West Bengal Chapter) et al.]. - 2nd ed. - New Delhi ; Panama City ; London : Jaypee, 2013. - 948 p. : il. - Ind.: p. 913-948. - ISBN. 5. Fischer, Conrad. USMLE Step 2 CK [Electronic resource] : lecture notes / C. Fischer. -New York : Kaplan medical, 2013. - ISBN. 6. Latin and Fundamentals of Medical Terminology for Medical Students with Training English [Text] : educational man. / A. Zh. Shoibekova ; Kazakh National Medical University. - Almaty : Evero, 2016. - 163, [1] p. : tab. - Bibliogr.: p. 161. - ISBN.   **WWW resources:**  1. https://app.lecturio.com/#/  2. https://3d4medical.com/  3. https://www.youtube.com/channel/UCc\_I2c2bUtO0p4DVeo6-Kxg  4. [University of Michigan Medical School](https://sites.google.com/a/umich.edu/bluelink/curricula?authuser=0) |
| Academic policy of the course in the context of university moral and ethical values | **Academic behavior rules.**  *Attendance policy*  Attendance for class is mandatory. Attendance for an additional extracurricular research activity is highly recommended for increasing the course assessment. No less than 50% attendance is required for the lectures and workshops. Additional research activities are not required, but highly beneficial for the course better comprehension.  *Class participation*  All students are expected to participate in class activities and discussions.  *Classroom decorum*  All unrelated activities are prohibited during a lecture and workshop time. Cell phones, computer games and unrelated Internet and computer activities are strictly prohibited.  *Missed exams*  Students can retake midterm exams with an official document for the days of absence. Other excuses are not accepted and the exam will be annulated. Missing of the final exam is registered according the rules of Academic Policy of the University.  *Late assignments*  Late assignments, projects, reports and etc. are not accepted with no excuses.  *Appeals policy*  Students may appeal instructor decisions by speaking directly with him. If a solution is not found students can consult with Head of the Department.  *Electronic resources*  You are expected to regularly check your emails for updates and announcements  about the course.  *Plagiarism and Cheating*  As a student, you are expected to adhere to the norms of academic integrity. Academic dishonesty includes plagiarism, cheating, fabrication, unauthorized collaboration, use of notes during exams and quizzes, and other forms. These students  will be given 0 with no further retake activities.  **Academic values.**  *Academic honesty*  There will be no tolerance for lapses of academic integrity. A student found to be guilty of falsifying, plagiarism and cheating or any other form of academic dishonesty will be given a failing grade.  *Tolerance and non-discrimination*  There is zero tolerance for unsafe activity in laboratory during workshops and additional research activities. There will be no discrimination per nationality, gender and anything else. |
| 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 OSPE using dummies and micropreparations - as part of the current / midterm / final control: final results No. 1, 3;  2) solution of situational problems, analysis of cases - within the framework of the current / midterm / final control - final results No. 2, 4, 5, 6, 9;  3) interview / oral interview - within the framework of the current / milestone / final control - final results No. 2, 4, 5, 6;  4) assessment by direct observation in the framework of current control and CDS - final results No. 7, 8, 9;  **Summary assessment:**  In the course, 6 current 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 = (RK1 + MT (Mid-Term) + RK2) / 3, where RK1 / RK2 / MT = the sum of all points for classes + points for overseas control and CPC of the corresponding period. RK1 - 1-5 weeks, MT - 6-10 weeks, RK2 - 11-15 weeks. The final control (exam) is carried out in 2 stages. First - writing, second - MCQ. The final grade for the discipline = RD \* 0.6 + Exam \* 0.4 |
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**Calendar (schedule) of the implementation of the course content**

*Coursework calendar*

|  |  |  |  |
| --- | --- | --- | --- |
| Week/date | Topic title (lectures, practical classes,  Independent work of students) | Number of hours | Max. grade |
| The lymphatic and immune system | | | |
| 1-1 | The lymphatic system and Immune system | 3 | 2 |
| Fluid, Electrolyte, and Acid–Base Balance | | | |
| 1-2 | FLUID, ELECTROLYTE, AND ACID–BASE BALANCE I  Fluid Balance Electrolyte Balance | 3 | 2 |
| 1-3 | FLUID, ELECTROLYTE, AND ACID–BASE BALANCE II  Acid–Base Balance | 2 | 2 |
| 1-4 | Histology of the  Lymphatic System  Cells of the lymphatic system, types of lymphatic tissue,  red bone marrow, thymus, lymph nodes, tonsils, and spleen | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers and Current control questions - work on mistakes. | 3 |  |
| The Digestive system | | | |
| 2-1 | The digestive system I  General Anatomy and Digestive Processes  The Mouth Through Esophagus | 3 | 2 |
| 2-2 | The digestive system II  The Stomach Liver, gallblader, pancreas | 3 |  |
| 2-3 | The digestive system III  The Small Intestine and Large Intestine | 2 | 2 |
| 2-4 | Histology of digestive system I  Microscopic Anatomy of digestive organs and tissue II  Topic: Digestive system. Middle section: small intestine, colon, duodenum. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers - work on mistakes. | 3 |  |
| 3-1 | Nutrition and metabolism I  Nutrition | 3 | 2 |
| 3-2 | Nutrition and metabolism II  Metabolic States and Metabolic Rate  Body Heat and Thermoregulation | 3 | 2 |
| 3-3 | Current Control 1 | 2 | 62 |
| 3-4 | Histology of digestive system II  Microscopic Anatomy of digestive organs and tissue III Liver, pancreas | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers and Current control questions- work on mistakes. | 3 |  |
| The Endocrine System | | | |
| 4-1 | The Endocrine System I  Overview of the Endocrine System  The Hypothalamus and Pituitary Gland  Other Endocrine Glands | 3 | 2 |
| 4-2 | The Endocrine System II  Other Endocrine Glands | 3 | 2 |
| 4-3 | The Endocrine System III.  Hormones and Their Actions | 2 | 2 |
| 4-4 | Histology of Endocrine System I  Microscopic Anatomy of endocrine organs and tissue  Endocrine system. Central endocrine system. Hypothalamus, pituitary, pineal gland. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers and work on mistakes. | 3 |  |
| 5-1 | The Endocrine System III  Hormones and Their Actions to target cells  Endocrine Disorders | 3 | 2 |
| 5-2 | The Endocrine System IV  Stress and Adaptation  Eicosanoids and Other Signaling Molecules | 3 | 2 |
| 5-3 | Histology of Endocrine System II  Microscopic Anatomy of endocrine organs and tissue  Peripheral endocrine system. Adrenal gland, thyroid, parathyroid glands. | 2 | 2 |
| 5-4 | Histology Reproductive System  Sexual Reproduction and Development | 3 | 2 |
| IWS -1 |  | 3 |  |
| IWS with teacher | Consultation on design work IWS-1. Division into teams and distribution of topics to cases. Analysis of written answers - work on mistakes. | 3 |  |
|  | MIDTERM 1 |  | 100 |
| 6-1 | Current Control 2 | 2 | 22 |
| The Reproductive System | | | |
| 6-2 | Histology Reproductive System I Male  Male reproductive system. | 3 | 2 |
| 6-3 | Male Reproductive Anatomy. Puberty, Hormonal Control, and Climacteric | 3 | 2 |
| 6-4 | Histology Female reproductive system: structure and functions of the ovary, ovogenesis, fallopian tubes. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers- work on mistakes. | 4 |  |
| 7-1 | Histology Female reproductive system: structure and functions of the ovary, ovogenesis, fallopian tubes. | 3 | 2 |
| 7-2 | Sperm and Semen. Male Sexual Response | 3 | 2 |
| 7-3 | Female Reproductive Anatomy. Puberty and Menopause | 2 | 2 |
| 7-4 | Embryology I  Human embryology Sex cells. Early stages of development of the human embryo. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers- work on mistakes. | 4 |  |
| 8-1 | Oogenesis and the Sexual Cycle. Female Sexual Response | 3 |  |
| 8-2 | Pregnancy and Childbirth. Lactation | 3 | 2 |
| 8-3 | Current control №3 Reproductive | 2 | 24 |
| 8-4 | Human embryology Sex cells. Early stages of development of the human embryo. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers- work on mistakes. | 4 |  |
| 9-1 | Human embryology Fertilization. Splitting up. | 3 | 2 |
| 9-2 | Human embryology Gastrulation. Differentiation of germ layers, organogenesis. | 3 | 2 |
| 9-3 | Human embryology Gastrulation. Differentiation of germ layers, organogenesis. | 3 | 2 |
| 9-4 | Current control №4 | 2 | 22 |
| IWS -2 |  |  |  |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers- work on mistakes. | 4 |  |
| 10-1 | Biophysics of nervous System Electrophysiology of Neurons Synapses | 3 | 2 |
| 10-2 | Biophysics of nervous System Neural Integration | 3 | 2 |
| 10-3 | Histology of Nervous System Supportive Cells (Neuroglia) | 2 | 2 |
| 10-4 | Histology of Nervous System Peripheral nervous system. The spinal cord | 3 | 2 |
| IWS with teacher | Presentation of Independent work of the student -1 | 4 |  |
|  | Midterm 2 |  | 100 |
| 11-1 | The Nervous System-The Spinal Cord I  The Spinal Cord | 3 | 2 |
| 11-2 | The Nervous System-The Spinal Cord II  The Spinal nerves | 3 | 2 |
| 11-3 | The nervous System-The Spinal Cord III  Somatic Reflexes | 2 | 2 |
| 11-4 | Histology of nervous system II-2  Central nervous system. Brain. The cerebral cortex. Cerebellum. The nervous System - Brain I  Overview of the Brain Meninges, Ventricles, Cerebrospinal Fluid, and Blood Supply | 3 | 2 |
| IWS with teacher | Consultation on design work IWS-2. Division into teams and distribution of topics to cases. Analysis of written answers - work on mistakes. | 4 |  |
| 12-1 | Brain I Overview of the Brain Meninges, Ventricles, Cerebrospinal Fluid, and Blood Supply | 3 | 2 |
| 12-2 | Brain II The Hindbrain and Midbrain | 3 | 2 |
| 12-3 | Brain III The Forebrain | 2 | 2 |
| 12-4 | Histology The Sensory Organs Organ of sight, organ of smell. Organs of hearing and balance, taste. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers and Current control questions- work on mistakes. | 4 |  |
| 13-1 | Brain IV Integrative Functions of the Brain | 3 | 2 |
| 13-2 | Current Control №5 | 2 | 32 |
| 13-3 | The Cranial Nerves I | 3 | 2 |
| 13-4 | Histology The Sensory Organs Organ of sight, organ of smell. Organs of hearing and balance, taste. | 3 | 2 |
| IWS with teacher | Consultation on anatomical structures for models according to the topics covered. Analysis of written answers - work on mistakes. | 4 |  |
| 14-1 | The Cranial Nerves II | 3 | 2 |
| 14-2 | The Autonomic Nervous System I General Properties and anatomy of the Autonomic Nervous System | 3 | 2 |
| 14-3 | The Autonomic Nervous System II Autonomic Effects on Target Organs. Central Control of Autonomic Function | 2 | 2 |
| 14-4 | Properties and Types of Sensory Receptors The General Senses; The Chemical Senses | 3 | 2 |
| IWS with teacher | Presentation of Independent work of the student -2 | 4 |  |
| 15-1 | Chemical Senses—Taste and Smell. Eye and Vision | 3 | 2 |
| 15-2 | Eye and Vision | 3 | 2 |
| 15-3 | The Sensory Organs IV Hearing and Equilibrium | 3 | 2 |
| 15-4 | Current control №6 | 2 | 32 |
| IWS with teacher | Сonsultation on covered topics. Analysis of written answers and Current control questions- work on mistakes. | 4 |  |
|  | MIDTERM 1 |  | 100 |
|  | Total |  | 300 |

Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Chairman of the Faculty Methodical Bureau \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_