

**AL-FARABI KAZAKH NATIONAL UNIVERSITY**  
**Medicine and Health Care Faculty**  
**Higher School of Medicine**  
**Department of Fundamental Medicine**



**EDUCATIONAL AND METHODOLOGICAL COMPLEX OF DISCIPLINE**

**MORPHOLOGY AND PHYSIOLOGY OF HUMAN BODY**

**BM087 “Dentistry”**  
**Educational program “6B10113 Dentistry”**

**Course – 1**

**Semester – 2**

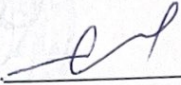
**Number of credits – 12 (12 ECTS)**

**Almaty 2023**

Educational and methodical complex of discipline was compiled by master of medical sciences  
Aitbayeva E.B., Espollayeva A.R.

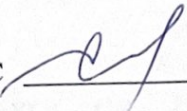
Based on educational program "6B10113 Dentistry"

Considered and recommended at a meeting of the fundamental medicine department  
from "30" 08 2023 protocol № 1

Head of department  Sarsenova L.K.

Recommended by Methodological Council of the Higher School of Medicine

"16" 10 2023 protocol № 1

Chairman of the Academic Committee of M&HC  Sarsenova L.K.



**SYLLABUS**  
**Fall semester 2023-2024 academic year**  
**Educational program "6BM10201 Dentistry"**

| <b>1. ACADEMIC INFORMATION ABOUT THE SUBJECT</b>   |  |   |   |
|--|--|---|---|
| 1.1  | Faculty/school: Medicine and Healthcare/<br>Higher school of medicine  | 1.6   | Number of credits (ECTS):<br>General number of credits: 12<br>lectures 6/ practical classes 6 |
| 1.2  | Educational program (EP):<br>6B10113 Dentistry"  | 1.7   | Prerequisites:<br>Postrequisites: General pathology   |
| 1.3  | Agency and year of EP accreditation<br>Date of issue: 28.01.2022<br>Registration No.: AB 3884<br>Independent agency for accreditation and rating | 1.8   | Independent work of the student:4   |
| 1.4  | Name of subject:<br>Morphology and physiology of human body  | 1.9   | Independent work of the student under<br>the guidance of a teacher (IWST):2                   |
| 1.5  | Discipline ID: 90806   | 1.10  | Required - yes  |
| <b>2. Description of subject</b>   |  |   |   |
| Formation of knowledge about the morphology (anatomy and histology) and physiology of organs and systems of the human body (musculoskeletal and skin as an organ, respiratory, cardiovascular, hematopoietic, digestive, urinary, reproductive) in the age and gender aspects of human organ systems to understand the processes of life and maintaining homeostasis |  |   |   |
| <b>3 Purpose of subject</b>  |  |   |   |
| Forming integrated knowledge of the normal typical structure and functioning of cells and organs of the human body, taking into account age, sex and individual characteristics, anatomical and topographic relationships and regulation of the functions of cells, organs and systems in normal conditions.   |  |   |   |
| <b>4. Learning outcomes (LO) of subject</b>  |  |   |   |
| LO of subject  |  | LO according to the educational program,<br>with which the LO is associated by subject  |   |
| Know structural and organizational structure of internal organs, localize and describe, using appropriate terminology correctly, on models, preparations and medical imaging materials, the typical structure of internal organs and organs is normal, taking into account age, sex and individual characteristics;  |  | №1 Apply detailed knowledge of the typical structure and functions of the human body at the level - from molecules, cells, to organs and systems, the body as a whole |   |
| Understand the functional organization of human body at the systemic, organ and cellular level, the physiological processes of excitable tissues;  |  |   |   |
| Explain the interrelation of structure and function at the level of tissue, organs and organ systems and the main physiological  |  |   |   |



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| mechanisms for maintaining homeostasis, vital activity of the organism and their characteristics, taking into account age, sexual and individual differences;   |   |
| Recognize microscopic specimens and describe correctly using the appropriate terminology the microscopic structure of human organs, taking into account age, sex and individual characteristics;  |   |
| Describe, using appropriate terminology, the stage of human development and explain the basic processes and mechanisms of normal morphogenesis  |   |
| Integrate knowledge about the structure of the musculoskeletal system and internal organs at the systemic, organ and tissue levels and their phylogenetic development in order to understand the anatomical and physiological features in different periods of development in normal conditions |   |
| Demonstrate commitment to the highest standards of professional responsibility and honesty; comply with ethical principles in all professional interactions;  |   |
| Demonstrate the need for continuous professional training and improvement of their knowledge and skills;  |   |
| Demonstrate the skills of conducting scientific research, the desire for new knowledge and the transfer of knowledge to others  | №14 Participate in scientific research aimed at promoting knowledge in the field of human health and improving the quality of life; strive for new knowledge, generate new knowledge; be capable of effective learning and transferring knowledge to others throughout their careers. |

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| <b>5. Formative assessment methods:</b> |   |     |  |
| 5.1                                     | Control work - yes                        | 5.5 | Essay -yes   |
| 5.2                                     | Laboratory classes- no                    | 5.6 | Case-study -yes  |
| 5.3                                     | Project (individual/group)- group project | 5.7 | Portfolio of scientific papers- no   |
| 5.4                                     | Mutual evaluation-no                      | 5.8 | Exam: (platform - Moodle)<br>Stage 1 - OSPE part<br>Stage 2 - Written part |

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| <b>6. Detailed information about the subject</b> |                          |     |   |
| 6.1  | Academic year: 2023-2024 | 6.3 | Schedule (days of classes, time): by schedule   |
| 6.2  | Semester: 2              | 6.4 | Location (academic building, office, platform and link to the training meeting using DOT): Tole bi 96, classrooms by schedule |



| 7. Teacher   |  |  |  |
|--|--|--|--|
| Position   | Full Name  | Contact information (tel., e-mail)   | Time for consultations or by appointment |
| MD, Master of Medical Sciences   | Aitbayeva Elmira   | aitbayeva.elmira@med-kaznu.com   | according to timetable                   |
| Lecturer/teacher   | Aitaliev Serik   | aitaliyev.serik@med-kaznu.com  | according to timetable                   |
| 8. Subject content   |  |  |  |
| Week #   | Topics and tasks   |  | Hours                                    |
| 1  | <b>Lecture 1</b> Introduction to anatomy and physiology Anatomical Position; Anatomical Planes; Directional Terms; Major Body Regions (Axial and Appendicular Region); Body Cavities and Membranes; Organ Systems.           |  | 2  |
|  | <b>Lecture 2</b> The integumentary system Structure and functions of the skin; Structure and functions of the Cutaneous Glands, Dermal circulation.  |  | 1  |
|  | <b>Practical lesson 1</b> Introduction to anatomy and physiology Anatomical Position; Anatomical Planes; Directional Terms; Major Body Regions (Axial and Appendicular Region); Body Cavities and Membranes; Organ Systems   |  | 2  |
|  | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p.27-37 |  |  |
|  | <b>Lecture 1:</b> Histology Histotechnics. Cytology.   |  | 1  |
|  | <b>Lecture 2:</b> Histology. Embryonic development of mammals and humans.  |  | 1  |
|  | <b>Lecture 3:</b> Histology. Epithelium tissue.Glands.   |  | 1  |
|  | <b>Practical lesson 1</b> Histology Histotechnics. Cytology.   |  | 2  |
|  | <b>Practical lesson 2</b> Histology Embryonic development of mammals and humans.   |  | 2  |
|  | Task:  |  |  |
|  | Literature for reading:  |  |  |
|  | IWST - consultations on models, discussion of results of written works.  |  | 4  |
|  | 2  | <b>Lecture 3 :</b> The skeletal system I Overview of skeletal system and Osseous Tissue; Gross Anatomy of Bones; Bone Development and Metabolism |  |
| <b>Practical lesson 2</b> The integumentary system Structure and functions of the skin; Structure and functions of the Cutaneous Glands, dermal circulation;   |  | 2  |  |
| Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p.175-189 |  |  |  |
| <b>Lecture 4:</b> The skeletal system II Bones associated with the Skull (Cranial and Facial Bones)  |  | 2  |  |
| <b>Practical lesson 3:</b> The skeletal system I Overview of skeletal system and Osseous Tissue; Gross Anatomy of Bones; Bone Development and Metabolism   |  | 2  |  |
| Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p.208-215 |  |  |  |
| IWST - consultations on IWS, models, discussion of results of written works, etc.  |  | 4  |  |
| <b>Lecture 4 :</b> Histology. Blood and lymph  |  | 1  |  |
| <b>Lecture 5 :</b> Histology. Connective tissues.  |  | 1  |  |



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|   | <b>Practical lesson 3</b> Histology. Epithelium tissues.  | 2 |
|   | Literature for reading:   |   |
|   | <b>Current control-1</b>  |   |
|   | Literature for reading (textbook, pages and chapters):  |   |
| 3 | <b>Lecture 5</b> : The Vertebral Column, The Thoracic Cage.   | 1 |
|   | <b>Practical lesson 4</b> : Bones associated with the Skull (Cranial and Facial Bones)  | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 229-240 |   |
|   | <b>Lecture 6</b> : The pectoral girdle and upper limb; The pelvic girdle and lower limb.  | 2 |
|   | <b>Practical lesson 5</b> : General Features of the Vertebral Column, General Structure of a Vertebra, Intervertebral Discs;  | 1 |
|   | Task (if available):<br><a href="https://classroom.google.com/c/NjE5Njk0Mjc0OTY2/m/NjI2MTAzMTgwODMx/details">https://classroom.google.com/c/NjE5Njk0Mjc0OTY2/m/NjI2MTAzMTgwODMx/details</a>                                     |   |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 245-253 |   |
|   | <b>Lecture 6</b> : Histology Muscle tissue. Nervous tissue.   | 1 |
|   | <b>Practical lesson 4</b> : Histology. Blood and lymph. Hemopoiesis   | 1 |
|   | Task:   |   |
|   | Literature for reading:   |   |
|   | <b>Practical lesson 5</b> : Histology. Histology Connective tissues.  | 1 |
|   | Task:   |   |
|   | Literature for reading:   |   |
|   | <b>Lecture 7</b> : The pectoral girdle and upper limb; The pelvic girdle and lower limb.  | 2 |
|   | <b>Practical lesson 6</b> : The pectoral girdle ; The upper limbs.  | 1 |
|   | Literature for reading: Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 254-257                                      |   |
|   | IWST - consultations on IWS, models, discussion of results of written works, etc.   | 4 |
| 4 | <b>Lecture 8</b> : The muscular system I  | 2 |
|   | <b>Practical lesson 7</b> : The pelvic girdle ;The lower limbs  | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 258-269 |   |
|   | <b>Lecture 9</b> : The muscular system II Muscles of the facial expression, head and neck   | 2 |
|   | <b>Practical lesson 8</b> : Joint Joints and Their Classification Jaw and knee joints;  | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 274-293 |   |
|   | <b>Lecture 10</b> : The muscular system III Muscles of the trunk; Muscles Acting on the Shoulder.   | 2 |
|   | <b>Practical lesson 9</b> : The muscular system I   | 1 |
|   | Literature for reading (textbook, pages and chapters):  |   |



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|---|---|---|
|   | 1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 308-314   |   |
|   | IWST - consultations on IWS, models, discussion of results of written works, etc.   | 4 |
|   | <b>Practical lesson 6</b> : Histology Muscle tissue. Nervous tissue.  | 1 |
|   | <b>Current control-2</b>  |   |
|   | Task:   |   |
|   | Literature for reading:   |   |
| 5 | <b>Practical lesson 10</b> : The muscular system II Muscles of the facial expression, head and neck   | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 317-327             |   |
|   | <b>Practical lesson 11</b> : The muscular system III Muscles of Respiration ; Muscles of the trunk  | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 328-334             |   |
|   | <b>Lecture 11</b> : Muscles of the Arm; Muscles Acting on the Forearm, the Wrist and Hand   | 2 |
|   | <b>Practical lesson 12</b> : The muscular system IV Muscles Acting on the Shoulder and Arm; Muscles Acting on the Forearm, the Wrist and Hand.  | 2 |
|   | Literature for reading: 1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 338-353   |   |
|   | <b>Lecture 12</b> : Muscles Acting on the Hip and Femur; Muscles Acting on the Knee   | 2 |
|   | <b>Lecture 13</b> : Muscles Acting on the Leg, Foot, Intrinsic Muscles of the Foot.   | 2 |
|   | IWST - consultations on IWS, models, discussion of results of written works, etc.   | 4 |
| 6 | <b>Practical lesson 13</b> : The muscular system V Muscles Acting on the Hip and Femur; Muscles Acting on the Knee  | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 354-360             |   |
|   | <b>Lecture 14</b> : Whole-Muscle Contraction; Muscle metabolism   | 2 |
|   | <b>Practical lesson 14</b> : The muscular system VI Muscles Acting on the Leg, Foot, Intrinsic Muscles of the Foot. Whole-Muscle Contraction; Muscle Metabolism   | 2 |
|   | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 361-368, p. 395-420 |   |
|   | <b>Lecture 15</b> : Circulatory system Blood I Introduction, Blood Types; Erythrocytes; Leukocytes  | 2 |
|   | <b>Lecture 16</b> : Platelets; Hemostasis.  | 2 |
|   | <b>Practical lesson 15</b> : Circulatory system Blood I Introduction, Blood Types; Erythrocytes; Leukocytes. Platelets; Hemostasis.   | 2 |
|   | Task:   |   |
|   | Literature for reading (textbook, pages and chapters):  |   |



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|--|---|---|
|  | 1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 670-679., p. 682-698  |   |
|  | IWST - consultations on IWS, models, discussion of results of written works, etc.   | 4 |
| 7  | <b>Lecture 17:</b> Heart I Overview of the Cardiovascular System; Systematic and pulmonary circuit;Gross Anatomy of the heart   | 2 |
|  | <b>Practical lesson 16:</b> Heart Overview of the Cardiovascular System. Systematic and pulmonary circuit Gross Anatomy of the heart  | 2 |
|  | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 705-714 |   |
|  | <b>Lecture 18:</b> Heart II Cardiac Muscle and the Cardiac Conduction System Electrical and Contractile Activity of the Heart. Cardiac cycle and heart sound<br>Cardiac output  | 2 |
|  | <b>Practical lesson 17:</b> Heart II Cardiac Muscle and the Cardiac Conduction System Electrical and Contractile Activity of the Heart. Cardiac cycle and heart sound<br>Cardiac output   | 2 |
|  | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 717-738 |   |
|  | <b>Lecture 19 :</b> Circulatory system - Vessels General Anatomy of the Blood Vessels Capillary Exchange. Physiology of Circulation.  | 2 |
|  | <b>Practical lesson 18:</b> Circulatory system -Vessels and circulation I General Anatomy of the Blood Vessels ; Physiology of Circulation  | 2 |
|  | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 741-760 |   |
|  | <b>IWS-1 «The role of facial muscles in various facial expressions» -</b><br>Preparation time during 6 weeks<br><b>Current control -3</b>   |   |
| <b><i>RK-1= total current scores from 1st to 7th weeks + IWS-1</i></b> |   |   |
| 8  | <b>Lecture 20 :</b> Circulatory system -Vessels and circulation II Circulatory Routes and Blood Vessels of Axial and Appendicular Region  | 2 |
|  | <b>Practical lesson 19:</b> Circulatory system -Vessels and circulation II Circulatory Routes and Blood Vessels of Axial and Appendicular Region  | 2 |
|  | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 764-790 |   |
|  | <b>Lecture 21:</b> The Lymphatic System and Immune System   | 1 |
|  | <b>Practical lesson 20 :</b> The Lymphatic System and Immune System   | 2 |
|  | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 801-830 |   |
|  | <b>Lecture 22:</b> The Respiratory System I General Anatomy of the Respiratory System+ Pulmonary Ventilation  | 3 |
|  | <b>Practical lesson 21 :</b> General Anatomy of the Respiratory System  | 2 |
| Literature for reading (textbook, pages and chapters):                 |   |   |



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|----|---|---|
|    | 1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 846-857   |   |
|    | IWST - consultations on IWS, models, discussion of results of written works, etc.   | 4 |
| 9  | <b>Lecture 23:</b> Urinary system 1. Functions of the urinary system. Anatomy of the urinary system.  | 2 |
|    | <b>Practical lesson 22:</b> Pulmonary Ventilation Gas Exchange and Transport  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 857-878 |   |
|    | <b>Lecture 24 :</b> Urinary system 2. Urine formation I: Glomerular Filtration. Urine Formation II: Tubular Reabsorption and Secretion. Urine formation III: Water conservation   | 2 |
|    | <b>Practical lesson 23:</b> Functions of the Urinary System Anatomy of the Kidney, ureters, urinary bladder, and urethra  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 895-905 |   |
|    | <b>Lecture 25:</b> Fluid Balance Electrolyte Balance Acid Base Balance  | 2 |
|    | <b>Practical lesson 24:</b> Urine Formation I: Glomerular Filtration+Urine Formation II: Tubular Reabsorption and Secretion. Urine Formation III: Water Conservation  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 890-910 |   |
|    | IWST - consultations on IWS, models, discussion of results of written works, etc.   | 2 |
| 10 | <b>Lecture 26:</b> The digestive system I General Anatomy and Digestive Processes The Mouth Through Esophagus The Stomach   | 2 |
|    | <b>Practical lesson 25:</b> Fluid Balance Electrolyte Balance Acid Base Balance   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 921-933 |   |
|    | <b>Lecture 27:</b> The digestive system II The Liver, Gallbladder, and Pancreas   | 2 |
|    | <b>Practical lesson 26:</b> The digestive system I General Anatomy and Digestive Processes ; The Mouth Through Esophagus  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 945-955 |   |
|    | <b>Lecture 28:</b> The digestive system III The Small Intestine and Large Intestine. Chemical Digestion and Absorption  | 2 |
|    | <b>Practical lesson 27:</b> The digestive system II The Stomach The Liver, Gallbladder, and Pancreas  | 2 |
|    | Literature for reading (textbook, pages and chapters):  |   |



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|----|--|---|
|    | 1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 981-985  |   |
|    | IWST Consultation and feedback on difficult topics   | 2 |
| 11 | <b>Lecture 29:</b> Nutrition Metabolic States and Metabolic Rate   | 1 |
|    | <b>Practical lesson 28:</b> The digestive system III The Small Intestine and Large Intestine ; Chemical Digestion and Absorption   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 965-974, 981-985 |   |
|    | <b>Lecture 30 :</b> Overview of nervous system; The basic structure and Physiology of Neurons.   | 2 |
|    | <b>Practical lesson 29:</b> Nutrition and Metabolism Nutrition; Metabolic States and Metabolic Rate  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 992-1016         |   |
|    | <b>Lecture 31:</b> The Spinal Cord ; The Spinal nerves ; Somatic Reflexes  | 3 |
|    | <b>Practical lesson 30:</b> Overview of nervous system The basic structure and Physiology of Neurons   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 432-437, 443-457 |   |
|    |  |   |
| 12 | <b>Lecture 32:</b> Brain I Overview of the brain   | 2 |
|    | <b>Practical lesson 31:</b> The Spinal Cord. The Spinal nerves. Somatic Reflexes   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 472-499          |   |
|    | <b>Lecture 33:</b> Brain II Principal Divisions of the Brain   | 2 |
|    | <b>Practical lesson 32:</b> Brain I Overview of the brain  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 505-520          |   |
|    | <b>Lecture 34:</b> Integrative Functions of the Brain The Cranial Nerves   | 2 |
|    | <b>Practical lesson 33:</b> Brain II Principal Divisions of the Brain  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 521-538          |   |
|    |  |   |
| 13 | <b>Lecture 35:</b> The Autonomic Nervous System  | 3 |
|    | <b>Practical lesson 34 :</b> Multiregional Brain Functions. The Cranial Nerves   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 538-549          |   |
|    | <b>Lecture 36:</b> The Endocrine System I Overview of the Endocrine System Hormones and Their Actions  | 3 |
|    | <b>Practical lesson 35:</b> The Autonomic Nervous System   | 2 |



|    |   |   |
|----|---|---|
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 555-570   |   |
|    | <b>Practical lesson 36:</b> Overview of the Endocrine System Endocrine Physiology   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 627-637   |   |
| 14 | <b>Lecture 37:</b> The Hypothalamus and Pituitary Gland ; Other Endocrine Glands  | 2 |
|    | <b>Practical lesson 37:</b> The Hypothalamus and Pituitary Gland Other Endocrine Glands   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 635-647   |   |
|    | <b>Lecture 38:</b> Sense organs Properties and Types of Sensory Receptors The General Senses; The Chemical Senses organs  | 2 |
|    | <b>Practical lesson 38:</b> Receptors and Sensations The General Senses Chemical sensation -taste   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 575-588   |   |
|    | <b>Lecture 39:</b> Eye and Vision.  | 2 |
|    | <b>Practical lesson 39 :</b> Eye and Vision.  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 603-620   |   |
| 15 | <b>Lecture 40 :</b> Hearing and Equilibrium   | 2 |
|    | <b>Practical lesson 40:</b> Hearing and Equilibrium   | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 589-602   |   |
|    | <b>Lecture 41:</b> The Male Reproductive System Male Reproductive Anatomy Male reproductive physiology  | 2 |
|    | <b>Practical lesson 41:</b> The male reproductive system  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 1026-1050 |   |
|    | <b>IWS -2 "Nerve blocks of the face"</b>  |   |
|    | <b>Lecture 42:</b> The Female Reproductive System Female Reproductive Anatomy Female reproductive physiology  | 2 |
|    | <b>Practical lesson 42:</b> Female Reproductive Anatomy Female reproductive physiology  | 2 |
|    | Literature for reading (textbook, pages and chapters):<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295 p. 1056-1077 |   |
|    | <b>CURRENT CONTROL - 4</b>  |   |



|  |  |
|--|--|
| <b>RK-2= total current scores from 8-th to 15th weeks+ IWS-2</b> |  |
| <b>Summary :</b>   | Total score = RK-1+RK-2  |
| <b>9.</b>  | <b>Teaching methods of the subject*</b> Lecture, interactive lecture, integrated, interdisciplinary case-study, working with models, discussion, simulations, Team Based Learning (TBL), solving typical/situational tasks, using Complete Anatomy (3D models) App   |
| <b>10.</b>   | <b>Methods of formative assessment:</b> quiz, test, interactive test, crosswords.  |
| <b>11.</b>   | <b>Summative assessment methods (from point 5):</b><br>1) testing using video, drawings, photographs, diagrams, microphotographs or OSPE using dummies and micro preparations - as part of the current / midterm / final control: final results No. 1, 3;<br>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;10;11;12<br>3) interview / oral interview - within the framework of the current / milestone / final control - final results No. 2, 4, 5, 6;12;13   |
| <b>10.</b>   | <b>Summative assessment</b><br>In the course, 2 controls (2 interim examinations) are planned, within the framework of which the development of the material is evaluated.<br>For the semester, admission rating points are set: $AR = (IE1 + IE2) / 2$ , where IE1 / IE2 / = the sum of all points for classes + points for interim examination control and IWS of the corresponding period**. IE1 – 1-7 weeks, IE2 - 8-15 weeks. The final control (exam) is carried out in 2 stages. The first stage is testing or OSPE*** (50%), the second stage is an oral survey of tickets (50%). The final grade for the discipline = $AR * 0.6 + Exam * 0.4$<br><br>**AR-admission rating, IE - interim examination, MT - midterm examination, IWS - independent work of student<br>***Objective Structured Practical Exam - students passing stations in the number from 5 to 10 in accordance with the topics submitted for the current / milestone / final controls for a limited time. |

| # | Type of educational activity  | Date                                       | Points                 | as a percentage %   |
|---|---|--|------------------------|---|
| 1 | Lecture   | According to the schedule                  | -                      | Not graded  |
| 2 | Practical class (current control)<br>1. Latin Test<br>2. Written control<br>3. Working with models<br>1. Oral interview | According to the schedule                  | 2 points for class     | 2% out of IE (100 %)  |
| 3 | Colloquium 1<br>1 stage - OSPE<br>2 stage – written control – an open-type questions based on the learning outcomes     | According to the schedule, in the 6th week | 53(A&P43,Histology 10) | 1 stage - 30 points =30% out of IE1<br>2 stage - 24 points = 24% out of IE1 |
|   | Case-study  | According to the schedule, in the 6th week | 5 points               | 5% out of IE1   |
|   | IE1   | Week 7                                     | 100 points, cumulative | 30% of the final grade for the subject                                      |



|  |   |   |                            |   |
|--|---|---|----------------------------|---|
|  | Colloquium 2<br>1 stage - OSPE<br>2 stage – written control – an open-type questions based on the learning outcomes | According to the schedule, in the 15th week | 48<br>(A&P36,Histology1 2) | 1 stage - 24 points =24% out of IE1<br>2 stage - 24 points = 24% out of IE2 |
|  | IWS   | According to the schedule, in the 14th week | 5 points                   | 5% out of IE2   |
|  | IE2   | Week 15                                     | 100 points, cumulative     | 30% of the final grade for the subject                                      |

| 10.                     | Assessment   |  |   |
|-------------------------|--|--|---|
| Rating by letter system | Digital equivalent of points   | Percentage Digital equivalent of points Percentage | Description of the assessment (changes should be made only at the level of the decision of the Academic Quality Committee of the faculty) |
| A                       | 4,0  | 95-100   | <b>Excellent.</b> Exceeds the highest task standards.   |
| A-                      | 3,67   | 90-94  | <b>Excellent.</b> Meets the highest standards of the assignment.  |
| B+                      | 3,33   | 85-89  | <b>Good.</b> Very good. Meets the high standards of the assignment.   |
| B                       | 3,0  | 80-84  | <b>Good.</b> Meets most of the job standards.   |
| B-                      | 2,67   | 75-79  | <b>Good.</b> More than enough. Shows some reasonable ownership of the material.   |
| C+                      | 2,33   | 70-74  | <b>Good.</b> Acceptable. Meets the basic standards of the task.   |
| C                       | 2,0  | 65-69  | <b>Satisfactory.</b> Acceptable. Meets some basic job standards.  |
| C-                      | 1,67   | 60-64  | <b>Satisfactory.</b> Acceptable. Meets some basic job standards.  |
| D+                      | 1,33   | 55-59  | <b>Satisfactory.</b> Minimally acceptable.  |
| D                       | 1,0  | 50-54  | <b>Satisfactory.</b> Minimally acceptable. The lowest level of knowledge and completion of the task.                                      |
| FX                      | 0,5  | 25-49  | <b>Unsatisfactory.</b> Minimally acceptable.  |
| F                       | 0  | 0-24   | <b>Unsatisfactory.</b> Very low productivity.   |
| 11.                     | <b>Educational resources</b> (use the full link and specify where you can access the texts/materials)  |  |   |
| Literature              | Basic<br>asic<br>1. Saladin, Kenneth S: Anatomy & Physiology. The Unity of Form and Function, 9th Edition (2020, McGraw-Hill Education), ISBN-10 1260571297, 978-1260571295<br>2. Costanzo, Linda S.: BRS Physiology. Board Review Series.7 edition. -Wolters Kluwer Health, 2018.- 307p. - ISBN 1496367693, 9781496367693<br>3. Leslie P. Gartner: Color Atlas and Text of Histology. - 7th Edition. - Wolters Kluwer, 2017. ISBN 1496346734, 9781496346735 |  |   |



|   |  |
|---|--|
|   | <ol style="list-style-type: none"> <li>4. Russell K. Hobbie, Bradley J. Roth: Intermediate Physics for Medicine and Biology. - Springer, 2015. - ISBN 3319126822, 9783319126821</li> <li>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</li> <li>6. Shoibekova, Alima Zhorabaevna. Latin and Fundamentals of Medical Terminology for Medical Students with Training English [Text] : educational man. / A. Zh. Shoibekova, 2016. - 163, [1] p.</li> <li>7. Sembulingam, K. 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 978-93-85999-11-6</li> </ol>  |
|   | <p>Additional</p> <ol style="list-style-type: none"> <li>1. Standing, Susan: Gray's Anatomy: The Anatomical Basis of Clinical Practice. - 41 Elsevier Limited, 2016</li> <li>2. Elaine N. Marieb, Lori A. Smith: Human Anatomy &amp; Physiology Laboratory Manual, Main Version. - 11 edition. - Pearson Education, 2015. - ISBN 9780133999143</li> <li>3. Scanlon V. C, Essentials of Anatomy and Physiology 8th Edition, F.A. Davis Company, 2018</li> <li>4. Victor P. Eroschenko, Atlas of Histology with Functional Correlations 13th Edition, LWW, 2017</li> <li>5. William Bialek: Biophysics: Searching for Principles. -Princeton University Press, 2012. - ISBN 0691138915, 9780691138916</li> <li>6. Ghosh, Byas Deb. 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 978-93-5025-942-9</li> <li>7. Mazumdar, Sibani. Anatomy at a Glance [Text] : An Exam-Oriented Text / S. Mazumdar ; Calcutta National Medical College [et al.]. - 2nd ed. - New Delhi ; London ; Philadelphia : Jaypee, 2014. - 534 p. : il. - Ind.: p. 525-534. - ISBN 978-93-5152-355-0 : App.: p. 519-520. Glossary: p. 521-524.</li> <li>8. Baktybayeva, Lyaila Kyrgyzbayevna. Base of Physiology [Text] : laboratory practicum / L. K. Baktybayeva, G. T. Zhamanbayeva, M. S. Kulbayeva ; Al-Farabi Kazakh National University. - Almaty : Qazaq University, 2017. - 146 p. : il. - Bibliogr.: p. 145. - ISBN 978-601-04-3138-6</li> </ol> |
| <p>Electronic resources (including, but not limited to: electronic library catalog, databases of scientific literature, databases, animation, modeling, professional blogs, websites, other electronic reference materials (for example, video, audio, digests)</p> |  |
| <p>Laboratory physical resources</p>  |  |
| <p>Special software</p>   | <p>Anatomical model center, Complete anatomy</p>   |
| <p><b>12.</b></p>   | <p><b>Teacher's expectations from students</b></p>   |
| <p>The student</p> <p>- attends all classes and lectures</p>  |  |



- actively participates in classroom classes during formative assessment, in group work,
- performs tasks on time
- shows respect for teachers, university staff and students
- carefully handles university property (models, desks, chairs, etc.)
- observes cleanliness and order on campus and classrooms
- uses gadgets in classes only with the teacher's permission
- for all issues within the discipline is addressed to the teacher of this discipline, for general academic issues – to his advisor
- correspondence is carried out only through a messenger approved by the teacher, at the time regulated by the teacher

|            |  |
|------------|--|
| <b>13.</b> | <b>Discipline Policy</b>   |
|            | <p>The discipline policy is determined by the <u>Academic Policy</u> and the <u>Policy of Academic Integrity of Al-Farabi Kazakh National University</u> .<br/>If the links will not open, then you can find the relevant documents in the Univer IC.</p> <p>The student is obliged to:</p> <ul style="list-style-type: none"> <li>- attend classes in a white coat</li> <li>- wear gloves when working with models</li> </ul> <p>The student must follow the <u>Code of Professional Conduct of Higher School of Medicine</u></p> <p>The behavior of the student at the exams is regulated by the "Rules for the final control", "Instructions for the final control of the autumn / spring semester of the current academic year" (current documents are uploaded to the IS "Univer" and updated before the start of the session); "Regulations on checking text documents of students for the presence of borrowings".</p>  |
| <b>14.</b> | <b>Principles of inclusive learning</b>  |
|            | <p><b>1. Constantly preparing for classes:</b><br/>For example, supports statements with appropriate links, makes short summaries<br/>Demonstrates effective learning skills, helps in teaching others</p> <p><b>2. Take responsibility for your training:</b><br/>For example, manages your training plan, actively tries to improve, critically evaluates information resources</p> <p><b>3. Actively participate in the group's training:</b><br/>For example, actively participates in the discussion, willingly takes assignments</p> <p><b>4. Demonstrate effective group skills</b><br/>For example, he takes the initiative, shows respect and correctness towards others, helps to resolve misunderstandings and conflicts</p> <p><b>5. Skillful communication skills with peers:</b><br/>For example, he listens actively, is receptive to nonverbal and emotional signals<br/>Respectful attitude</p> <p><b>6. Highly developed professional skills:</b><br/>Strives to complete tasks, looking for opportunities for more training, confident and qualified<br/>Compliance with ethics and deontology in relation to patients and medical staff<br/>Insubordination.</p> <p><b>7. High introspection:</b><br/>For example, he recognizes the limitations of his knowledge or abilities, without becoming defensive or reproaching others</p> <p><b>8. Highly developed critical thinking:</b><br/>For example, accordingly demonstrates skills in performing key tasks, such as generating hypotheses, applying knowledge to cases from practice, critically evaluating information, making conclusions aloud, explaining the process of reflection</p> <p><b>9. Fully complies with the rules of academic behavior with understanding, offers improvements in order to increase efficiency.</b><br/>Observes the ethics of communication – both oral and written (in chats and appeals)</p> <p><b>10. Fully complies with the rules with full understanding of them, encourages other members of the group to adhere to the rules</b></p> |



|  |  |                  |  |
|--|--|------------------|--|
|  | Strictly adheres to the principles of medical ethics and PRIMUM NON NOCER  |                  |  |
| <b>15.</b>   | <b>Distance/Online learning</b>  |                  |  |
|  | Distance/online learning is implemented at the University in accordance with the Order of the Minister of Education and Science of the Republic of Kazakhstan dated March 20, 2015 No. 137 "On approval of requirements for educational organizations to provide distance learning and rules for organizing the educational process for distance learning and in the form of online learning for educational programs of higher and (or) postgraduate education"; according to the Rules of the organization of training with the use of DOT at the University; Instructions for the final control of the autumn/spring semester of the current academic year (the current document is in the IS "Univer"); "Regulations on checking text documents of students for the presence of borrowings". |                  |  |
| <b>16.</b>   | <b>Approval and review</b>   |                  |  |
| Head of the Department   | Signature  | Sarsenova L.K.   |  |
| Committee on the Quality of Teaching and Learning of the Faculty | Protocol No. /   | Date of approval |  |
| Chairman of the Academic Committee of M&HC                       | Signature  | Sarsenova L.K.   |  |





**Independent work of students (IWS)**  
**"6BM10201 Dentistry"**  
**"Morphology and physiology of human body"**  
**(12 credits)**  
**Fall semester, academic year 2023-2024**

| № | IWS tasks   | Format                                 | Deadlines<br>(school week) | Points |
|---|---|--|----------------------------|--------|
| 1 | <p>"The role of facial muscles in various facial expressions."<br/>           To perform this group independent work, you need to divide into groups of 5 people.<br/>           Take a picture of your facial expression, showing one of the emotions: fear, anger, joy, sadness, surprise, contempt, and so on.<br/>           In the photo, draw the direction of the muscle fascicles of each muscle that is involved in this facial expression.<br/>           Sign each muscle.<br/>           Your photo must be of high quality, and your face must take up at least 90% of the entire photo.</p>   | Powerpoint presentation with 25 slides | 7-th week                  | 5      |
| 2 | <p>"Nerve blocks of the face" Background: Before drilling on a patient's tooth, a dentist typically gives the patient a shot of local anesthetic, such as procaine hydrochloride or lidocaine. The injection is given in the mouth near the location of nerves that innervate the particular tooth. When the anesthetic reaches the neurons, certain regions of the face, mouth and tongue lack sensation or become numb. The drug works by blocking neurons communicating with the CNS. The brain is unaware of the presence of painful stimuli in the mouth. Search for some knowledge concerning the voltage-gated sodium channels in neurons and discuss the mechanism of action for the numbing procedure with the teacher. Draw a diagram to describe the nerves associated with regional blocks of facial and dental pain and the bony marks of injection sites with your anatomical knowledge. Work in a team. Conduct research, Summarize and present it in the form of a report or presentation.<br/>           Source:<br/>           1. <a href="https://www.nysora.com/techniques/head-and-neck-blocks/nerve-blocks-face/">https://www.nysora.com/techniques/head-and-neck-blocks/nerve-blocks-face/</a><br/>           2. <a href="https://pdfs.semanticscholar.org/15f9/1c205b5e09554d40b8c5a333e5018e4b6bfc.pdf">https://pdfs.semanticscholar.org/15f9/1c205b5e09554d40b8c5a333e5018e4b6bfc.pdf</a></p> | Powerpoint presentation with 25 slides | 15-th week                 | 5      |

To perform the IWS, both the recommended course literature and sources are used, as well as those found independently. The IWS is delivered strictly on schedule. In case of valid circumstances (if there is documentary evidence), the IWS may be accepted outside of the schedule.



**Evaluation sheet of the student's independent work**

| <b>1. Material design</b>  |   |   |
|--|---|---|
| <b>25 points</b><br>Designed in accordance with general and technical requirements, including a list and references to the literature used | <b>24-17 points</b><br>Designed in accordance with general and technical requirements, incorrectly designed or not provided references to the literature used | <b>16-0 points</b><br>Designed carelessly, there are violations in the structure of the material, there are no references to the sources used |
| <b>2. The content of the material and its informativity</b>  |   |   |
| <b>25 points</b><br>Corresponds to the topic and task. All the necessary information has been fully conveyed.                              | <b>24-17 points</b><br>Partially corresponds to the topic/task. Overloaded with material, or there is not enough information.                                 | <b>16-0 points</b><br>Does not correspond to the topic/task.  |
| <b>3. The amount of work</b>   |   |   |
| <b>25 points</b><br>The work is finished. All sections/components are presented  | <b>24-17 points</b><br>Up to 50% of the work has been completed. The main sections/components are presented   | <b>16-0 points</b><br>Up to 30% of the work has been completed. The main sections/components are presented                                    |
| <b>4. Mastery of material</b>  |   |   |
| <b>25 points</b><br>Fluency in the material  | <b>24-17 points</b><br>Incomplete knowledge of the material. The information was reported with inaccuracies.  | <b>16-0 points</b><br>The work performed does not reflect the mastery of the material   |

**Response quality scale (written / oral response)**

| <b>Mark</b>  | <b>Criteria</b>  | <b>Scale, points</b> |
|--------------|--|----------------------|
| Excellent    | <ol style="list-style-type: none"> <li>1. all key aspects are included and presented logically;</li> <li>2. high accuracy (relevance, without redundancy) and constant attention to the issue;</li> <li>3. excellent integration of theoretical questions;</li> <li>4. providing relevant examples;</li> <li>5. in-depth analysis and theoretical justification of the problem (if applicable), all key aspects identified and interpreted;</li> <li>6. fluency in professional terminology</li> </ol>                       | 90 - 100             |
| Good         | <ol style="list-style-type: none"> <li>1. all key aspects are included and presented logically;</li> <li>2. constant focus on the issue with satisfactory accuracy, relevance, and / or some redundancy;</li> <li>3. satisfactory integration of theoretical questions;</li> <li>4. the lack of examples;</li> <li>5. satisfactory analysis and theoretical justification of the problem (if applicable), most of the key aspects identified and interpreted;</li> <li>6. correct use of professional terminology</li> </ol> | 70 - 89              |
| Satisfactory | <ol style="list-style-type: none"> <li>1. most of the key aspects are included;</li> <li>2. satisfactory focus on the question - some errors and / or noticeable redundancy;</li> </ol>  | 50 - 69              |



|                     |   |         |
|---------------------|---|---------|
|                     | <ul style="list-style-type: none"> <li>3. theoretical problems presented without noticeable integration;</li> <li>4. Providing failed examples or no examples;</li> <li>5. some analysis and theoretical justification of this problem (if applicable), most of the key aspects are defined and interpreted;</li> <li>6. correct use of professional terminology</li> </ul>   |         |
| Unsatisfactory (FX) | <ul style="list-style-type: none"> <li>1. most of the key aspects are omitted;</li> <li>2. lack of attention to the issue-irrelevant and significant redundancy;</li> <li>3. some theoretical problems presented without integration and understanding;</li> <li>4. missing or outdated examples;</li> <li>5. some analysis and theoretical justification of this problem (if applicable), most of the key aspects are omitted;</li> <li>6. problems in using professional terminology</li> </ul>   | 25 - 49 |
| Unsatisfactory (F)  | <ul style="list-style-type: none"> <li>1. most or all of the key aspects are omitted;</li> <li>2. no focus on the question, not much related to the issue of information;</li> <li>3. significant gaps in theoretical questions, or their superficial consideration;</li> <li>4. the lack of examples or irrelevant examples;</li> <li>5. there is no analysis and no theoretical justification for the given problem (if applicable), most of the key aspects are omitted;</li> <li>6. problems in using professional terminology</li> </ul> | 0-24    |

#### Grading system

| Rating by letter system | Digital equivalent of points | Percentage | Evaluation using the traditional system  |
|-------------------------|------------------------------|------------|--|
| A                       | 4                            | 95-100     | Excellent  |
| A-                      | 3,67                         | 90-94      |  |
| B+                      | 3,33                         | 85-89      |  |
| B                       | 3                            | 80-84      | Good   |
| B-                      | 2,67                         | 75-79      |  |
| C+                      | 2,33                         | 70-74      |  |
| C                       | 2                            | 65-69      | Satisfactory   |
| C-                      | 1,67                         | 60-64      |  |
| D+                      | 1,33                         | 55-59      |  |
| D-                      | 1                            | 50-54      | Unsatisfactory   |
| FX                      | 0                            | 25-49      |  |
| F                       | 0                            | 0-24       |  |
| I<br>(Incomplete)       | -                            | -          | «Discipline is not completed»<br>(it is not taken into account when calculating the GPA) |