

SYLLABUS

concerning the cycle of education 2023-2029

(date range)

1.1. BASIC INFORMATION CONCERNING THIS SUBJECT / MODULE

Subject / Module	Physiology
Course code / module *	Fj/B
Faculty of (name of the leading direction)	Medical College of Rzeszów University
Department Name	Medical College of Rzeszów University
Field of study	medical direction
Level of education	uniform master's studies
Profile	practical
Form of study	stationary / extramural
Year and semester	year II, semester III
Type of course	obligatory
Coordinator	Prof. dr hab. Piotr Thor
First and Last Name of the Teacher	Prof. dr hab. Piotr Thor Dr Dorota Bądziul Dr Marta Kopańska lek. med. Agata Stepek Dr Andrzej Jopek

* - According to the resolutions of the Faculty of Medicine

1.2. Forms of classes, number of hours and ECTS

Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Practical	Self-learning	Number of points ECTS
30	50	-	-	45	-	-	-	10

1.3. The form of class activities

☒ classes are in the traditional form

☐ classes are implemented using methods and techniques of distance learning

1.4. Examination Forms / module (exam, credit with grade or credit without grade)

2. REQUIREMENTS

Knowledge of human physiology at the level of high school, including issues related to the construction and functioning of humans at the level of the cell, tissues, organs and systems.
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3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS

3.1. Objectives of this course/module

C1	Familiarizing with the proper activity of individual organs and their systems
C2	Understanding the general and detailed principles of regulation and control of the activities of human body systems
C3	Familiarizing with organ homeostasis, its analysis, indicating the disorders leading to the disease
C4	Acquiring the theoretical basis for differentiating physiological changes in medical reasoning
C5	Acquiring the ability to observe the organism, determine deviations and their interpretation
C6	Understanding the physiological biochemical (laboratory) and functional norms
C7	Acquiring the ability to measure parameters describing the physiological state of the human body and conducting standard clinical diagnostics tests
C8	Acquiring the ability to use textbooks, monographs and articles in the field of physiology and related sciences

3.2 OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)

EK (the effect of education)	The content of the learning effect defined for the subject (module)	Reference to directional effects (KEK)
EK_01	Describes water and electrolyte management in biological systems	B.W1
EK_02	Describes the acid-base balance and the mechanism of action of buffers and the importance of buffers in systemic homeostasis	B.W2
EK_03	He knows the physical laws describing the flow of liquids and gases and factors affecting the vascular resistance of blood flow	B.W5
EK_04	He knows the physicochemical and molecular basis of the sensory organs	B.W7
EK_05	He knows the enzymes involved in digestion, the mechanism of producing hydrochloric acid in the stomach, the role of bile, the course of absorption of digestive products and disorders associated with them	B.W18
EK_06	He knows the basis of stimulation and conduction in the nervous system and higher nervous functions, as well as the physiology of striated and smooth muscles and blood functions	B.W24
EK_07	Knows the activity and mechanisms of regulation of all organs and systems of the human body, including the circulatory, respiratory,	B.W25

	digestive, urinary and skin layers, and understands the relationships existing between them	
EK_08	He knows the mechanism of action of hormones, and the consequences of disorders of hormonal regulation	B.W26
EK_09	He knows the course and regulation of reproductive functions in women and men	B.W27
EK_10	He knows the mechanisms of aging of the body	B.W28
EK_11	He knows the basic quantitative parameters describing the efficiency of individual systems and organs, including: the scope of the norm and demographic factors affecting the value of these parameters	B.W29
EK_12	Performs simple functional tests assessing the human body as a stable regulation system (stress tests, stress tests); interprets numerical data on basic physiological variables	B.U8
EK_13	It supports simple measuring instruments and evaluates the accuracy of measurements	B.U10

3.3 CONTENT CURRICULUM (filled by the coordinator)

A. Lectures

IV.ENDOROLOGY, METABOLISM, DISTRIBUTION

1. General characteristics and basics of endocrine system regulation. Energy balance. Metabolism. Metabolic changes during physical exertion
2. Obesity. Evaluation of components and body proportions. Physical efficiency and methods of its evaluation. Nutrition.
3. Hormones of the thyroid gland: T3 and T4. Thermoregulation
4. Pancreatic endocrine function. Regulation of carbohydrate metabolism
5. Core and adrenal cortex
6. Hormonal control of calcium metabolism, bone physiology
7. Pituitary gland, hormonal activity of the hypothalamus
8. Endocrine function of the kidneys, heart and pineal gland
9. Physiology of the sexual glands; development and functions of the reproductive system

V. GASTROINTESTINAL TRACT, FOOD

1. Digestion and absorption. The role of the liver and pancreas in gastrointestinal function
2. Adjustment of tank and transport activities. motorics

gastrointestinal tract. Gastrointestinal hormones

VI. PHYSIOLOGY OF THE CIRCULATION OF THE CARDIOVASCULAR SYSTEM

1. Circulating body fluids, blood, bone marrow, plasma, lymph.
2. The origin of heart contractions of his electrical activities; electrocardiography
3. The heart as a pump. Mechanical phenomena, minute capacity
4. Dynamics of blood circulation and lymph biophysical and anatomical basis
5. Regulatory mechanisms in the cardiovascular system
6. Peripheral blood circulation - biophysical basics of hemodynamics
7. Arterial system. Adjusting the blood pressure
8. Microcirculation, capillary exchange, venous system, edema
9. Regulation of cardiovascular function in the cardiovascular system
10. Cardio-vascular homeostasis in health and disease
11. Organ, cerebral, muscular, coronary, visceral, cutaneous and renal circulation.

VII. PHYSIOLOGY OF THE RESPIRATORY SYSTEM AND KIDNEYS

1. Lung function. Mechanics of breathing
2. Breathing phases
3. Partial pressures of oxygen and carbon dioxide.
4. Regulation of breathing, nervous and chemical

VIII. APPLICATION AND EXPANSION OF URINARY UREA

1. Physiology of the formation and excretion of urine / kidneys
- Regulation of the composition and volume of extracellular fluid

B. Exercise

Course contents

Determination of the number of red and white blood cells in 1 mm³ of human blood

Determination of the percentage of leukocytic pattern according to Arnet-Schilling

Osmotic resistance test of red blood cells using the Sanford method.

Determination of clotting time. Determination of clot shrinkage. Determination of Duke bleeding time

Determination of blood groups in the ABO system. Determination of antigen D from the Rh system. Performing a cross trial

Determination of multiple thrombocytes by the indirect method. Determination of the reticulocyte number. Examination of capillary permeability

Physiology of the digestive system. BIA test - electrical bioimpedance (examination of fat mass, examination of lean tissue mass, examination of water content in cellular and extracellular space).

Metabolism. Determination of basic metabolism (PPM) using the Stoberg apparatus.

Physiology of sense organs with elements of the physiology of the nervous system. Examination of body postural reflexes based on the labyrinth excitability test. Testing the efficiency of the body posture system. Study of unconditional reflexes. Study of simple and alternative reaction time.

Physiology of physical exertion. Assessment of the physical fitness of the body.

Physiology of the respiratory system. Lung function tests. Spirometry. Effect of physical exercise on lung ventilation and cardiovascular reactions

Analysis of clinical cases

C. Seminars

Course contents
Endocrine system
The digestive system. Metabolism
Physiological mechanisms of receptor functioning
Physiology of the excretory system
Physiology of the respiratory system
Reproductive system

3.4 TEACHING METHODS

Lecture: problem lecture, lecture with multimedia presentation

Classes / seminars: discussion, group work, problem solving

4 METHODS AND EVALUATION CRITERIA

4.1 Methods of verification of learning outcomes

Symbol of effect	Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes)	Form of classes
EK_01	Report, colloquium, exam	Exercise, Seminars, Lectures

EK_02	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_03	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_04	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_05	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_06	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_07	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_08	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_09	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_10	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_11	Report, colloquium, exam	Exercise, Seminars, Lectures
EK_12	Report, colloquium	Exercise, Seminars
EK_13	Report, colloquium	Exercise, Seminars

4.2 Conditions for completing the course (evaluation criteria)

The student gets a credit from the subject based on a point system, which has its mapping on the scale of grades.

Semester IV

Exercises - credit with grade including: attendance, theoretical preparation for classes, student's skills.

Seminars - credit including: attendance, student activity and skills

The semester ends with a semester test covering the scope of material from the entire semester.

Lectures - final exam (open questions)

Knowledge assessment:

5.0 - has knowledge of each of the contents of education at the level of 90% -100%

4.5 - has knowledge of each of the content of education at the level of 84% -89%

4.0 - has knowledge of each of the content of education at the level of 77% -83%

3.5 - has knowledge of each of the content of education at the level of 70% -76%

3.0 - has knowledge of each of the content of education at the level of 60% -69%

2.0 - has knowledge of each of the contents of education below 60%

Skill assessment:

5.0 - the student actively participates in the classes, is well prepared, correctly interprets the dependencies and is able to draw the right conclusions, flawlessly performs experiments and simple functional tests assessing the human body

4.5 - the student actively participates in classes, with little help from the teacher, correctly interprets the occurring phenomena, is able to perform experiments and simple functional tests assessing the human body

4.0 - the student actively participates in the classes, does not fully interpret the occurring phenomena, with the help of the teacher performs experiments and simple functional tests assessing the human body

3.5 - the student participates in the classes, his scope of preparation does not allow for a comprehensive presentation of the discussed problem, formulates conclusions requiring correction from the teacher, often erroneously performs experiments and simple functional tests assessing the human body

3.0 - the student participates in classes, his scope of preparation does not allow for a comprehensive presentation of the discussed problem, formulates conclusions requiring correction from the teacher, commits minor mistakes, not fully understanding dependencies and causal links, incorrectly performs experiments and simple functional tests assessing the body human

2.0 - the student passively participates in classes, commits blatant errors in the diagnosis and proper naming of anatomical units, and can not link knowledge of the detailed human anatomical structure with the function and tasks of individual organs.

Knowledge evaluation, verified learning outcomes: EK_01-EK_11

Assessment of skills, verified learning outcomes: EK_12-EK_13

5. Total student workload required to achieve the desired result in hours and ECTS credits

Activity	Hours / student work
Hours of classes according to plan with the teacher	105
Preparation for classes	75
Participation in the consultations	2
The time to write a paper / essay	-

Preparation for tests	70
Participation in colloquia	
Other (e-learning)	
SUM OF HOURS	252
TOTAL NUMBER OF ECTS	10

6. TRAINING PRACTICES IN THE SUBJECT / MODUL

Number of hours	-
Rules and forms of apprenticeship	-

6. LITERATURE

READING: 1.W.F. Ganong, <i>Fizjologia</i>, wyd. I PZWL 2008 r. 2.S.J. Konturek [red.], <i>Fizjologia człowieka. Podręcznik dla studentów medycyny</i>, ElsevierUrban&Partner2007
Additional literature: 1.W. Traczyk [red.], A. Trzebski, <i>Fizjologia człowieka z elementami fizjologii stosowanej i klinicznej</i>, PZWL, wyd. III, 2001 r.

Acceptance Unit Manager or authorized person