UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Course sylabus – part A
Physiology

48SJO-PHYSIOL
2024
ECTS: 16.00

SUBJECT MATTER CONTENT:

Introduction to Physiology. Principles of regulation of Physiology as an integrative science. Organization of the nervous system. Skeletal, cardiac and smooth muscle. The limbic system. Memory processing. Sensory physiology. Reflex pathways in the brain. Autonomic sympathetic and parasympathetic pathways. Role of the autonomic division in homeostasis. Physiology of blood. The immune system. Hemostasis and tissue repair.
Cardiovascular system. The heart. Cardiac muscle the heart as a pump. Rhythmical excitation of the heart.Local and control of the tissue blood flow. Nervous regulation of the circulation, and control of the arterial blood pressue. The microcirculation and lymphatic system. Regulation of respiration. General principles of gastrointestinal function. Digestion and absorption in the GI. Acid base-regulation. Renal regulation of potassium, calcium, phosphate and magnesium. Renal mechanisms for control of blood volume and extracellular fluid volume. Inroduction to endocrinology; pituitary hormones, thyroid metabolic hormones, insulin, glucagon.

Seminars are held in the form of Problem Based Learning (PBL) with clinical case scenario to solve by each group. In small group discussion, the learner is expected to actively and productively participate, to further
the group's performance and learning. Performance will be assessed by observation by faculty and peers

Introduction to the practical classes of human physiology. Electrical activity: resting membrane potentials and action potentials of neurons relative and absolute refractory periods; chronaxy and rheobase. Study of spinal reflexes. Sensory physiology. EEG. Physiology of muscles

TEACHING OBJECTIVE:
This course is designed to provide students with knowledge of the functions and regulation of the human body and the integration of physiological systems and organs to maintain homeostasis. The course will provide a thorough knowledge and understanding of physiological processes occurring in the body at the cellular, organ, systemic and inter-system levels. Upon completion of the course, the student should possess the ability to infer the functioning of the organism as a whole when there is a change of function in individual systems of the organism, and be able to perform basic functional tests to assess the functioning of the human body and know the numerical values of basic physiological variables.

Legal acts specifying learning outcomes: 467/2024 (Medicine),
Status of the course:
Group of courses:
Discipline: Medical Sciences

Program: Medicine
Form of studies:full-time
Level of studies: uniform master's studies

Introductory subject: Medical Sciences

Prerequisites: Anatomy, Histology.

Coordinators:

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DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:

Symbols for outcomes related to the discipline:

M/NMA_P7S_KO+++++, M/NMA_P7S_ UW++++, M/NMA_P7S_WG++++++

Symbols for outcomes related to the field of study:

K.1.+, K.2.+, K.3.+, K.7.+, K.8.+, B.U7.+, B.U8.+, D.U4.+, D.U7.+, B.W1.+, B.W19.+, B.W2.+, B.W20.+, B.W22.+, C.W4.+

LEARNING OUTCOMES (Knowledge, Skills, Social competence):

K1 K1-K.1. Establish and maintain a deep and respectful contact with the patient, as well as show understanding of worldview and cultural differences.

K2 K2- K.2. Be guided by the welfare of the patient.

K3 K3-K.3. Observance of medical confidentiality and patient rights.

K4 K4 - K.7. Use of objective sources of information.

K5 K5 - K.8. Formulate conclusions from their own measurements or observations.

U1 U1-B.U7. Perform simple functional tests to assess the functioning of the human body as a stable regulatory system (stress and exercise tests) and interpret numerical data on basic physiological variables

U2 U2-B.U8. Use medical databases and properly interpret the information in them needed to solve problems in basic and clinical sciences.

U3 U3- D.U4. Demonstrate responsibility for improving their skills and transferring knowledge to others.

U4 U4 - D.U7. Develop and improve self-awareness, self-reflection and self-care skills, and reflect with others on their own way of communicating and behaving.

U5

W1 W1-B.W1. Water and electrolyte management in biological systems.

W2 W2-B.W19. The basics of excitation and conduction in the nervous system and higher nervous activities, as well as the physiology of striated and smooth muscle.

W3 W3- B.W2. Acid-base balance and the mechanism of action of buffers and their importance in systemic homeostasis.

W4 W4-B.W20. The function and regulatory mechanisms of all organs and systems of the human body and the relationship between them.

W5 W5- B.W22. Basic quantitative parameters describing the capacity of individual systems and organs, including ranges of norms and demographic factors affecting the value of these parameters

W6 W6-C.W4. Genetic determinants of human blood groups and serological conflict in the Rh system.

W7

TEACHING FORMS AND METHODS:

Lecture-['W1', 'K1', 'U2', 'K2', 'W3', 'U3', 'K3', 'W4', 'K4', 'W5', 'K5', 'W7']-Presentation power point and discussion.-Introduction to Physiology. Principles of regulation of Physiology as an integrative science. Organization of the nervous system. Skeletal, cardiac and smooth muscle. The limbic system. Memory processing. Sensory physiology. Reflex pathways in the brain. Autonomic sympathetic and parasympathetic pathways. Role of the autonomic division in homeostasis. Physiology of blood. The immune system. Hemostasis and tissue

repair.
Cardiovascular system. The heart. Cardiac muscle the heart as a pump. Rhythmical excitation of the heart.Local and control of the tissue blood flow. Nervous regulation of the circulation, and control of the arterial blood pressue. The microcirculation and lymphatic system. Regulation of respiration. General principles of gastrointestinal function. Digestion and absorption in the GI. Acid base-regulation. Renal regulation of potassium, calcium, phosphate and magnesium. Renal mechanisms for control of blood volume and extracellular fluid volume. Inroduction to endocrinology; pituitary hormones, thyroid metabolic hormones, insulin, glucagon.
Seminar-['U1', 'W3', 'W4', 'U4', 'W5', 'U5', 'K5', 'W6']-Classes in small subgroups, clinical cases in the form of PBL, discussion and interaction between students, solving cases and presenting them.-Seminars are held in the form of Problem Based Learning (PBL) with clinical case scenario to solve by each group. In small group discussion, the learner is expected to actively and productively participate, to further the group's performance and learning. Performance will be assessed by observation by faculty and peers
Classes-['W1', 'U1', 'W2', 'U2', 'K2', 'W3', 'U3', 'K3', 'U4', 'K4', 'U5', 'W6', 'W7']-Practical exercises using simulation programs and Ad Instruments system, working in a group of 2, performing manual activities of arranged exercises.-Introduction to the practical classes of human physiology. Electrical activity: resting membrane potentials and action potentials of neurons relative and absolute refractory periods; chronaxy and rheobase. Study of spinal reflexes. Sensory physiology. EEG. Physiology of muscles

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

Lecture-(Written exam)-[]-Written exam on the entire lecture and exercise material in the form of descriptive questions. Absences from the lecture, the student develops a short essay on the topic of the lecture. Lectures are obligatory.
Seminar-(Written exam)-[]-Evaluation of student work. Evaluation of activity during class. Assessment of preparation for classes
Classes-(Written exam)-[]-Student Report, a five-question qiuzz exam on a given exercise

Literature:

1. ***Physiology***, Costanzo L., Elsevier, 2017, Strony: , Tom:6th Edition (literatura podstawowa)

2. ***Textbook of Physiology***, Guyton and Hall, Elsevier, 2021, Strony: , Tom:14th Edition (literatura podstawowa)

3. ***BRS Physiology***, Costanzo L., Kluwier, 2018, Strony: , Tom:7th Edition (literatura uzupełniająca)

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Detailed description of ECTS credits awarded - part B

48SJO-PHYSIOL
2024
ECTS: 16.00

Physiology

The number of ECTS credits awarded consists of:

1. Contact hours with the academic teacher:

- participation in:	50 h
- participation in:	16 h
- participation in:	99 h
- consultation	4 h
	Total: 169 h

2. Independent work of a student:

Seminars	41.00 h
Self -study for colloquium	110.00 h
Classes	80.00 h
	Total: 231.00 h

Total (contact hours + independent work of a student): 400.00 h

1 ECTS credit = 25-30 h of an average student's work, number of ECTS,
ECTS Points = 400.00 h : 25 h/ECTS = **16.00** ECTS

Average: 16.00 ECTS

- including the number of ECTS credits for contact hours with the direct participation of an academic teacher	6.76 ECTS
- including the number of ECTS credits for hours of independent work of a student	9.24 ECTS