



UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN
Faculty of Medicine

Course syllabus – part A

Course code: 48SJO-PHYSIOL

Cycle: 2025

ECTS: 16.00

Physiology

Physiology

SUBJECT MATTER CONTENT:

Seminar - 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 - Details of practical classes of Human Physiology. Perform or record and interpret the data or finding experiments of Physiology: the use of simulation program: SimNerw, SimHeart and SimVessels examination of electrical activity: resting membrane potentials and action potentials of neurons relative and absolute refractory periods, study of spinal reflexes, frog skeletal muscle contraction experiments, cardiac muscle experiments, smooth muscle experiments. Sensory physiology: vision, hearing, smell and taste: interpret the data or finding of experiments. Human experiments using LabTutor Ad Instruments and examination of Nervous System, Muscle, Respiratory system Cardiovascular system, Excretory system. Interpretation of recordings: ECG, EEG, EMG, Spirometry. Recording of respiratory movements by respiratory belt: effects of Hyperventilation, breath holding exercise. Blood classes: Red blood Cell count, Total White Cell count, Differential Leucocyte count, Reticulocyte count, Blood grouping and typing, Hb% estimation. The digestive system experiments: digestion of carbohydrates, proteins and fats. Reproductive system experiments: pregnancy and ovulation test, oocyte observation discussion of hormonal regulation during the menstrual cycle ovulation, pregnancy, childbirth. Hormonal regulation in men.

Lecture - Introduction to Physiology. Principles of regulation of Physiology as an integrative science. Body fluids. Membrane Potentials and Action Potentials. 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 pressure. 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. Introduction to

Legal acts specifying learning outcomes:
467/2024;

ISCED Code: -

Status: -

Group of courses: -

Discipline: Medical Sciences

Language: ANG

Classes: Lecture (50h); Seminar (11h); Classes (99h);

Program: Medicine

Phase: Kierunek lekarski drugi rok (oferta w jęz. angielskim dla obcokrajowców)

Profile: -

Form: full-time

Level of studies: uniform master's studies

Introductory subject: Medical Sciences

Prerequisites: Anatomy, Histology.

Organized by the unit:

Coordinators:

Mariusz Majewski,
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endocrinology; pituitary hormones, thyroid metabolic hormones, insulin, glucagon.

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.

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.+

Symbols for outcomes related to the field of study:

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 -

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 -

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.

Symbols for outcomes related to the field of study:

Seminar - ['K5', 'U1', 'U4', 'U5', 'W3', 'W4', 'W5', 'W6'] - Classes in small subgroups, clinical cases in the form of PBL, discussion and interaction between students, solving cases and presenting them.

Classes - ['K2', 'K3', 'K4', 'U1', 'U2', 'U3', 'U4', 'U5', 'W1', 'W2', 'W3', 'W6', 'W7'] - Practical exercises using simulation programs and Ad Instruments system, working in a group of 2, performing manual activities of arranged exercises.

Lecture - ['K1', 'K2', 'K3', 'K4', 'K5', 'U2', 'U3', 'W1', 'W3', 'W4', 'W5', 'W7'] - Presentation power point and discussion.

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

Seminar (Written exam) - [] - Evaluation of student work.
Evaluation of activity during class. Assessment of preparation for classes

Seminar (Written exam) - [] - Student Report, a five-question quiz exam on a given exercise

Seminar (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.

Literature:

1. Physiology, Costanzo L.; Elsevier; 2017; Pages: ; Tome: 6th Edition; Required literature
2. Textbook of Physiology, Guyton and Hall; Elsevier; 2021; Pages: ; Tome: 14th Edition; Required literature
3. BRS Physiology, Costanzo L.; Kluwier; 2018; Pages: ; Tome: 7th Edition; Complimentary literature



Detailed description of ECTS credits awarded - part B

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Physiology

Physiology

1. Contact hours with the academic teacher:

- participation in: Lecture	50 h
- participation in: Seminar	11 h
- participation in: Classes	99 h
- consultation	4 h
Total:	164 h

Independent work of a student:

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

1 ECTS credit = 25-30 h of an average student's work, number of ECTS

ECTS Points = 395.00 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 - 6.64 ECTS pts

- including the number of ECTS credits for hours of independent work of a student - 9.36 ECTS pts