**SYLLABUS**

for the education cycle starting in the Academic year 2020/2021

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| **Name of a course / module** | **Physiology** | |
| **Name of a department where course is held** | **Department of Physiology** | |
| **E-mail of department** | [**fizjolog@umb.edu.pl**](mailto:fizjolog@umb.edu.pl)**; adrian@umb.edu.pl** | |
| **Faculty of** | Medicine with Division of Dentistry and Division of Medical Education in English | |
| **Name** **of a field of study** | Medicine | |
| **Level of education** | *First degree studies, Uniform master’s degree studies* | |
| **Form of study** | full time □ part time □ | |
| **Language of instruction** | Polish □ English □ | |
| **Type of course** | obligatory □ facultative □ | |
| **Year of study / Semester** | I □ II □ III □ IV □ V □ VI □ | 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 10 □  11 □ 12 □ |
| **Introductory courses with preliminary requirements** | *getting credit according to acquired effects of learning during anatomy, biochemistry and biophysics.* | |
| **Number of didactic hours with specification of forms of conducting classes** | *Total: 170 hours, including: 45h– lectures, 125h – classes,* | |
| **Assumptions and aims**  **of the course** | The course provides the fundamental principles of human physiology suitable for students in a Medical Doctor degree program. Human Physiology covers general cellular and systemic physiology through reading, study, practical activities reinforced and assisted by lectures, laboratories, case studies and discussions. In more details, the course explains and teaches:  -neurophysiology: excitable membranes, resting and action potentials, sensory reception, synaptic and neuromuscular transmission, muscular contraction, autonomic nervous system functions, control of movement, nutritive and trophic functions of the neurons;  -cardiovascular system: excitation, spread of the action potentials, ECG, control and contraction of the heart, hemodynamics, control of circulation, pulmonary and special circulations, microcirculation and transcapillary exchange;  -respiratory system: mechanics of breathing, ventilation and gas exchange, acid-base balance, ventilation-perfusion balance and control of respiration;  -gastrointestinal system: secretory functions of the GI tract, action of digestive enzymes, absorption of water, salts, nutrients, vitamins, liver function, bile-salt metabolism, motility and its control;  -general and cellular physiology: membrane transport, control of cell volume and composition, epithelial transport;  -urinary system: glomerular filtration, tubular transport mechanisms, sodium, potassium, hydrogen ions;  -body fluids: body fluid compartments, hormonal control of water and salt balance. | |
| **Didactic methods** | *- providing knowledge in a form of a lecture*  *- consultation (both regular and organized in individual cases)*  *- discussion*  *- in class- case studies, problem solving teaching*  *- self study*  *- practical classes(including ECG, arterial/venous pressure, spirometry, optics, blood typing, blood glucose levels, oral glucose tolerance test, urine testing, etc.)* | |
| **Full name of the person conducting the course** | *employed in the Dep. of Physiology teaching assistants* | |
| **Full name of the person responsible for teaching** | *Prof Adrian Chabowski* | |

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| **Symbol and number of learning outcomes according to the teaching standards and other learning outcomes** | **Description of directional learning outcomes** | **Form of classes** | | **Verification methods for achieving intended learning outcomes** |
| **Knowledge** | | | | |
| BW1 | Describes and understands water-electrolyte equilibrium of biological systems | | lecture and classes | *Summarizing methods e.g.,*  *- written tests (10-questions in-class test with multiple choice and/or true/false and/or fill-in questions and quarterly quizzes with a total of 30 multiple choice questions, and the final exam scheduled to the summer examination session consists of 90 multiple choice questions etc.)*  *Forming methods, e.g.,*  *- observation of the student's work*  *- evaluation of the activity in the classroom*  *- completion of each activity*  *- assessment of preparation for the classes*  *- creative discussion in class*  *- case description* *and case studies* |
| BW2 | Describes and understands acid-base equilibrium, buffer action mechanism and its significance for systemic homeostasis | | lecture and classes |
| CW.49 | Knows and understands digestive enzymes, mechanism of production of hydrochloric acid in the stomach; role of bile, course of absorption of digestion products, malabsorption | | lecture and classes |
| BW20 | Describes and understands basics of nerve system conduction and stimulation, higher functions of nerve system, physiology of smooth and striated muscles, blood role | | lecture and classes |
| BW21 | Describes and understands functions and mechanisms of all organs and systems of the human body including: cardiovascular system, respiratory system, digestive system, urinary system, nervous/hormonal systems; interdependence of organs and systems | | lecture and classes |
| BW22 | Describes and understands the anatomy and regulatory functions of male and female reproductive system | | lecture and classes |
| BW25 | links between the factors causing dysfunctions of equilibrium of biological processes and physiological or pathophysiological changes | |  |
| **Skills** | | | | |
| BU7 | doing simple function tests to evaluate the stability of  human organism’s regulation system (loading tests,  exercise test); interpreting numerical data concerning  basic physiological variables; | | lecture and classes | *Summarizing methods e.g,.*  *- realization of a specific task*  *- project, presentation etc.*  *Forming methods, e.g.,*  *- observation of the student's work*  *- pretest*  *- evaluation of the activity in the classroom*  *- completion of each activity*  *- assessment of preparation*  *for classes*  *- discussion in class*  *- case studies* |
| BU9 | using a simple measuring apparatus and evaluating accuracy of measurements; | | lecture and classes |
| BU13 | planning and performing simple scientific research, interpreting the results and drawing conclusions. | | lecture and classes |
| **Social competence** | | | | |
| K4 | He /She recognizes his/her own diagnostic and therapeutic limitations, educational needs, planning of educational activity | | classes | *Summarizing methods e.g.,*  *Continuous assessment by teachers (observation)*  *Forming methods, e.g.,*  *- observation of the student's work*  *- discussion in class*  *- opinions of colleagues* |
| K2 | can establish and maintain a deep and respectful contact with the patient, as well as show understanding for worldview and cultural differences | | classes |
| K3 | is guided by the good of the patient, putting it first, | | classes |
| K8 | formulates conclusions from his own measurements or observations | | classes |
| K9 | He /She implements the principles of professional camaraderie and cooperation with representatives of other professionals in the range of health care | | classes |
| K1 | He /She knows doctor-patient privilege; and patient rights | | classes |
| K11 | accepts responsibility for decisions made in the course of professional activity, including in terms of their own safety and that of others | | classes |

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| **ECTS points** | *17* | | |
| **Student Workload** | | | |
| **Form of activity** | | **Number of hours to complete the activity** | |
| **Classes that require the participation of a teacher** | | | |
| 1. Realization of the course: lectures (according to the curriculum ) | | 45 | |
| 1. Realization of the course: classes (according to the curriculum ) | | 125 | |
| 1. Realization of the course: seminars; (according to the curriculum) | | -- | |
| 1. Realization of the course: | | -- | |
| 1. Participation in consultation | | -- | |
|  | | Total hours: 170 | |
| **Student self-study**  *1 punkt ECTS oznacza 25-30 godzin pracy studenta w różnych formach, takich jak np.:* | | | |
| 1. Preparation for the theoretical and practical classes (realization of projects, documentation, case description etc.) | | | 100 |
| 1. Preparation for tests/credits | | | 20 |
| 1. Preparation for an exam/final test-credit | | | 40 |
|  | | | Total hours: 160 |

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| **Course contents:** *proszę wpisać hasłowo tematykę poszczególnych zajęć, pamiętając, aby przekładała się ona na zamierzone efekty kształcenia* | |
| **Learning outcomes**  **(symbol and number)** | **Topics** |
| BW20, BU9, BU13 | Introduction to neurophysiology. Review of internal regulations, safety regulations etc. |
| BW20, BU9, BU13 | Neurophysiology (nerve cells, membrane resting, action potential |
| BW20, BU9, BU13 | Neurophysiology (synapses) |
| BW20, BU9, BU13 | Muscles |
| BW20, BU9, BU13 | Sensory Physiology |
| BW20, BU9, BU13 | Control of Posture and Movement + CNS |
| BW20, BU9, BU13 | The Autonomic Nervous |
| BW20, BU9, BU13 | Special Senses |
| BW20, BU9, BU13, K1, K2,K3, K4, K8,K9,K11 | Quarterly Quiz |
| BW21, BU9, BU13,BW25 | Electrical Activity of the Heart |
| BW21, BU9, BU13,BW25 | Electrocardiography |
| BW21, BU9, BU13,BW25 | The Heart as a Pump |
| BW21, BU9, BU13,BW25 | Circulation: Dynamics of Blood and Lymph Flow |
| BW21, BU9, BU13,BW25 | Cardiovascular Regulatory Mechanisms |
| BW21, BU9, BU13,BW25 | Circulation Through Special Regions |
| BW21, BU9, BU13,BW25, K1, K2,K3, K4, K8,K9,K11 | Quarterly Quiz |
| BW21, BU9, BU13,BW25 | Respiration |
| BW21, BU9, BU13,BW25 | Regulation of Respiration; |
| BW20, BU9, BU13 | The Blood |
| BW20, BU9, BU13 | The Blood II |
| BW21, BW25, BW1, BW2 | The Kidneys |
| BW21, BW25, BW1, BW2 | The Body Fluid Compartments and Acid-Base |
| BW20, BW21, BW25, BW1, BW2, BU9, BU13, K1,K2, K3,K4, K8,K9, K11 | Quarterly Quiz |
| BU9,BU13, BW21, BW25 | Endocrinology I |
| BU9,BU13, BW21, BW25 | Endocrinology II; re-take of the 3rd quiz |
| BU9,BU13, BW21, BW25 | Endocrinology III |
| BW20, BW21, BW25,CW49 | Gastrointestinal Physiology |
| BW20,BW21, BW25, BU9, BU13, BU7 | Exercise Physiology. |
| BW20, BW21, BW25, CW49, BU9,BU13, BU7, K1, K2, K3, K4, K8, K9, K11 | Quarterly Quiz |

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| **Obligatory textbook:** *(1-2 pozycje)* |
| 1.Ganong W.F.: Review of Medical Physiology, Lange Medical Book, 21st ed., 2003 (or later), ISBN 0071402365  2.Guyton A.C.: Textbook of Medical Physiology, Saunders, 10th ed (or later)., 2000, ISBN 072168677 |
| **Optional textbook:** *(1-2 pozycje)* |
| 1.Berne R.M., Levy M.N.: Physiology, Mosby, 5th ed., 2004, ISBN 0-323-02225-1  2. Bullock J.: Physiology, NMS Lippincott Williams & Wilkins 4-th ed., 2004, ISBN 0683306030 |

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| **Criteria for assessing the achieved learning outcomes and the form and conditions for receiving credit:** *Należy określić w szczególności: zasady dopuszczenia do egzaminu, zwalniania z egzaminu, sposób i warunki zaliczenia zajęć, łącznie z określeniem zasad zaliczania nieobecności oraz określeniem liczby godzin nieobecności kwalifikujących do niezaliczenia przedmiotu oraz możliwości i formy wyrównywania zaległości* |
| Student is obliged to participate in all lectures and classes. Absence should be excused as soon as possible. It is demanded in the case of health reasons a medical certificate of temporary disability, and in the other cases a certificate of proper authorities.  Student should have a theoretical basic knowledge of the current subject (based on the lectures and obligatory textbooks) prior to the class. During every class Student’s knowledge is evaluated based on 10-question in-class quiz (multiple choice and/or true/false and/or fill-in questions). The minimum - 6 points (out of maximum 10) - is required to pass in-class quiz. Student has right to retake the in-class quiz in appointed time, but not later than within two weeks after the first term.  Quarterly quizzes are taken as scheduled. A total of 30 multiple choice questions will make up every quiz. Minimum of 9 points is required to pass the quiz (0.5 points for each correct answer; points from the first take only are counted for the final evaluation – see below). Student has right to inspect quarterly quiz result within seven days after announcing it. Student has right to retake the quiz in appointed time, but no later than within two weeks after the first term. Passing of 3 out of 4 quarterly quizzes is mandatory in order to participate in the final exam. Failing of more than 1 quarterly quiz results in obligation of passing a pre-exam – otherwise student is graded 2 (failed) as a final grade from the human physiology course.  The final exam is scheduled to the summer examination session and consists of 90 multiple choice questions (1 point for each correct answer). In order to pass the final exam student is obliged to obtain at least 46 points.  Final evaluation of student performance:  · quarterly quizzes – maximum of 60 points (15 points for each quiz; 4 × 15 = 60)  · final exam – maximum of 90 points  · final grade (total score for human physiology course) – maximum of 150 points (60 + 90 = 150)  Student will be graded as follows (final grade):  5 (very good) 135-150 points  4+ (more than good) 120-134 points  4 (good) 105-119 points  3+ (fairly good) - 90-104 points  3 (satisfactory) 76-89 points  2 (failed) < 76 points    Student has right to inspect final exam result within seven days after announcing it.  Retake of the final exam takes place in the term appointed by the Head of the Department of Physiology and has the same form as the final exam (90 multiple choice questions, 1 point for each correct answer). The result of the final exam retake will be graded as follows (final grade):  5 (very good) 81-90 points  4+ (more than good) 72-80 points  4 (good) 63-71 points  3+ (fairly good) 54-62 points  3 (satisfactory) 46-53 points  2 (failed) < 46 points  During in-class quizzes, quarterly quizzes and final exam student may not consult any written materials or electronic devices. Moreover, student may not have verbal or non-verbal contact with any person other than teaching assistant. Any violations of these rules will be regarded as cheating and will result in failing of the quiz/exam (grade 2). |

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*(date and signature of the person preparing the syllabus)*

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*(date and signature of the Head of the and (course coordinator)*

*Department where the course is held)*