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| **Syllabus 2020/2021****training cycle: ………2019/2024……………………………………….** |
| **Description of the course** |
| **Module/Course** | **Human Physiology** |
| **Faculty** | Dentistry |
| **Major**  | Dentistry |
| **Specialties** |  |
| **Level of studies** | Uniform magister studies **X**\*1st degree studies 2nd degree studies 3rd degree studies postgraduate studies  |
| **Form of studies** | X full-time part-time |
| **Year of studies**  | **2** | **Semester** | **X** Winter**X** Summer |
| **Type of course** | **X** obligatory limited choice free choice / elective  |
| **Course** |  major basic |
| **Language of instruction** |  Polish **X** English other |
| \* mark with an **X** |
| **Number of hours** |
| Form of education |
| Unit teaching the course | Lectures (L) | Seminars (SE) | Auditorium classes (AC) | Major Classes – not clinical (MC) | Clinical Classes (CC) | Laboratory Classes (LC) | Classes in Simulated Conditions (CSC) | Practical Classes with Patient (PCP) | Specialist Classes – magister studies (SCM) | Foreign language Course (FLC) | Physical Education obligatory (PE) | Vocational Practice (VP) | Self-Study (Student's own work) | E-learning (EL) |
| **Winter Semester** |
|  | **10** |  |  | **35** |  |  |  |  |  |  |  |  |  |  |
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| **Summer Semester** |
|  | 10 |  |  | 35 |  |  |  |  |  |  |  |  |  |  |
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| **TOTAL per year: 90** |
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| **Educational objectives** (max. 6 items)**C1.** To make studentacquainted with issues of general physiology.**C2.** To make studentacquainted with issues of detailed physiology.**C3.** Student should beable to discuss physiological processes in human body at the cell, organ and system level, and discuss relationship between functions of different systems.**C4.** Student should be able to have integrative approach to the human body in case of a change in the functioning of any system. **C5.** Studentshould beacquainted with numerical values of basic physiological variables.**C6.** Student should learn basic functional tests to assess functions of human body.  |
| **Education result matrix for module/course in relation to verification methods of the intended education result and the type of class** |
| Number of course education result  | Number of major education result  | Student who completes the module/course knows/is able to | Methods of verification of intended education results (forming and summarising) | Form of didactic class*\*\*enter the abbreviation* |
| **K 01** | **B.K 5** | knows the principles of calcium and phosphate management; | written/oral examwritten/oral test, presentation | L; MC |
| **K 02** | **B.K 6** | knows the role and importance of body fluids, including saliva; | written/oral examwritten/oral test, presentation | L; MC |
| **K 03** | **B.K 19** | knows vital functions of a human body; | written/oral examwritten/oral test, presentation | L; MC |
| **K 04** | **B.K 20** | knows neurohormonal regulation of physiological processes; | written/oral examwritten/oral test, presentation | L; MC |
| **K 05** | **B.K 21** | understands the principles of acid-base balance and oxygen and carbon dioxide transport in the body; | written/oral examwritten/oral test, presentation | L; MC |
| **K 06** | **B.K 22** | knows principles of metabolism and nutrition; | written/oral examwritten/oral test, presentation | L; MC |
| **K 07** | **B.K 23** | knows numerical value of basic physiological variables and interprets changes in numerical values. | written/oral examwritten/oral test, presentation | L; MC |
| **S 01** | **B.S 1** | is able to refer chemical phenomena to processes that occur in the oral cavity; | written/oral examwritten/oral test, presentation | L; MC |
| **S 02** | **B.S 4** | is able to relate chemical phenomena to oral processes; | written/oral examwritten/oral test, presentation | L; MC |
| **Sc 01** | **6)** | is ready to promote health-promoting behavior; |  | L; MC |
| **Sc 02** | **7)** | is ready to use objective sources of information; |  | L; MC |
| **Sc 03** | **8)** | is ready to draw conclusions from own measurements or observations; |  | L; MC |
| \*\* L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning .  |
| Please mark on scale 1-5 how the above effects place your classes in the following categories: communication of knowledge, skills or forming attitudes:Knowledge: .5…Skills: …5.Social competences: …5.. |
| **Student's amount of work (balance of ECTS points)** |
| **Student's workload** (class participation, activity, preparation, etc.) | **Student Workload (h)** |
| 1. Contact hours: | 90 |
| 2. Student's own work (self-study): | 150 |
| Total student's workload | 240 |
| **ECTS points for module/course** | **7** |
| Comments  |  |
| **Content of classes** (please enter topic words of specific classes divided into their didactic form and remember how it is translated to intended educational effects) |
| **Lectures****Winter semester:** 5 X 2 hoursIntroduction to physiology. Homeostasis.Nervous system – part 1Nervous system – part 2Nervous system – part 3Hormones**Summer semester:** 5 X 2 hoursCardiovascular system – cardiac muscleCardiovascular system – vascular system Respiratory systemImmunity |
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| **Classes****Winter semester:****Homeostasis** 4 hours - Definition of homeostasis, local and long-term mechanisms -Iinternal environment of human body; water areas, ion composition- Contribution of individual system in maintaining homeostasis- Dynamics of biological membrane, membrane transport **Nervous system: Excitability** 4 hours- Nervous system; function, organizing, pathways of signal conduction- Neuron: structure, types- Resting and action membrane potential - Conduction in a neuron- Synapse: structure, types, conduction in the synapse**Nervous system: Sensory systems. Senses** 4 hours- General properties of the sensory systems- Sensory receptors: features and criteria for division, signal transduction - Somatic senses: touch, temperature, proprioception, pain- Special senses: smell, taste **Nervous system: Motor control system and brain functions**  4 hours- Spinal cord: structure, properties of conduction, spinal reflexes- Muscle spindle- Pyramidal and extrapyramidal system – functions- Cerebellum: functional arrangement, role- Equilibrium **Autonomic nervous system (ANS)** 4 hours- Division of the ANS, - Neurotransmitters and receptors- Effectors of the ANS, neuromodulators- Control of the ANS by CNS - Autonomic reflexes- The ways of evaluation of ANS activity **Muscle physiology** 4 hours- Skeletal muscles: structure of sarcomere, neuromuscular junction, excitation-contraction coupling, types of skeletal muscles, types of contractions, sources of energy in skeletal muscles, factors determining the strength of contractions, mechanics of contractions.- Smooth muscles: myocyte structure, contraction and relaxation mechanism, types of contractions, types of smooth mucsles**Hormones** 4 hours- Types of hormones, regulating mechanisms of hormones secretion- Hypothalamic and pituitary gland hormones, hypothalamic-pituitary axis thyroid gland hormones, adrenal gland hormones, sex hormones**Growth of bones and tissues**. 4 hoursHormonal regulation of growth: adrenal glucocorticoids, thyroid hormones, growth hormone.The importance of calcium in the body, hormones that control calcium balance.**Metabolism. Body Temperature regulation** 3 hours- Energy balance. Metabolism during fed state and fasted state. Measurement of metabolism.- Function of endocrine pancreas; glucagon, insulin- Mechanisms of body temperature regulation**Summer semester:****Physiology of cardiovascular system: Cardiac muscle** 4 hours- Physiological properties of cardiac muscle, regulation of heart activity- Basics of ECG- Cardiac cycle**Physiology of cardiovascular system: Vascular system** 4 hours- Cardiovascular functional differentiation,- Principles of hemodynamics - Blood pressure, heart rate, venous pressure **Physiology of cardiovascular system – regulation. Venous circulation. Capillary circulation** 4 hours- Blood flow regulation : local, nervous, reflex, hormonal- Venous circulation- Capillary circulation**Physiology of cardiovascular system: Blood flow in specific regions** 4 hours- Features and control mechanisms of circulation in specific regions: coronary circulation, cerebral circulation, pulmonary circulation, blood flow in the skin, visceral circulation, blood flow in the skeletal muscles**Respiratory system** 4 hours- Mechanics of respiration: ventilation, respiratory resistance, function of respiratory pathways- Spirometry- Exchange of gases in the lungs, gasometry- Nervous and chemical control of respiration**Blood. Erythrocytes** 4 hours- Composition and functions of blood; Erythropoesis - Properties and functions of erythrocytes- Hemoglobin: structure and properties , types of hemoglobin and combinations with gases- Transport of gases in the blood**Blood: Leucocytes. Hemostasis** 4 hours- Leucocytes: types, functions- Immunity- Response to invading bacteria and viruses- Hemostasis**Water-electrolyte balance. Physiology of the kidney** 4 hours- Kidney’s functional anatomy- Glomerular filtration, reabsorption and secretion in the kidneys. Assessment of renal function - measurement of renal clearance.- Micturition.- Water-electrolyte and acid-base balance of the body.- Vasopressin. Aldosterone. RAS system.**Digestive system. Function of the liver**. 3 hours- Regulation of food intake- Motility and secretion in the gastrointestinal tract and their regulation- Digestion and absorption of nutrients- Function of the liver |
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| **Basic literature** (list according to importance, no more than 3 items)1. Dee Unglaub Silverthorn, Human Physiology. An Integrated Approach.**Additional literature and other materials** (no more than 3 items)1. Guyton and Hall, John E. Hall, Textbook of Medical Physiology2. Wiliam F. Ganong, Review of Medical Physiology 22e  |
| **Didactic resources requirements** (e.g. laboratory, multimedia projector, other…)Computer lab, multimedia projector, TV with DVD player, daylight projector, blackboard, whiteboard, stationery, esthesiometer, TIP THERM device, neurological hammer, Piórkowski apparatus, ECG unit, apparatus for blood pressure measuring, device for hemodynamic measurements, spring dynamometer, infrared thermometer, weight evaluating fat content, measuring tape, stethoscope, spirometer, pickflowmeter, hematological lancets, hematocrit centrifuge, hematocrit tubes, serum with antibodies, light microscope, microscope slides, tissue/lignin, Petri dish, didactic films, hydrogen breath test gauge, glasses with stearin, hollowed slides, pulsoximeter, stopwatch, body composition weight, metronome |
| **Preliminary conditions** (minimum requirements to be met by the student before starting the module/course)Student has knowledge of human anatomy, histology; knows the course of basic chemical reactions and biochemical processes taking place in the body. |
| **Conditions to receive credit for the course** (specify the form and conditions of receiving credit for classes included in the module/course, admission terms to final theoretical or practical examination, its form and requirements to be med by the student to pass it and criteria for specific grades)IMPORTANT! Class attendance cannot be a condition for passing the subject.Conditions required for getting credit for classes:- active participation in classes- obtaining at least a satisfactory grade from each partial test- obtaining at least a satisfactory grade from each semester, which is calculated from the average of all grades obtained in a given semesterEvery absence from classes must be made up, including rector days and dean's hours (in this case, a form of presentation or essay prepared by the student as part of self-study is recommended).Conditions required for admitting the student to the final exam:- Student is obliged to obtain credit for each semester.Form of the final exam: oral or/and written test To be admitted to the final exam it is necessary to obtain at least a satisfactory grade for each semester according to the criteria given below:Very Good (5.0) - avarage grade for the semester 4.76 – 5.0Good Plus (4.5) - avarage grade for the semester 4.26 – 4.75Good (4.0) - avarage grade for the semester 3.76 – 4.25Satisfactory Plus (- avarage grade for the semester 3.26 – 3.75Satisfactory - avarage grade for the semester 3.00 – 3.25 |
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| **Grade:** | **Criteria** (only for courses/modules ending with an examination) |
| Very Good(5.0) | 94% - 100% of total points for final examination |
| Good Plus (4.5) | 86% - 93% of total points for final examination |
| Good(4.0) | 78% - 85% of total points for final examination |
| Satisfactory Plus (3.5) |  70% - 77% of total points for final examination |
| Satisfactory (3.0) | 61% - 69% of total points for final examination |
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| **Name and address of module/course teaching unit, contact: telephone and e-mail address**Department of Physiologyul. T. Chałubińskiego 10, 50-368 Wrocławtel.: 71 784 00 91, 71 784 14 22, 71 784 14 23faks: 71 784 00 92; e-mail address : wl-9@umed.wroc.pl**Coordinator / Person responsible for module/course, contact: telephone and e-mail address**Head of the Department of Physiologyprof. dr hab. Beata Ponikowskatel.: 71 784 14 22, 71 784 14 23; e-mail address: beata.ponikowska@umed.wroc.pl **List of persons conducting specific classes: full name, degree/scientific or professional title, discipline, performed profession, form of classes**.Agnieszka Buldańczyk, dr n.med., medicine, academic, classes, lecturesBartłomiej Paleczny, dr n. o zdrowiu, health sciences, academic, classes, lecturesAgnieszka Siennicka, dr n. o zdrowiu, health sciences, academic, classes, lecturesRobert Skalik dr n.med., medicine, academic, physician, classes, lecturesRafał Seredyński, dr biol., biology, academic, classes, lecturesMałgorzata Wyciszkiewicz, dr mgr inż., biotechnology, academic, classesAdrianna Nowicka, mgr, biotechnology, classes

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| **Date of Syllabus development**  | **Syllabus developed by**  |
|  17.06.2020 |  dr n. med. Agnieszka Buldańczyk |
| **Signature of Head of teaching unit** |
| prof. dr hab. Beata Ponikowska |

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