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| <b>Higher education institution:</b> <i>Slovak Medical University in Bratislava</i>  |    |    |  |    |    |
| <b>Faculty:</b> <i>Faculty of Medicine</i>   |    |    |  |    |    |
| <b>Course code:</b> <i>GM 012A</i>   |    |    | <b>Course title:</b> <i>Physiology (1)</i> |    |    |
| <b>Type, extent and method of educational activity:</b><br><i>Number of hours per semester:</i><br><i>Lectures: 56/4 hours per week</i><br><i>Practices: 56/4 hours per week</i><br>(Total work load of the student: <b>225 h</b> )<br>Method of the education: full-time study (distance study) <sup>1</sup><br>Form of study: full-time  |    |    |  |    |    |
| <b>Number of credits:</b> <i>8 credits</i>   |    |    |  |    |    |
| <b>Recommended semester/trimester study:</b> <i>3<sup>rd</sup></i>   |    |    |  |    |    |
| <b>Level of higher education study:</b> <i>1<sup>st</sup> + 2<sup>nd</sup> level</i>   |    |    |  |    |    |
| <b>Prerequisite courses:</b> <i>Medical biophysics</i>   |    |    |  |    |    |
| <b>Requirements for completion of the course:</b><br><i>Graduate 100% of practices, at least 70 % on each written test.</i><br>Completion of the course: <b>CA - continuous assessment</b><br><i>Student workload is 113 hours</i>   |    |    |  |    |    |
| <b>Learning outcomes:</b><br><i>The graduate of Physiology 1:</i><br>VV1: <i>acquires basic molecular principles of functioning of the organism,</i><br>VV2: <i>will understand functions of organs and systems of human body and understands their cooperation,</i><br>VV3: <i>will be able to perform some basic diagnostic methods for assessment of function of organ systems,</i><br>VV4: <i>the acquired knowledges applies in understanding of pathophysiological processes and therapeutic approaches.</i>   |    |    |  |    |    |
| <b>Brief content of the course (syllabus):</b><br><i>Blood - blood plasma, blood elements, acid-base balance, osmotic pressure, blood groups, blood coagulation, erythropoiesis. basics of immunity.</i><br><i>Physiology of the cell – receptors, channels, intra- and paracellular signalling.</i><br><i>Excitable tissues - membrane potential, nerve excitability, synapses, reflex and the reflex arc, functional properties of skeletal and smooth muscle.</i><br><i>Special senses - receptors, their classification and function, specialization of receptors, receptor potentials - vision, hearing, taste, olfaction, thermoreception, nociception.</i><br><i>Physiology of central nervous system - sensation and perception, regulation of movements, sleeping, higher nervous functions - memory, learning, speech. Autonomic nervous system.</i><br><i>Endocrine glands - mechanisms of hormonal action, function of the hypothalamus - pituitary system, functions of hormones.</i> |    |    |  |    |    |
| <b>Recommended literature:</b><br><i>Despopoulos, A., Silbernagl, S. Color Atlas Physiology. 7th ed. Thieme, 2015. 472 p. ISBN-10 3135450074, ISBN-13 978-3135450070.</i><br><i>Linda S. Costanzo Physiology 2017. Elsevier, 528 p. ISBN-10 0323478816, ISBN 978-0323478816</i><br><i>John E. Hall, Michael E. Hall Guyton and Hall Textbook of Medical Physiology 2020. Elsevier, 1152 p. ISBN-10 0323597122, ISBN-13 978-0323597128</i><br><i>Ralf Brandes, Florian Lang, Robert F. Schmidt Physiologie des Menschen: mit Pathophysiologie Vydavateľstvo Springer-2019 1092 s., ISBN-10 366256467X, ISBN-13 978-3662564677</i><br><i>Béder, I.et al.: Practical Physiology, Slovak Medical University, Medical Faculty, Bratislava 2013. 148 p. ISBN 978-80-89352-97-5.</i>  |    |    |  |    |    |
| <b>Language requirements:</b> <i>-English</i>  |    |    |  |    |    |
| <b>Notes:</b><br><i>The course runs in English language.</i>   |    |    |  |    |    |
| <b>Course assessment</b><br>Assessed students in total: <i>0</i>   |    |    |  |    |    |
| A  | B  | C  | D  | E  | FX |
| 0%   | 0% | 0% | 0%   | 0% | 0% |

<sup>1</sup>§ 108e ods. 2 zákona č.131/2002 Z.z. o vysokých školách

**Lecturers:**

*PharmDr. Štefan Mátyás, PhD.,*

*RNDr. Peter Musil, PhD.,*

**Date of last modification:** 16.2.2022

**Supervised by:** *person responsible for realization, development and ensuring of the study program quality prof.*

*MUDr. Iveta Šimková, CSc.*

Course Information Sheet

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| <b>Higher education institution:</b> <i>Slovak Medical University in Bratislava</i>   |  |
| <b>Faculty:</b> <i>Faculty of Medicine</i>  |  |
| <b>Course code:</b> <i>GM 012B</i>  | <b>Course title:</b> <i>Physiology (2)</i> |
| <b>Type, extent and method of educational activity:</b><br><i>Number of hours per semester:</i><br><i>Lectures: 56/4 hours per week</i><br><i>Practices: 56/4 hours per week</i><br>(Total work load of the student: <b>225 h</b> )<br>Method of the education: full-time study (distance study) <sup>1</sup><br>Form of study: full-time   |  |
| <b>Number of credits:</b> <i>9 credits</i>  |  |
| <b>Recommended semester/trimester study:</b> <i>4<sup>th</sup></i>  |  |
| <b>Level of higher education study:</b> <i>1<sup>st</sup> + 2<sup>nd</sup> level</i>  |  |
| <b>Prerequisite courses:</b> <i>GM 012A Physiology (1)</i>  |  |
| <b>Requirements for completion of the course:</b><br><i>Graduate 100% of practices, at least 70 % on each written test.</i><br><i>Method of assessment and completion of the course: active attending of lectures and practical exercises, oral evaluation, test.</i><br><i>During semester - 30%</i><br><i>Completion of the course: Exam. A, B, C, D, E, Fx</i><br><i>Student workload is 88 hours</i>  |  |
| <b>Learning outcomes:</b><br><i>The graduate of Physiology 2:</i><br><i>VV1: acquires basic molecular principles of neurohumoral regulations of organism,</i><br><i>VV2: will understand functions of organs and systems of human body and understands their cooperation,</i><br><i>VV3: will be able to perform some basic diagnostic methods for assessment of function of organ systems,</i><br><i>VV4: the acquired knowledges applies in understanding of pathophysiological processes, diagnostic and therapeutic approaches..</i>  |  |
| <b>Brief content of the course (syllabus):</b><br><i>Cardiovascular system - physiological properties of the cardiac muscle, cardiac cycle, heart sounds, arterial pulse, electrocardiography, regulation, blood flow in vessels, blood pressure, transcapillary exchange, lymph circulation, regional blood circulations.</i><br><i>Thermoregulation - body temperature and its biorhythms, heat production and losses, mechanisms of thermoregulation.</i><br><i>Kidneys - body fluids and their ion-structure, glomerular filtration rate and tubular processes, acid-base balance, formation of urine, regulation of renal functions.</i><br><i>Respiration - functions of the respiratory system, ventilation, exchange of respiratory gases, the lung volumes and capacities, transport of O<sub>2</sub> and CO<sub>2</sub>, breathing and regulation of the blood pH, influence of changed atmospheric pressure, regulation of breathing.</i><br><i>The digestive system - mastication, swallowing, stomach motility, the small and large intestine motility, the function of digestive juices and their secretion, digestion and absorption of nutrients, the function of the liver, regulation.</i><br><i>Metabolism and nutrition - energy intake and expenditure, basal and total metabolic rate, caloric value of foods, caloric equivalent of 1L of O<sub>2</sub>, respiratory quotient, O<sub>2</sub>-debt, metabolism of carbohydrates, fats, proteins and their regulation, basics of nutrition, principles of balanced diet.</i> |  |
| <b>Recommended literature:</b><br><i>Despopoulos, A., Silbernagl, S. Color Atlas Physiology. 7th ed. Thieme, 2015. 472 p. ISBN-10 3135450074, ISBN-13 978-3135450070.</i><br><i>Linda S. Costanzo Physiology 2017. Elsevier, 528 p. ISBN-10 0323478816, ISBN 978-0323478816</i><br><i>John E. Hall, Michael E. Hall Guyton and Hall Textbook of Medical Physiology 2020. Elsevier, 1152 p. ISBN-10 0323597122, ISBN-13 978-0323597128</i><br><i>Ralf Brandes, Florian Lang, Robert F. Schmidt Physiologie des Menschen: mit Pathophysiologie Vydavateľstvo Springer-2019 1092 s., ISBN-10 366256467X, ISBN-13 978-3662564677</i>  |  |

<sup>1</sup>§ 108e ods. 2 zákona č.131/2002 Z.z. o vysokých školách

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| <b>Language requirements:</b> -English  |    |    |    |    |    |
| <b>Notes:</b><br><i>The course runs in English language.</i>  |    |    |    |    |    |
| <b>Course assessment</b><br>Assessed students in total: 0   |    |    |    |    |    |
| A   | B  | C  | D  | E  | FX |
| 0%  | 0% | 0% | 0% | 0% | 0% |
| <b>Lecturers:</b><br><i>PharmDr. Štefan Mátyás, PhD.,<br/>RNDr. Peter Musil, PhD.,</i>  |    |    |    |    |    |
| <b>Date of last modification:</b> 16.02.2022  |    |    |    |    |    |
| <b>Supervised by:</b> : person responsible for realization, development and ensuring of the study program quality<br><i>prof. MUDr. Iveta Šimková, CSc.</i> |    |    |    |    |    |