

<b>Program of Study</b>	:	GENERAL MEDICINE
<b>Course</b>	:	Physiology
<b>Abbreviation</b>	:	FYZ/VAA11
<b>Schedule</b>	:	45 hours of lectures
		15 hours of seminars
		45 hours of exercises
<b>Course Distribution</b>	:	2nd year, 3rd semester
<b>Number of Credits</b>	:	0
<b>Course Form</b>	:	Lectures, seminars, exercises

#### Lectures :

<b>Teachers :</b>	MUDr. PharmDr. Lenka Bartošíková, Ph.D. Doc. MUDr. Jiří Nečas, CSc.
<b>Study :</b>	Continuous

	<b>Date</b>	<b>Subject</b>	<b>Hrs</b>	<b>Teacher</b>
1	20.09.2022	Introduction to the physiology. Physiology of the cell.	3	Bartošíková
2	27.09.2022	Membrane physiology I. (membrane potentials, ion channels).	3	Bartošíková
3	04.10.2022	Membrane physiology II. (types of transport through membrane).	3	Bartošíková
4	11.10.2022	Physiology of excitable tissues, neuron, synapses.	3	Bartošíková
5	18.10.2022	Autonomic nervous system - introduction	3	Bartošíková
6	25.10.2022	Physiology of cardiovascular system I.	3	Nečas
7	01.11.2022	Physiology of cardiovascular system II.	3	Nečas
8	08.11.2022	Physiology of cardiovascular system III.	3	Nečas
9	15.11.2022	Autonomic nervous system II.	3	Bartošíková
10	22.11.2022	Physiology of GIT (function of the oral cavity, esophagus).	3	Bartošíková
11	29.11.2022	Physiology of GIT (function of the stomach)	3	Bartošíková
12	06.12.2022	Physiology of GIT (function of the small and large intestines).	3	Bartošíková
13	13.12.2022	Physiology of GIT (hormones of GIT)	3	Bartošíková
14	20.12.2022	Physiology of liver and pancreas (exocrine function)	3	Bartošíková
15	03.01.2023	Physiology of immunity	3	Bartošíková

## Exercises:

<b>Leading Teacher:</b>	MUDr. PharmDr. Lenka Bartošíková, Ph.D.
<b>Teachers:</b>	Doc. MUDr. Jiří Nečas
<b>Study:</b>	Continuous

	<b>Dates 2022</b>	<b>Subject</b>	<b>Hrs</b>	<b>Teacher</b>
1	19.-25.09.	<b>Introduction to practical training:</b> Organisation of the study. The rules of the safety of work in physiological laboratory.	4	Bartošíková Nečas
2	26.09.- 02.10.	<b>Introduction to practical training :</b> Physiology and function of skeletal, smooth and cardiac muscles. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• monosynaptic and polysynaptic reflex</li> <li>• reflex arc – function</li> <li>• determination of some reflexes in man</li> </ul>	4	Bartošíková Nečas
3	03.- 09.10.	<b>Introduction to practical training:</b> Action potentials of cardiac cells. Cardiac cycle. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• Physical examination of the heart.</li> <li>• Measurement of the heart rate.</li> <li>• Demonstration of venous valves.</li> <li>• Effect of gravity on the content of the blood in the veins.</li> </ul>	4	Bartošíková Nečas
4	10.-16.10.	<b>Introduction to practical training :</b> Electrocardiography (ECG), the genesis of the ECG. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• recording and evaluation of ECG</li> <li>• calculation of average heart rate</li> <li>• construction of the electrical heart axis</li> </ul>	4	Bartošíková Nečas
5	17.-23.10.	<b>Introduction to practical training :</b> Blood flow, blood pressure and resistance. Methods of measuring blood pressure. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• Determination of blood pressure by means of the auscultatory and the palpation method.</li> <li>• Pulse examination.</li> <li>• Effect of gravity on blood pressure.</li> </ul>	4	Bartošíková Nečas
6	24.-30.10.	<b>Introduction to practical training :</b> Response of cardiovascular system to exercise. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• Functional tests of the cardiovascular system – Flack’s test, Ljanov’s test, Step test, Ruffier’s test, Letunov’s test .</li> </ul>	4	Bartošíková Nečas
7	31.10.-	<b>Introduction to practical training :</b>	4	Bartošíková

	06.11.	Lung volumes and capacities. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• nomograms</li> </ul> voluntary apnoea State Holiday 28. 10.		Nečas
8	07.-13.11.	<b>Introduction to practical training:</b> The transport of O <sub>2</sub> and CO <sub>2</sub> . Respiratory control. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• determination of forced vital capacity and forced expiratory volume (FEV<sub>1</sub>)</li> </ul> determination of maximal voluntary ventilation (MVV) and breathe reserve	4	Bartošíková Nečas
9	14.-20.11.	<b>Introduction to practical training :</b> Multiple-choice <b>Test I.</b> <b>Physiology of cardiovascular system.</b>	4	Bartošíková Nečas
10	21.-27.11.	<b>Introduction to practical training :</b> Energy intake and energy expenditure. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• determination of BMR according H-B formula</li> <li>• determination of BMI</li> <li>• determination of circumference of the waist</li> <li>• determination of WHR – waist hip ratio</li> </ul> determination of glycaemia	4	Bartošíková Nečas
11	28.11.- 04.12.	<b>Introduction to practical training :</b> Renal physiology I. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• kidney functional tests - glomerular filtration, renal plasma flow, renal blood flow, maximal tubular transport</li> </ul>	4	Bartošíková Nečas
12	05.-11.12.	<b>Introduction to practical training :</b> Renal Physiology II. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• urinalysis – chemical tests, microscopic examination</li> </ul>	4	Bartošíková Nečas
13	12.-18.12.	<b>Introduction to practical training :</b> Water balance. Minerals. <b>Exercise:</b> <ul style="list-style-type: none"> <li>• Presentations of students.</li> </ul>	4	Bartošíková Nečas
14	19.-25.12.	<b>Introduction to practical training :</b> Substitutions.	4	Bartošíková Nečas
15	02.-08.01. 2023	<b>Exercise:</b> Final assessment (interview). Credit.	4	Bartošíková Nečas

<b>Completed by :</b>	Zp (zápočet/credit)
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<b>Requirements :</b>	To get a credit, the students must take part in all seminars, all practical training, pass all the tests successfully, be interested in practical topics, use practical methods and put down notes.
<b>Literature :</b>	<p><b>a) basic</b></p> <ol style="list-style-type: none"> <li>1. Arthur C. Guyton, John E. Hall: Textbook of Medical Physiology, ed.: W. B. Saunders Comp., 11<sup>th</sup> ed., 2005.</li> <li>2. John E. Hall.: Guyton and Hall Textbook of Medical Physiology, ed.: Saunders Elsevier, 12<sup>th</sup> ed., 2011.</li> <li>3. John E. Hall.: Guyton and Hall Textbook of Medical Physiology, ed.: Elsevier, 13<sup>th</sup> ed., 2016.</li> <li>4. Bartošíková L., Luža J., Nečas J.: Practical Physiology, ed.: Palacký University Olomouc, 1<sup>st</sup> ed., 2009.</li> </ol> <p><b>b) additional</b></p> <ol style="list-style-type: none"> <li>1. William F. Ganong: Review of Medical Physiology, eds.: The McGraw-Hill Companies, Inc., 22<sup>nd</sup> ed., 2005.</li> </ol>