

<b>Program of Study</b>	<b>:</b>	<b>GENERAL MEDICINE</b>
<b>Course</b>	<b>:</b>	<b>PATHOLOGICAL PHYSIOLOGY</b>
<b>Abbreviation</b>	<b>:</b>	<b>PFY/VAB11</b>
<b>Schedule</b>	<b>:</b>	<b>30 hours of lectures</b> <b>60 hours of exercises</b>
<b>Course Distribution</b>	<b>:</b>	<b>3<sup>rd</sup> year, 6<sup>th</sup> semester</b>
<b>Number of Credits</b>	<b>:</b>	<b>10</b>
<b>Course Form</b>	<b>:</b>	<b>Lectures, Exercises</b>

### **Learning objectives**

#### **On the 2nd course of Pathological Physiology students will**

- learn molecular, cellular, organ and systemic mechanisms of etiology and pathogenesis of major medical symptoms, syndromes, and diseases of respiratory, cardiovascular, endocrine systems and kidneys,
- learn to analyze role of different risk factors in pathogenesis of atherosclerosis, arterial hypertension, coronary heart disease, bronchial asthma, chronic obstructive pulmonary disease, diabetes mellitus, circulatory, respiratory and kidney failure and other important medical conditions,
- *learn connections between pathophysiology and clinical disciplines on the base of relevant uncomplicated clinical cases.*

### **Learning outcomes**

#### **After completing the course students should be able to**

- discuss etiology and pathogenesis of major human diseases
- *apply acquired knowledge for interpretation of uncomplicated clinical cases of patients with disorders of respiratory, cardiovascular, endocrine systems and kidneys (including clinical cases on simulators)*
- understand principles of interpretation of the major laboratory tests and other diagnostic procedures related to the above mentioned disorders
- understand principles of treatment of disorders of respiratory, cardiovascular, endocrine systems and kidneys,
- discuss principles of diagnostics and treatment of patients in sepsis, shock, coma, multiple organ dysfunction syndrome and other severe pathological states,
- understand how the various organ systems are interrelated, and use this understanding to promote their future integrative approach towards the evaluation of patient disease and delineating basic treatment principle(s),
- read, understand, and critically evaluate articles from general medical journals (intermediate level) related to pathophysiology.

**Lectures:**

Teacher: Professor(s) of the department, event. guest teachers  
 Study: Continuous  
 Time: 13:00 – 14:30 (Mondays)  
 Location: Left Lecture Hall

	Date	Title	Duration (hrs. )
1	15. 2. 2021	Pathophysiology of respiratory system I.	2
2	22. 2. 2021	Pathophysiology of respiratory system II.	2
3	1. 3. 2021	Pathophysiology of symptoms of respiratory system.	2
4	8. 3. 2021	Pathophysiology of coronary heart disease.	2
5	15. 3. 2021	Pathophysiology of blood pressure.	2
6	22. 3. 2021	Pathophysiology of cardiac failure.	2
7	29. 3. 2021	Pathophysiology of shocks.	2
8	5. 4. 2021	<b>Holiday.</b>	2
9	12. 4. 2021	Pathophysiology of the symptoms of the cardiovascular diseases.	2
10	19. 4. 2021	Pathophysiology of kidney failure.	2
11	26. 4. 2021	Pathophysiology of endocrine disorders.	2
12	3. 5. 2021	Pathophysiology of diabetes mellitus.	2
13	10. 5. 2021	Pathophysiology of Ca, P balance. Pathophysiology of bone. Connective tissue disorders.	2
14	17. 5. 2021	Stress. General adaptation syndrome.	2
15	24. 5. 2021	Summary overview for summer semester.	2

**Exercises:**

Teacher: Assistant Profs. / Lecturers  
 Study: Continuous

	Date	Title	Duration (hrs. )
1	17. – 18. 2. 2021	Hypoxia. Respiratory system disorders I. <i>Principles of pulse oximetry.</i>	4
2	24. – 25. 2. 2021	Respiratory system disorders II.	4
3	3. – 4. 3. 2021	Pathophysiology of atherosclerosis, obesity, metabolic syndrome. <i>Analysis of body composition by bioelectrical impedance.</i>	4
4	10. – 11. 3. 2021	ECG assessment basics I. Pathophysiology of arrhythmias. <b>Midterm test No. 1 (content of exercises No. 1-3 and lectures No. 1-3).</b>	4
5	17. – 18. 3. 2021	ECG assessment basics II. Pathophysiology of coronary heart disease. <i>ECG interpretation of fundamental pathological states.</i>	4
6	24. – 25. 3. 2021	Pathophysiology of changes in blood pressure. <i>Discussion of pathophysiological mechanisms using simulator (run A, date subject to change.)</i>	4

7	31. 3. – 1. 4. 2021	Pathophysiology of heart failure. Cardiac overload.	4
8	7. – 8. 4. 2021	<i>Pathophysiological interpretation of the clinical cases (respiratory and cardiovascular system). Analysis of Heart Rate Variability. Bicycle ergometer exercise test.</i> Midterm test No. 2 (content of exercises No. 4-7 and lectures No. 4-6).	4
9	14. – 15. 4. 2021	Pathophysiology of critical states. Shock, coma and seizures. Falls.	4
10	21. – 22. 4. 2021	Disturbances of kidney functions.	4
11	28. – 29. 4. 2021	Pathophysiology of the endocrine system. Midterm test No. 3 (content of practical exercises No. 9-10 and lectures No. 7-9). <i>Discussion of pathophysiological mechanisms using simulator (run B, date subject to change).</i>	4
12	5. – 6. 5. 2021	Pathophysiology of diabetes mellitus.	4
13	12. – 13. 5. 2021	Pathophysiology of diabetic comas. Urgent states in endocrinology.	4
14	19. – 20. 5. 2021	Pathophysiological interpretation of the clinical cases (topics 9-13), <i>discussion of simplified cases with illustrative symptoms of various clinical and laboratory disorders.</i> Midterm test No. 4 (content of practical exercises No. 11 - 13 and lectures No. 10-14)	4
15	26. – 27. 5. 2021	Credit. Credit test. Substitutions of absences confirmed by relevant document.	4

The practical exercises are held in the seminar room of the Department of Pathophysiology on Wednesday from 13.45 p.m. to 16.45 p.m. - group B and on Thursdays, from 7.15 a.m. to 10.15 a.m. - group A; from 10.30 a.m. to 13.30 p.m. - group C.

### Completed by: Credit; exam

#### Credit conditions are as follows:

1. In accordance with Directive of the dean of the faculty of medicine and dentistry LF-B-18/14, article 7. item 1, Department sets the following limit for absences: 6 teaching hours (10%, this means 1 whole and 0.5 exercises) without apologies. Substitutions are provided at the 15th week of the study.
2. Credit will be granted upon successful answering 2/3 of questions from the respective term topics in the final test in the 15th week of the term. To take (or retake) the Credit students must register on STAG.
3. *Midterm tests and credit test contain questions from the theoretical and practical part of teaching; part of the exam is a discussion of pathophysiological mechanisms based on teaching on a simulator, or a discussion of simplified clinical cases.*
4. There are two possibilities for correction of unsuccessful credit test; after that, at the discretion of the department, opportunity for oral correction with at least two teachers will be considered.
5. Unpreparedness of the student, i.e. the basic deficit in knowledge of the material discussed in the previous Pathophysiology lessons or crucial deficits from previous subjects, especially Physiology, Biochemistry, Histology, Anatomy, etc., can be a reason for exclusion from the lesson.

*The conditions for granting the credit will be specified during the course of teaching, in connection with the development of the epidemiological situation. Similarly, the rules for the realization of the exam will be specified at the beginning of the respective semester and may be subject to partial changes.*

**Literature:**

1. Porth's Pathophysiology: Concepts of Altered Health States (9th Edition) by Sheila Grossman, Carol Mattson Porth. Wolters Kluwer Health | Lippincott Williams & Wilkins, 2014.
2. McCance K. L., Huether S. E.: Pathophysiology. 8th Edition. Mosby, 2018.
3. Silbernagl S, Lang F. Color Atlas of Pathophysiology, 3rd Ed. Thieme, 2016.
4. <https://pfyziol.upol.cz/>

For revision e.g. S.Silbernagl, A.Despopoulos. Color Atlas of Physiology. 7th edition. Thieme 2015