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

Learning objectives

In 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 the role of different risk factors in the 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 model 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 model cases of patients with disorders of respiratory, cardiovascular, endocrine systems and kidneys (including model 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	13. 2. 2023	The use of simulation in the teaching of Pathological Physiology.	2
2	20. 2. 2023	Pathophysiology of respiratory system I.	2
3	27. 2. 2023	Pathophysiology of respiratory system II.	2
4	6. 3. 2023	Pathophysiology of coronary heart disease.	2
5	13. 3. 2023	Pathophysiology of blood pressure.	2
6	20. 3. 2023	Pathophysiology of cardiac failure.	2
7	27. 3. 2023	Pathophysiology of shocks.	2
8	3. 4. 2023	Pathophysiology of the symptoms of cardiovascular diseases.	2
9	10. 4. 2023	Holiday.	2
10	17. 4. 2023	Pathophysiology of kidney failure.	2
11	24. 4. 2023	Pathophysiology of endocrine disorders.	2
12	1. 5. 2023	Holiday. Pathophysiology of diabetes mellitus.	2
13	8. 5. 2023	Holiday. Pathophysiology of Ca, P balance. Pathophysiology of bone. Connective tissue disorders.	2
14	15. 5. 2023	Stress. General adaptation syndrome.	2
15	22. 5. 2023	Summary overview for the summer semester.	2

Exercises:

Teacher: **Assistant Profs. / Lecturers**
Study: **Continuous**

	Date	Title	Duration (hrs.)
1	16. 2. 2023	Hypoxia. Respiratory system disorders I. *(Principles of pulse oximetry).*	4
2	23. 2. 2023	Respiratory system disorders II.	4
3	2. 3. 2023	Pathophysiology of atherosclerosis, obesity, metabolic syndrome. *(Analysis of body composition by bioelectrical impedance).*	4
4	9. 3. 2023	ECG assessment basics I. Pathophysiology of arrhythmias. Midterm test No. 1 (the content of weeks 12-13 WS and 1-3 SS).	4
5	16. 3. 2023	ECG assessment basics II. Pathophysiology of coronary heart disease. *ECG interpretation of fundamental pathological states.*	4

6	**23. 3. 2023**	***Pathophysiological interpretation of the model cases (respiratory and cardiovascular system).*** ***Analysis of Heart Rate Variability.*** ***Discussion of pathophysiological mechanisms using simulator.***	**4**
7	**30. 3. 2023**	**Pathophysiology of changes in blood pressure.**	**4**
8	**6. 4. 2023**	**Pathophysiology of heart failure. Cardiac overload.** **Midterm test No. 2 (the content of weeks 4-7).**	**4**
9	**13. 4. 2023**	**Pathophysiology of critical states. Shock, coma and seizures. Falls.**	**4**
10	**20. 4. 2023**	**Disturbances of kidney functions.**	**4**
11	**27. 4. 2023**	**Pathophysiology of the endocrine system.** ***Discussion of pathophysiological mechanisms using simulator.***	**4**
12	**4. 5. 2023**	**Pathophysiology of diabetes mellitus.** **Midterm test No. 3 (the content of weeks 8-11).**	**4**
13	**11. 5. 2023**	**Pathophysiology of diabetic comas. Urgent states in endocrinology.** **Credit.**	**4**
14	**18. 5. 2023**	**Pathophysiological interpretation of the model cases.** **Credit. Credit test.**	**4**
15	**25. 5. 2023**	**Credit. Credit test.** **Substitutions of absences confirmed by the relevant document.**	**4**

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

Control Midterm tests in the 4th, 8th and 12th teaching week are mandatory. The way of their implementation will be specified at the beginning of the semester.

Completed by: Credit, exam

Credit conditions are as follows:

1) 100% participation in practical exercises. The 15th teaching week is reserved for the substitution of justified absences (health or other serious reasons).

2) The readiness of students for the study course, which is continuously monitored. The unpreparedness of the student, i.e. basic ignorance from the material covered in previous lessons and also inadequate knowledge of basic of physiology, biochemistry, etc., may be a reason for exclusion from the lesson and the need to substitute it after the student adequately prepares.

3) Compulsory completion of all three control Midterm tests in terms specified in the syllabi (in case of duly excused absence due to health or other serious reasons, the test will be substituted in term by agreement with the assistant professor) with a total average success rate of at least 2/3 (i.e. a total average of at least 66.7%).

4) Passing a credit test with the possibility of two retakes in the form of an oral discussion.

Midterm tests and credit test contain questions from the theoretical and practical part of the study course, including a discussion of pathophysiological mechanisms based on teaching on a simulator, eventually a discussion of simplified model cases.

Note: It cannot be ruled out that the form of practical teaching and the implementation of the end of the semester may be subject to partial changes, e.g., in connection with the epidemiological situation.

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. Silbernagl S, Despopoulos A. Color Atlas of Physiology. 7th edition. Thieme, 2015.