

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

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
- 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 dept., event. guest teachers
Study: Continuous
Time 13:00 – 14:30 (Mondays)
Location: Left Lecture Hall

	Date	Title	Duration (hrs.)
1	10. 2. 2020	Pathophysiology of respiratory system I.	2
2	17. 2. 2020	Pathophysiology of respiratory system II.	2
3	24. 2. 2020	Pathophysiology of symptoms of respiratory system.	2
4	2. 3. 2020	Pathophysiology of coronary heart disease.	2
5	9. 3. 2020	Pathophysiology of blood pressure.	2
6	16. 3. 2020	Pathophysiology of cardiac failure.	2
7	23. 3. 2020	Pathophysiology of shocks.	2
8	30. 3. 2020	Pathophysiology of the symptoms of the cardiovascular diseases.	2
9	6. 4. 2020	Pathophysiology of kidney failure.	2
10	13. 4. 2020	Holiday.	2
11	20. 4. 2020	Pathophysiology of endocrine disorders.	2
12	27. 4. 2020	Pathophysiology of diabetes mellitus.	2
13	4. 5. 2020	Pathophysiology of Ca, P balance. Pathophysiology of bone. Connective tissue disorders.	2
14	11. 5. 2020	Stress. General adaptation syndrome.	2
15	18. 5. 2020	Summary overview for summer semester.	2

Exercises:

Teacher: Assistant Profs. / Lecturers
Study: Continuous

	Date	Title	Duration (hrs.)
1	12. – 13. 2. 2020	Hypoxia. Respiratory system disorders I. Principles of pulse oximetry.	4
2	19. – 20. 2. 2020	Respiratory system disorders II.	4
3	26. 2. – 27. 2. 2020	Pathophysiology of atherosclerosis, obesity, metabolic syndrome.	4
4	4. – 5. 3. 2020	ECG assessment basics I. Pathophysiology of arrhythmias. Midterm test No. 1 (content of exercises No. 1-3 and lectures No. 1-3). ECG interpretation of fundamental pathological states.	4
5	11. – 12. 3. 2020	ECG assessment basics II. Pathophysiology of coronary heart disease. Exercise tolerance bicycle ergometry test.	4
6	18. – 19. 3. 2020	Pathophysiology of changes in blood pressure. Discussion of pathophysiological mechanisms using simulator (run A).	4
7	25. – 26. 3. 2020	Pathophysiology of heart failure. Cardiac overload.	4

8	1. – 2. 4. 2020	Pathophysiological interpretation of the clinical cases (respiratory and cardiovascular system). Analysis of Heart Rate Variability. Midterm test No. 2 (content of exercises No. 4-7 and lectures No. 4-6).	4
9	8. – 9. 4. 2020	Pathophysiology of critical states. Shock, coma and seizures. Falls.	4
10	15. – 16. 4. 2020	Disturbances of kidney functions.	4
11	22. – 23. 4. 2020	Pathophysiology of the endocrine system. Midterm test No. 3 (content of practical exercises No. 9-10 and lectures No. 7-9). Discussion of pathophysiological mechanisms using simulator (run B).	4
12	29. – 30. 4. 2020	Pathophysiology of diabetes mellitus.	4
13	6. – 7. 5. 2020	Pathophysiology of diabetic comas. Urgent states in endocrinology.	4
14	13. – 14. 5. 2020	Pathophysiological interpretation of the clinical cases (content of practical exercise 9-13). Midterm test No. 4 (content of practical exercises No. 11 - 13 and lectures No. 10-14)	4
15	20. – 21. 5. 2020	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:

- 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%) without apologies. Substitutions are provided at the 15th week of the study.
- 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, and
 - discussion of the practical issues of pathophysiology, related to respective term topics, with the lecturers of the department

To take (or retake) the Credit students must register on STAG.
- For students, who demonstrated continuous involvement during the term by actively participating in lessons and in addition, in the midterm tests achieved minimum 60% with average score over 2/3 of all tests*, final test (item 2.a) will not be mandatory, final discussion with the lecturers will be on the 15th week of the term.
- 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.
- 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.

* Students have possibility to retake 1 Midterm test during semester, extra bonus of up to 10% of average score can be earned by presenting a topic selected from department list.

Exam:

The exam begins with a written part on the computer. Registration for the date and time in STAG means the written part of the exam. The oral part of the exam may take place on a same day (morning/afternoon) or during the following day.

The condition for passing the exam is success in both parts of the exam; answering at least 60% of the questions in the writing part of the exam.

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