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| <b>Program of Study</b>    | <b>:</b> | <b>DENTISTRY</b>  |
| <b>Course</b>              | <b>:</b> | <b>PATHOLOGICAL PHYSIOLOGY 1</b>                            |
| <b>Abbreviation</b>        | <b>:</b> | <b>PFY/ZAB11</b>  |
| <b>Schedule</b>            | <b>:</b> | <b>30 hours of lectures</b><br><b>45 hours of exercises</b> |
| <b>Course distribution</b> | <b>:</b> | <b>2<sup>rd</sup> year, 4<sup>th</sup> semester</b>         |
| <b>Number of Credits</b>   | <b>:</b> | <b>0</b>  |
| <b>Course Form</b>         | <b>:</b> | <b>Lectures, exercises</b>                                  |

### **Learning objectives**

#### **On the course of Pathological Physiology 1 students will**

- acquire knowledge about role of genetic, aging and environmental factors in development of pathological states and diseases with emphasis on the disorders of orofacial area;
- study molecular, cellular, organ and systemic mechanisms of pathogenesis of major medical symptoms, syndromes, and diseases including:
  - o inflammation, fever, disorders of water, ion and acid-base balance
  - o typical disorders of the blood and haemostasis
  - o major disorders and diseases of respiratory and cardiovascular system
- learn basic clinical terminology and important connections between pathophysiology and clinical disciplines
- study relationships between local disorders of oral cavity and disorders of blood, cardiovascular and respiratory systems

### **Learning outcomes**

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

- demonstrate a basic understanding of the concepts and elements of disease
- discuss etiology, pathogenesis, major clinical and laboratory manifestations of typical pathological processes providing examples related to orofacial area
- learn to analyze role of different risk factors in pathogenesis of arterial hypertension, coronary heart disease, bronchial asthma, chronic obstructive pulmonary disease, circulatory, respiratory failure
- apply acquired knowledge for interpretation of basic clinical cases of patients with disorders of blood, coagulation, cardiovascular and respiratory systems, especially related to disorders of orofacial area
- understand the basis for major laboratory tests and other diagnostic procedures related to above mentioned disorders
- understand principles of treatment of disorders of blood, coagulation, cardiovascular and respiratory systems
- discuss principles of diagnostics and treatment of patients in sepsis, shock, coma

- make correlations between pathophysiology and clinical skills they are learning in their allied health science programs.

### Lectures:

**Teacher:** Professor(s) of the dept., event. guest teachers

**Study:** Continuous

|    | Date        | Subjects  | Duration (hrs) |
|----|-------------|---|----------------|
| 1  | 15. 2. 2021 | Introduction. General mechanisms of disease.                            | 2              |
| 2  | 22. 2. 2021 | Pathogenetic principles at gene level.                                  | 2              |
| 3  | 1. 3. 2021  | Pathophysiology of water and salt balance.                              | 2              |
| 4  | 8. 3. 2021  | Acid-base disturbances.   | 2              |
| 5  | 15. 3. 2021 | Pathophysiology of respiratory system I.                                | 2              |
| 6  | 22. 3. 2021 | Pathophysiology of respiratory system II.                               | 2              |
| 7  | 29. 3. 2021 | Pathophysiology of coronary heart disease.                              | 2              |
| 8  | 5. 4. 2021  | Holiday.  | 2              |
| 9  | 12. 4. 2021 | Pathophysiology of the heart failure.                                   | 2              |
| 10 | 19. 4. 2021 | Pathophysiology of aging.   | 2              |
| 11 | 26. 4. 2021 | Pathophysiology of critical states.                                     | 2              |
| 12 | 3. 5. 2021  | Pathophysiology of blood and haemopoetic tissues.                       | 2              |
| 13 | 10. 5. 2021 | Pathophysiology of clotting.  | 2              |
| 14 | 17. 5. 2021 | Pathophysiology of the immune system.                                   | 2              |
| 15 | 24. 5. 2021 | Localized and generalized disease manifestations in the orofacial area. | 2              |

The lectures are held on Mondays from 8.00 a.m. to 9.30 a.m. in the room No. 2.517 (Theoretical Institutes - New Building).

### Exercises:

**Teacher:** Assistant Profs./Lecturers

**Study :** Continuous

|   | Week from-to | Subject   | Duration (hrs) |
|---|--------------|---|----------------|
| 1 | 15. 2. 2021  | Introduction. General mechanisms of disease. Fever.   | 3              |
| 2 | 22. 2. 2021  | Pathophysiology of reactivity I.  | 3              |
| 3 | 1. 3. 2021   | Pathophysiology of reactivity II.   | 3              |
| 4 | 8. 3. 2021   | Pathophysiology of water and salt balance.  | 3              |
| 5 | 15. 3. 2021  | Acid-base disturbances. Examination of lactate, principles and applications in diagnostics.   | 3              |
| 6 | 22. 3. 2021  | Hypoxia. Respiratory system disorders I. <b>Midterm test No. 1 (content of exercises No. 1-5 and lectures No. 1-4).</b> Principles of pulse oximetry. | 3              |
| 7 | 29. 3. 2021  | Respiratory system disorders II.  | 3              |

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|----|-------------|--|---|
| 8  | 5. 4. 2021  | <b>Holiday. ECG interpretation basics.</b>   | 3 |
| 9  | 12. 4. 2021 | <b>Pathophysiology of coronary heart disease. Exercise tolerance bicycle ergometry test.</b>                                       | 3 |
| 10 | 19. 4. 2021 | <b>Pathophysiology of changes in blood pressure.</b>   | 3 |
| 11 | 26. 4. 2021 | <b>Pathophysiology of heart failure. Cardiac overload. Midterm test No. 2 (content of exercises No. 6-9 and lectures No. 5-8).</b> | 3 |
| 12 | 3. 5. 2021  | <b>Pathophysiology of critical states. Shock, coma and seizures. Falls.</b>  | 3 |
| 13 | 10. 5. 2021 | <b>Pathophysiology of blood and haemopoetic tissues.</b>   | 3 |
| 14 | 17. 5. 2021 | <b>Pathophysiology of blood clotting. Midterm test No. 3 (content of exercises No. 10-13 and lecture No. 9-12).</b>                | 3 |
| 15 | 24. 5. 2021 | <b>Credit. Credit test. Substitutions of absences confirmed by relevant document.</b>  | 3 |

**\* Materials for self-study will be supplied by the department. Students are encouraged to discuss the topic in consultation hours at the department.**

**The exercises are held on Mondays from 9.45 a.m. to 12.00 a.m. in the room No. 2. 517 (Theoretical Institutes - New Building).**

### **Completed by: Credit**

**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: **4,5 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 on the computer in the 15th week of the term. To take (or re-take) the Credit final test students must register on STAG.
- 3) 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.
- 4) 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.*

### **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. 8<sup>th</sup> Edition. Mosby, 2018.
3. Silbernagl S, Lang F. Color Atlas of Pathophysiology, 3rd Ed. Thieme, 2016.
4. <http://pfyziol.upol.cz>