Faculty of Medicine, University of Mostar
Course: Pathophysiology
Course Coordinator: Zlatko Trobonjača, MD, PhD, Full Professor
Study: Study of Medicine in English
Year of the study: Third
Academic year: 2021/2022

COURSE SYLLABUS

Course information (basic description, general information, teaching overview, required equipment, and preparation, etc.):

The **main aim of this course** is to enable students to apply the previously acquired knowledge from all subjects of the first two years of study, especially from the course of Physiology, in order to acquire knowledge about pathological function of certain organ systems and etiopathogenetic mechanisms leading to dysfunction and disease occurrence.

The course is performed in the winter semester at the third year of study, in the form of lectures (34 teaching hours), seminars (60 teaching hours), and practicals (30 teaching hours). Lectures last 2, and seminars and practicals 3 teaching hours. A) *Lectures* are a form of classes that provide an introduction and an overview of a thematic unit that is taught in more detail on seminars and practicals. **B)** *Seminars* and **C)** *practicals* are a form of classes where students actively **review** and **critically discuss** physiological and pathophysiological mechanisms (of certain morphological and functional units), which are then explained at the molecular, microenvironmental, organic, systemic and whole-organism level. Active participation of students in the curriculum program is further achieved by **D)** studying natural integrators of etiopathogenetic events, the so-called etiopathogenetic clusters, **E)** performing practicals in the laboratory and on computer programs that simulate pathological conditions and provide clinical correlates of certain diseases

Class attendance and student participation in all forms of classes are compulsory in accordance with the Law and the Statute of the Faculty of Medicine in Rijeka. Accordingly, student attendance at lectures, seminars, and practicals will be regularly checked. Only justifiable absences due to, for example, illness will be acceptable within the limits allowed and according to the Ordinance on Studies.

The student is obligated to prepare in advance the predefined material that is being discussed on seminars and practicals. The teacher/course coordinator continuously evaluates student participation throughout seminars and practicals (demonstrated knowledge, the ability to correlate morphological, ultrastructural, biochemical and/or functional factors into a complete image of physiological functional systems and certain diseased states). Student activity during classes (lectures, seminars, practicals) is certified in the daily work log

Required reading:

1. **Guyton A.C., Hall J.E. Textbook of Medical Physiology** (13th edition), Elsevier, 2016.
2. **Gamulin S., Marušić M., Kovač Z. Pathophysiology** (7th edition), Medicinska naklada Zagreb, 2014.
3. **Kovač Z. et al. Clinical Pathophysiology – Etiopathogenetic Nodes** (Third Book: I-IV part). Medicinska naklada Zagreb 2013.

Recommended for additional reading:

1. **Ganong, W.F. Review of Medical Physiology,** (21st edition) Lange Medical Books / McGraw-Hill, Medical Pub. Division, New York 2004.
2. **Vrhovac B. et al. Interna medicina [Internal Medicine],** (4th edition), Naklada Ljevak, Zagreb 2008.
3. **3. McPhee,S.J, Ganong, W.F. Pathophysiology of Disease. An introduction to Clinical medicine,** (5th edition), Lange Medical Books / McGraw-Hill, Medical Pub. Division, New York 2006.

Course teaching plan:
List of lectures:

Lecture 1: Introduction to pathophysiology. General causes and development of pathophysiological processes. Homeostatic maintenance and disorders. Health and disease. An integrative approach to the disease.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 19.-38.

Lecture 2: Principles of the pathogenetic mechanisms.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 38.-74.

Lecture 3: Inflammation.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 760.-803.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 455.-463.

Lecture 4: Endogenous bioactive compaunds in disease processes.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 551.-611.

Lecture 5: Immunopathophysiology. Immunopathogenetic role of the HLA system. Tissue transplant reactions.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 682-695 and 739.-753.

Lecture 6: Immunodeficiencies. Autoimmunity.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 705.-733.

Lecture 7: Malignant transformation and growth. Disorders of energy metabolism.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 208-246 and 938.-988.

Lecture 8: Red blood cells disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1148.-1164.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 452.-453.

Lecture 9: White blood cells disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1164.-1180.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 463.-464..

Lecture 10: Disorders of myocardial function. Disorders of the heart valve function. Congenital heart defects. Cardiac filling disorders. Cardiac output disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1209.-1239., 1267.-1271. and 1302.-1309.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 248.-258. and 283.-291.

Lecture 11. The coronary circulation and ischemic heart disease.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1253.-1267.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 262.-269.

Lecture 12. Disorders of arterial pressure. Hypertension. Local tissue perfusion disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1309.-1326. i 1333.-1348.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 232.-241.

Lecture 13. Circulatory Shock.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 843.-861.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 293.-302.

Lecture 14. Overview of the renal functions disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1388.-1434.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 427.-441.

Lecture 15. Overview of the respiratory system disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1351.-1385.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 549.-557.

Lecture 16. Chronobiological pathophysiology.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 885.-933.

Lecture 17. Pathophysiology of gastrointestinal system.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1453.-1487.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 843.-849.

Lecture 18. Disorders of pancreatic endocrine function. Diabetes mellitus.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 250.-265. and 536.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 994.-999.

Lecture 19. Integral organismic reactions to noxious stimuli.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 804.-841.

Lecture 20. Causes of endocrinopathies. Disorders of pituitary function. Thyroid gland disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 494.-526.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 946.-948. i 959.-963.

Lecture 21. Functional disorders of the cortex and medulla of the adrenal gland.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 526.-536.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 979.-981.

Lecture 22. Disorders of gonadal function.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 539.-544.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages:1033.-1034. and 1051.-1054

Lecture 23. Disorders of parathyroid glands function. Disorders of calcium, phosphate and magnesium metabolism.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 424.-438. and 536.-539. and 354
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages:1014.-1016.

List of seminars:

Seminar 1: Pathophysiology of DNA: DNA damages, chromosomal aberrations, genomic instability. Gene expression disorders. Hereditary metabolic disases.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 77.-151.

Seminar 2: Functional disorders of subcellular structures.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 160.-201.

Seminar 3: Function and composition disorders of blood and hematopoetic organs.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1148.-1194.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 452.-453. and 490.-493.

Seminar 4: Immune hypersensitivities and transfusion reactions.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 733.-739. i 749.-753.

Seminar 5. Disorders of impulse conduction. Heart rhytm disorders. Heart adaptation to the functional load.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1239.-1253. i 1271.-1281.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 155.-165.

Seminar 6. Cardiac Failure.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1281.-1294.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 271.-280.

Seminar 7. Disorders of arterial pressure and blood flow.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1309.-1344.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 232.-241.

Seminar 8. Circulatory Shock.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 843.-861.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 293.-302.

Seminar 9. Disorders of osmolality and hydration of the body. Disorders of extracellular fluid distribution.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 383.-403.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 312.-320.

Seminar 10. Disorders of urine quantity and composition.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1434.-1445.

Seminar 11. Pathophysiology of the respiratory system.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1351.-1385..
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 549.-557. and 515.

Seminar 12. Disorders of electrolytic homeostasis.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 403.-424.

Seminar 13. Acid-base balance disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 449.-487.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 421.-426.

Seminar 14. Disorders of metabolism of proteins and carbohydrates. Disorders of dietary balances.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 250.-265. i 291.-308. i 223.-234.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 894.-897.

Seminar 15. Lipid metabolism disorders. Atherosclerosis.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 265.-291.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 994.-999. i 872.-874.

Seminar 16. Pathophysiology of the liver.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1493.-1536.

Seminar 17. Disorders of energy metabolism. Disorders of thermoregulation.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 208.-246. and 661.-681.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 919.-922.

Seminar 18. Disorders of specific metabolic substances.

Material:

Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 328.-376.

Seminar 19. Structural and functional disorders of connective and bone tissue.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1125.-1144.

Seminar 20. Disorders of neurovegetative regulation. Disorders of consciousness.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 614.-635. i 864.-881.

List of practicals:

Practical 1: Leukocytes and the monocyte-macrophage system disorders. Biological etiological factors.

The pathogenesis of multiple organ failure, sepsis and SIRS

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1164.-1180. i 1088.-1122.

Practical 2. Physical and chemical etiological factors.

Mushroom poisoning-acute liver failure

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 993.-1043. i 1050.-1085.

Practical 3: Disorders of the composition and structure of plasma protein. Function disorders of the spleen. Haematological laboratory tests.

Pathological fracture + Hyperviscosity of blood

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1194.-1206.

Practical 4: Hemostasis and blood clotting disorders.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1180.-1194.

Practical 5. Electrocardiographic interpretation of disorders of the heart muscle and coronary circulation - Vectorial analysis

Material:
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 139.-153.

Practical 6. Cardiac arrhythmias and their electrocardiographic Interpretation. Pathological electrocardiogram.

Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1239.-1253.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 155.-165.

Practical 7. Disorders of the digestive system and metabolism.
I. Teoretical part:
To understand the material discussed in lectures (L17.) and seminars (S14., S15, S16.). This material comprises the pathophysiology of the digestive system, impaired metabolism of proteins, carbohydrates and lipids, and nutritive disorders.
Etiopathogenetic cases:
a) Pathophysiology of gluten enteropathy.
b) Pathogenesis of diarrhea in cholera syndrome
c) Pathophysiology of peptic disease in gastrinoma (Zollinger - Ellis syndrome).

Etiopathogenetic nodes: Hypoglycemia + Hyperglycemia

Material:

Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 250.-314. and 1453.-1487.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 846.-849. i 872.-874. i 894.-897. i 994.-999.

Practical 8. Pathophysiology of the liver and exocrine pancreas.
I. Teoretical part:
To understand the material discussed in the lecture and seminar (L17 and S16). This material covers the field of pathophysiology of the hepatobiliary system and the field of pathophysiology of the exocrine pancreas.
Etiopathogenetic cases:
a) Pathophysiology of liver cirrhosis.
b) Pathophysiology of obstructive jaundice caused by cholelithiasis.
Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 1493.-1537. i 1474.-1478.

Practical 9. Disorders of conception, pregnancy, fetal growth and development. Disorders of sexual function.
I. Teoretical part:
To understand the material discussed in the lecture (L21.). This material covers the area of pathophysiology of reproductive functions and sex hormones.
Etiopathogenetic cases:
a) Pathophysiology of postmenopausal osteoporosis.
Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 539.-544. i 885.-919.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 1051.-1053.

Practical 10. Endocrinopathies.
I. Teoretical part:
Understand the material discussed in the lectures (contents L19., L20., L21 and L22.) This material covers the field of pathophysiology of general endocrinology, pituitary hormones, metabolic hormones of the thyroid gland, adrenal cortex hormones, parathyroid hormone and calcitonin.
Etiopathogenetic cases:
a) Pathophysiology of hyperfunctional thyroid adenoma.
Material:
Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.
Pages: 497.-539.
Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016. Pages: 946.-948. i 960.-963. i 979.-981. i 1014.-1016.

Exam (exam taking, detailed exam description of the oral/written/practical part, point distribution, grading criteria):

Student work will be evaluated during classes and at the final exam. A maximum of **(I) 30 grade points** can be obtained during classes and up to **(II) 70 grade points** at the final exam, which totals **100 grade points**.

I. The following components are evaluated during classes (up to 30 grade points):

1) acquired knowledge **(up to 20 grade points)**
2) active participation in classes **(up to 10 grade points)**

1) acquired knowledge (up to 20 grade points)

During classes, acquired knowledge will be evaluated by means of **two midterm tests comprising 50 questions.** Test will be held on:

(I) 14. january 2022. from 10,30 to 11,30 hours

(II) 28. january 2022. from 13,00 do 14,00 hours

A student may obtain up to **10 grade points** on each test as follows:

Correct answers	Grade points
48-50	**10**
45-47	**9**
42-44	**8**
39-41	**7**
36-38	**6**
33-35	**5**
30-32	**4**
27-29	**3**
24-26	**2**
21-23	**1**

2) active participation in classes (up to 10 grade points)

Based on oral discussions and/or written tests, student knowledge is graded at all seminar and practical classes. A students can obtain grade points during classes only if they were **graded** at least on 10 seminars and 5 practicals. Students will be graded in the range from 1 to 5. The score scale is determined according to the absolute distribution of mean values of grades, which is achieved by summing all grades from seminars and exercises (a total of 30 teaching units) and dividing by number 30 (or less if the student was justifiably absent or not graded). The obtained average grade is converted into grade points as shown in the table:

4,26-5,0	**10 points**
3,76-4,25	**8 points**
3,26-3,75	**6 points**
2,76-3,25	**4 points**
2,00-2,75	**2 points**

II. Final exam (up to 70 grade points):

The final exam consists of an oral and a written part. A student must solve **at least 50% of the test** in order to access the oral part of the final exam.

Who can NOT access the final exam:

Students who missed 30% or more teaching hours. Such a student cannot take the final exam, i.e. he/she must re-enroll the course in the following academic years.

Student can obtain a maximum of 70 grade points at the written part of the final exam (100 questions) that corresponds to the total number of grade points as shown in the table:

Correct answers	**Grade points**		Correct answers	**Grade points**
97-100	**70**		68-69	**57**
94-96	**69**		66-67	**56**
91-93	**68**		64-65	**54**
88-90	**67**		62-63	**52**
86-87	**66**		60-61	**50**
84-85	**65**		58-59	**48**
82-83	**64**		56-57	**46**
80-81	**63**		54-55	**44**
78-79	**62**		52-53	**42**
76-77	**61**		50-51	**40**
74-75	**60**		<50	**0**
72-73	**59**			
70-71	**58**			

III. The final grade (a maximum of 100 grade points)

The final grade represents the sum of all grade points obtained during classes and at the final exam. It is based on the absolute distribution according to the following scale:

A (80-100 grade points)	**excellent (5)**
B (70-79,99 grade points)	**very good (4)**
C (60-69,99 grade points)	**good (3)**
D (40-59,99 grade points)	**sufficient (2)**
F (student who has solved less than 50% of the test at the final exam)	**insufficient (1)**

IV. The final grade obtained on the written test has to be confirmed at the oral exam

Other important notes:

Exam terms: **31.01.2022.**
08.07.2022.
22.07.2022.
19.09.2022.

II

COURSE SCHEDULE

Pathophysiology

Academic year: 2021./2022.

Study: Medicine

Course Coordinator: Prof. dr. sc. Zlatko Trobonjača, dr. med.

Date	Title of Lectures / Seminars / Practicals	Teaching	Groups	Lecturer
06. 12. 2021. Lect 1 (08,30-10,00)	**Introduction to pathophysiology. General causes and development of pathophysiological processes. Homeostatic maintenance and disorders. Health and disease. An integrative approach to the disease.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
06.12. 2021. Sem1 (13,00-15,15)	**Pathophysiology of DNA: DNA damages, chromosomal aberrations, genomic instability. Gene expression disorders. Hereditary metabolic diseases.**	On-site	Group A	Mr. sc. Borko Rajić, dr. med.
06. 12. 2021. Pract 1 (15,30-17,45)	**Leukocytes and the monocyte-macrophage system disorders. Biological etiological factors.**	On-site	Group A	Mr. sc. Borko Rajić, dr. med.
07.12.2021. Lect 2 (08,30-10,00)	**Principles of the pathogenetic mechanisms.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
07. 12. 2021. Pract 2 (11,00-13,15)	**Physical and chemical etiological factors.**	On-site	Group A	Ivana Bjelanović Glibo, dr. med.
08.12.2021. Lect 3 (08,30-10,00)	**Inflammation.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
08.12.2021. Sem 2 (11,00-13,15)	**Functional disorders of subcellular structures.**	On-site	Group A	Benjamin Palić, dr. med.
09.12.2021. Lect 4 (12,15 -13,45)	**Endogenous bioactive compaunds in disease processes.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
09.12.2021. Pract 3 (14,00-16,15)	**Disorders of the composition and structure of plasma protein. Function disorders of the spleen. Haematological laboratory tests.**	On-site	Group A	Mr. sc. Marija Šandrk, dr. med.
10.12.2021. Lect 5 (8,00-10,00)	**Immunopathophysiology. Immunopathogenetic role of the HLA system. Tissue transplant reactions.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
10.12.2021. Sem 3 (11,00-13,15)	**Function and composition disorders of blood and hematopoetic organs.**	On-site	Group A	Benjamin Palić, dr. med.
13.12.2021. Lect 6 (13,00-14,30)	**Immunodeficiencies. Autoimmunity.**	On-site	Group A	Prof. dr. sc. Zlatko Trobonjača
13.12.2021. Sem 4 (14,45-17,00)	**Immune hypersensitivities and transfusion reactions.**	On-site	Group A	Prof. dr. sc. Zlatko Trobonjača

14. 12. 2021. Lect 7 (13,00 -14,30)	**Malignant transformation and growth. Disorders of energy metabolism.**	On-site	Group A	Prof. dr. sc. Zlatko Trobonjača
14. 12. 2021. Pract 4 (14,45-17,00)	**Hemostasis and blood clotting disorders.**	On-site	Group A	Mr. sc. Marija Šandrk, dr. med.
15. 12. 2021. Lectr 8 (13,00-14,30)	**Red blood cells disorders.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
15. 12. 2021. Lect 9 (14,45-16,15)	**White blood cells disorders.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
16. 12. 2021. Lect 10 (14,00-15,30)	**Disorders of myocardial function. Disorders of the heart valve function. Congenital heart defects. Cardiac filling disorders. Cardiac output disorders.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
16. 12. 2021. Sem 5 (15,45-18,00)	**Disorders of impulse conduction. Heart rhytm disorders. Heart adaptation to the functional load.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
17. 01. 2021. Pract 5 (13,00-15,15)	**Electrocardiographic interpretation of disorders of the heart muscle and coronary circulation - Vectorial analysis**	On-line	Group A	Ante Mandić, dr. med.
17. 01. 2021. Lect 11 (15,30-17,45)	**The coronary circulation and ischemic heart disease.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
20.12.2021. Pract 6 (13,00-15,15)	**Cardiac arrhythmias and their electrocardiographic Interpretation. Pathological electrocardiogram.**	On-line	Group A	Ante Mandić, dr. med.
20. 20. 2021. Sem 6 (15,30-17,45)	**Cardiac Failure.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
21.12.2021. Sem 7 (10,15-13,30)	**Disorders of arterial pressure and blood flow.**	On-line	Group A	Mr. sc. Borko Rajić, dr. med.
21.12.2021. Lect 12 (13,45-15,15)	**Disorders of arterial pressure. Hypertension. Local tissue perfusion disorders.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
22.12.2022. Sem 9 (10,30-12,45)	**Disorders of osmolality and hydration of the body. Disorders of extracellular fluid distribution.**	On-line	Group A	Mr. sc. Borko Rajić, dr. med.
22.12.2022. Lect 13 (13,00-14,30)	**Circulatory Shock.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
22.12.2021. Sem 8 (14,45-17,00)	**Circulatory Shock.**	On-line	Group A	Mr. sc. Marija Šandrk, dr. med.
	nd New Year holidays			
10.01.2022. Lect 14 (15,30-17,00)	**Overview of the renal functions disorders.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
11.01.2022. Sem 10 (13,00-15,15)	**Disorders of urine quantity and composition.**	On-line	Group A	Prof. dr. sc. Zlatko Trobonjača
11.01.2022. Sem 12 (15,30-17,45)	**Disorders of electrolytic homeostasis.**	On-line	Group A	Mr. sc. Borko Rajić, dr. med.

12.01.2022. Lect 15 (13,00-14,30)	**Overview of the respiratory system disorders.**	**On-line**	Group A	Prof. dr. sc. Zlatko Trobonjača
12.01.2022. Sem 11 (14,45-17,00)	**Pathophysiology of the respiratory system.**	**On-line**	Group A	Mr. sc. Borko Rajić, dr. med.
13. 01. 2022. Sem 13 (13,30-15,45)	**Acid-base balance disorders.**	**On-site**	Group A	Prof. dr. sc. Zlatko Trobonjača
14.01.2022. Lect 16 (08,30-10,00)	**Chronobiological pathophysiology.**	**On-site**	Group A	Prof. dr. sc. Zlatko Trobonjača
14.01.2022. (10,30-11,30)	**Midterm exam I**	**On-site**	Group A	Prof. dr. sc. Zlatko Trobonjača Doc. dr. Slavica Ćorić Mr. sc. Borko Rajić Mr. sc. Marija Šandrk, dr. med. Ivana Bjelanović, dr. med. Benjamin Palić, dr. med.
17. 01. 2022. Lect 17 (13,00-14,30)	**Pathophysiology of gastrointestinal system.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
17. 01. 2022. Sem 14 (14,45-17,00)	**Disorders of metabolism of proteins and carbohydrates. Disorders of dietary balances.**	**On-site**	Group A	Mr. sc. Marija Šandrk, dr. med.
18. 01. 2022. Lect 18 (13,00-14,30)	**Disorders of pancreatic endocrine function. Diabetes mellitus.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
18. 01. 2022. Pract 7 (14,45-17,00)	**Disorders of the digestive system and metabolism.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
19. 01. 2022. Sem 15 (13,30-15,45)	**Lipid metabolism disorders. Atherosclerosis.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
20. 01. 2022. Sem 16 (13,45-16,00)	**Pathophysiology of the liver.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
20. 01. 2022. Pract 8 (16,15-18,30)	**Pathophysiology of the liver and exocrine pancreas.**	**On-site**	Group A	Ivana Bjelanović, dr. med.
21. 01. 2022. Sem 17 (11,00-13,15)	**Disorders of energy metabolism. Disorders of thermoregulation.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
21. 01. 2022. Lect 19 (13,30-15,00)	**Integral organismic reactions to noxious stimuli.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
24. 01. 2022. Lect 20 (13,00-14,30)	**Causes of endocrinopathies. Disorders of pituitary function. Thyroid gland disorders.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
24. 01. 2022. Sem 18 (14,45-17,00)	**Disorders of specific metabolic substances.**	**On-site**	Group A	Mr. sc. Marija Šandrk, dr. med.
25. 01. 2022. Pract 9 (08,30-10,45)	**Disorders of conception, pregnancy, fetal growth and development. Disorders of sexual function.**	**On-site**	Group A	Mr. sc. Marija Šandrk, dr. med.

25. 01. 2022. Sem 19 (11,00-13,15)	**Structural and functional disorders of connective and bone tissue.**	**On-site**	Group A	Mr. sc. Borko Rajić, dr. med.
25. 01. 2022. Lect 21 (13,30-15,00)	**Functional disorders of the cortex and medulla of the adrenal gland.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
26. 01. 2022. Pract 10 (13,00-15,15)	**Endocrinopathies.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
26. 01. 2022. Lect 22 (15,30-17,00)	**Disorders of gonadal function.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
27. 01. 2022. Lect 23 (13,00-14,30)	**Disorders of parathyroid glands function. Disorders of calcium, phosphate and magnesium metabolism.**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac, dr. med.
27. 01. 2022. Sem 20 (14,45-17,00)	**Disorders of neurovegetative regulation. Disorders of consciousness.**	**On-site**	Group A	Benjamin Palić, dr. med.
28. 01. 2022. (13,00-14,00)	**Midterm exam II**	**On-site**	Group A	Prof. dr. sc. Hrvoje Jakovac Doc. dr. Slavica Ćorić Mr. sc. Borko Rajić Mr. sc. Marija Šandrk, dr. med. Ivana Bjelanović, dr. med. Benjamin Palić, dr. med.