[Medicinski fakultet u Rijeci]

Curriculum
2022/2023

[Za kolegij]

Physiology and Pathophysiology I

Study program:	**Medical Studies in English (R)** [Sveučilišni integrirani prijediplomski i diplomski studij]
Department:	**[Katedra za fiziologiju, imunologiju i patofiziologiju]**
Course coordinator:	**prof. dr. sc. Mrakovčić-Šutić Ines, dr. med.**
Year of study:	**2**
ECTS:	**5**
Incentive ECTS:	**0 (0.00%)**
Foreign language:	**Possibility of teaching in a foreign language**

Course information:

The course consists of 66 class hours (38 hours of lectures, 12 hours of seminars, and 16 hours of practicals) and is conducted in the third semester. The class performance totals 5 ECTS credits. The main aim of this course is to enable the students to apply previously acquired knowledge of physics, chemistry, biology, biochemistry, and normal morphology in order to acquire knowledge about normal organism functions and pathophysiological mechanisms, which lead to disorders of the normal function and disease emergence. Seminars and practicals should prepare the students for independent problem-solving and integrative reasoning on health and disease. Individual functions are explained on a molecular level, as well as on the level of an organism as a whole, and analyzed in the adaptation process of the organism to changing environmental circumstances. The emphasis is on learning basic “applied” physiology, i.e., on the vertical knowledge upgrade acquired while explaining basic physiological functions.

Classes are performed in terms of lectures, seminars, and practicals. Active student participation in the curriculum is achieved by performing laboratory practicals and by using computer programs that simulate pathological conditions and yield clinical correlates of certain diseases.

Throughout seminars and practicals, the student actively discusses physiological and pathophysiological mechanisms. The student is obligated to prepare the material that is being discussed in seminars and practicals. The teacher evaluates student participation throughout seminars (demonstrated knowledge, understanding, the ability to set up a problem, concluding, etc.). Acquired grade points are then added to the number of grade points obtained at the final exam.

Course content:

General concepts of physiology and pathophysiology: Concepts of health and disease. Homeostasis. Etiology. Pathogenesis. Disease. Clinical manifestations. Diagnosis. Clinical course. Etiological factors. General disorders of the body: Structure and function of macromolecules. Pathophysiological principles of inheritance of diseases and syndromes and hereditary metabolic diseases. Energetic homeostasis and Energy metabolic disorders. Hypoenergoses.

Cellular physiology and pathophysiology: Disorders of structure and function of mitochondria. An integral reaction of the cells to the injuries. Cellular death. Malignant transformation and growth. Physiology and pathophysiology of cell membranes: transfer of substances through cell membranes. Canalopathies and membrane transport disorders. Membrane and action potential.

Physiology and pathophysiology of muscle cells: contraction of skeletal muscle. Skeletal muscle relaxant, neuromuscular transmission, poaching, and contraction. Smooth muscle contraction.

Blood cells and clotting. Erythrocytes. Erythrocyte disorders. Blood type. Platelets, hemostasis, and blood clotting. Hemostasis disorders. White blood cells. White blood cell disorders. Endogenous bioactive compounds. Inflammation, repair of damage and wound healing.

Integrative functions and disorders of integrative functions. The overall reaction of the organism to the noxa. Stress and adaptation. Homeostasis. Stress response disorders.

List of assigned reading:

1. Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016.

2. Gamulin S, Marušić M, Kovač Z. Pathophysiology – Basic Mechanisms of disease - Textbook, Medicinska naklada Zagreb, 2014.

3. Handbook for Practicals in Physiology, Neurophysiology, and Immunology, Department of Physiology, Immunology, and Pathological Physiology, Faculty of Medicine in Rijeka, October 2001. (can be downloaded from the SharePoint platform of the Department of Physiology)

4. Kovač Z. et al. Clinical Pathophysiology – Etiopathogenetic Nodes – Third Book (I-IV part). Medicinska naklada Zagreb 2013.

All materials that are not included in the compulsory reading will be published on the course website.

List of optional reading:

1. Alberts et al. Molecular biology of the Cell, Sixth Edition, Garland publ., New York, 2015.

2. Abbas A.K, Lichtman A.H., Pillai S. Basic Immunology. Functions and Disorders of the Immune System. Fifth edition. Elsevier, 2016.

Curriculum:

Student obligations:

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

ECTS grading system: Student grading will be conducted according to the current Ordinance on Studies of the University of Rijeka and the Ordinance on Student Grading at the Faculty of Medicine in Rijeka. Student work and achievement are assessed and graded during the course, which is the basis for the final grade. Student work and competencies are evaluated during classes with a maximum of 70 grade points and up to 30 grade points at the final exam, which totals 100 grade points. Students are graded according to the ECTS (A-E) and numerical system (1-5). Grading according to the ECTS system is conducted according to the absolute redistribution, as well as according to the graduate grading criteria.

I. The following components are evaluated during the course (maximum of 70 grade points):

a) acquired knowledge (up to 66 grade points)

b) seminar thesis (up to 6 grade points)

a) acquired knowledge (up to 66 grade points)

During classes, acquired knowledge will be evaluated by two midterm exams comprising 60 questions, which will take place on November 2020 (first midterm exam) and on January, 2021 (second midterm exam). A student may obtain up to 16,5 grade points on each midterm exam:

Correct answers	Grade points		Correct answers	Grade points
58-60	33		44	24
56-57	32		43	23
54-55	31		42	22
53-54	30		40-41	21
51-52	29		39-40	20
49-50	28		37-38	19
47-48	27		35-36	18
46	26		33-34	17
45	25		30-32	16,5

Students who fail to earn a minimum number of points one or both MTEs can repeat one or both MTEs, which will be organised in February, between the first and second term of the Final exam. At repeated MTEs, student can acquire grade point according to the above table and correct/improve the final score.

Improvement of the overall performance during the course. Students who have achieved sufficient points on a regular MTEs can improve their final score at the repeated MTE/MTEs. The repeated MTEs (writing the test) will be organized at the Faculty of Medicine under controlled conditions: either using traditional printed tests or using the Merlin platform in the faculty's computer classroom.

Additional acquisition of minimum conditions for the Final exam. Students who failed to acguire a minimum score on one of the MTEs can earn minimum grades required to access the Final exam. This will be organized in early September. The acquisition of minimum grade pointe will be carried out by writing one or both tests covering the material of the first and/or second MTE. The acquisition of minimum garde points (writing a test) will be organized at the Faculty of Medicine under controlled conditions: either using traditional printed tests or using the Merlin platform in the Faculty's computer classroom. On tests for the acquisition of minimum conditions, students cannot earn additional grade points With a positive test result (more than 50%) student can earn the minimum number of grade points (17.5+17.5) and can access the Final exam. If it is not possible to approach the Faculty due to the epidemiologic situation, additional acquisition of minimum conditions will be carried out by oral examination of the required materials using MS teams or Google Meets. At the oral check, students can achieve a positive result and earn the minimum number of points needed to enter the Final exam.

b) Independent work (up to 4 grade points)

A student must prepare a Powerpoint presentation and present it to other students during practicals (starting from P2). After that, a student submits the presentation to the teacher in a printed form with a front page containing the topic title, name and surname of the student, their group, and the date. The presentation should not last longer than 10 minutes, and the student can choose only one topic for the presentation. The list of topics will be announced at the Share-portal of the course. The number of grade points granted for the presentation is evaluated by the teacher according to the quality of content and presentation in categories.

A positively evaluated presentation in a certain field is graded as follows:

Grade of the presentation	Grade points
A (5)	4
B (4)	3
C (3)	2
D (2)	1
F (1)	0

Attending lectures, seminars, and practicals are mandatory. Students can be absent from 30% of classes provided they have a justifiable cause, i.e. a doctor's note. If a student is absent for more than 30% of the classes, whether it is justifiable or not, they cannot continue to participate in the course and cannot access the final exam. In that case, the student is graded with 0 ECTS points and an F grade.

II. Final exam (up to 30 grade points)

Students who obtained 35-70 grade points during classes are obligated to access the final exam at which they may obtain additional grade points. The final exam consists of a multiple-choice questions test and an oral part. Students who obtained less than 35 grade points during classes or were absent for more than 30% of classes are not allowed to access the final exam (insufficient F).

Students can obtain 15-30 grade points at the final exam. The final exam consists of an oral and a written part, where students are expected to show at least 50% of knowledge, skills, and competencies. A student who demonstrates at least 50% of knowledge, skills, and competencies at the written and the oral part of the exam, is credited with points according to the achieved result, which is added to the grade points obtained during classes. At the written part of the final exam, a student can obtain 15 grade points according to the table:

Correct answers	Grade points		Correct answers	Grade points
47-50	15		34-36	10
43-46	14		31-33	9
41-42	13		28-30	8
39-40	12		25-27	7
37-38	11			

At the oral part of the final exam, a student can obtain 15 grade points that are divided into 5 categories:

Grade obtained at the oral part of the final exam	Number of grade points obtained at the oral part of the final exam
excellent A	13-15
very good B	11-12
good C	9-10
sufficient D	1-8
insufficient F	0

In order to pass the final exam, a student must achieve a minimum of 7 grade points at the written part and a minimum of 8 grade points at the oral part of the exam. The final exam is an integral part, therefore, if the student does not achieve a positive assessment of the oral part of the final exam, the results of the written part of the final exam are invalid in the following final exam terms.

III. The final grade (maximum of 100 grade points) The final grade represents a sum of all grade points obtained during classes and at the final exam based on the absolute redistribution according to the following scale

90-100 grade points	A	excellent (5)
75-89,99 grade points	B	very good (4)
60-74,99 grade points	C	good (3)
50-59,99 grade points	D	sufficent (2)
less than 50 grade points	E	insufficient (1)

Other notes (related to the course) important for students:

Course content and all information regarding the course, including exam dates, can be found on the SharePoint platform of the Department of Physiology and Immunology on the following website: https://spp.uniri.hr/ss_medri/katedre/427 - accessed via an AAI address.

COURSE HOURS 2022/2023

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List of lectures, seminars and practicals:

EXAM DATES (final exam):
