[Medicinski fakultet u Rijeci]

**Curriculum**
**2021/2022**

[Za kolegij]

# Immunology

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|---|---|
| Study program: | **Medical Studies in English (R)**<br>[Sveučilišni integrirani prijediplomski i diplomski studij] |
| Department: | **[Katedra za fiziologiju, imunologiju i patofiziologiju]** |
| Course coordinator: | **prof. dr. sc. Lučin Pero, dr. med.** |
| Year of study: | **2** |
| ECTS: | **4** |
| Incentive ECTS: | **0 (0.00%)** |
| Foreign language: | **Possibility of teaching in a foreign language** |

## Course information:

The main aim of this course is to introduce students to the normal and pathological function of the immune system. The focus is on the explanation of physiological processes that enable normal functioning of certain subtypes of immune cells in a non-specific and specific immune response, as well as on the explanation of pathophysiological mechanisms leading to disorders of normal immune processes, as well as on the possibilities for therapeutic action to the immune response. Teaching tasks imply enabling the student to connect basic knowledge of immunology and pathophysiology of the immune system with the teaching of physiology and pathophysiology, microbiology and parasitology, pathology, infectious disease, oncology, and epidemiology (vaccination), therefore, qualifying the student to apply immunological cognition in clinical medicine.

Course content:

Overview of Immunity. Antigens. Tissue Cells and Organs of the Immune System. Major Histocompatibility Complex Molecules. Immune Recognition. Cellular Immunity. Non-specific Immunity. Complement. Structure of Antibody and Antigen Receptor of Lymphocyte B. Gene Background of Synthesis and Antibody Differences. Humoral Immunity. Immune Response Regulation. Interaction of Immune Cells. Action on Immune Response. Cytokines and Chemokines. Immune Response to Tumor. Immunodeficiency and AIDS. Immunotolerance and Autoimmunity. Immunity to Infections. Tissue and Organ Transplantation. Immunological Hypersensitivity. Mucosal Immunity. Vaccination. Laboratory Methods in Clinical Immunology.

Class organization:

Class attendance is mandatory. The course consists of 24 hours of lectures, 18 hours of seminars, and 8 hours of practicals, which totals 50 class hours. Students are obligated to wear lab coats during practicals and have exercise protocols, where they will write measured and obtained values. Throughout seminars and practicals, the student actively discusses immune mechanisms with the lecturer. The student is obligated to prepare the material that is being discussed in seminars and practicals. The teacher evaluates student participation throughout seminars and practicals (demonstrated knowledge, understanding, the ability to set up a problem, concluding, etc.). There will be two midterm exams during the course, and a written and an oral part of the final exam at the end of classes. After completing all class activities and the final exam, the student acquires 4 ECTS credits.

## List of assigned reading:

1. Abbas A.K, Lichtman A.H., Pillai S. Cellular and Molecular Immunology. International Edition. Tenth edition. Elsevier, 2021. **or** Abbas A.K, Lichtman A.H., Pillai S. Cellular and Molecular Immunology. International Edition. Eighth edition. Elsevier, 2015.
2. Handbook for Practicals in Immunology, Editor: H. Mahmutefendić. The University of Rijeka, Faculty of Medicine, 2014. (e-edition), 2015 (printed edition).

## List of optional reading:

1. Abbas A.K, Lichtman A.H., Pillai S. Basic Immunology. Functions and Disorders of the Immune System. Fifth edition. Elsevier, 2016.
2. Murphy K, Weaver C: Janeway's Immunobiology 9th edition, Garland Science, New York and London, 2017.

## Curriculum:

## Student obligations:

**Attendance.** Attendance at lectures, seminars and practical courses is compulsory. The student can miss a maximum of 30% of the lectures and 30% of the seminars/practicals, whereby the absence must be justified. Any absence from the seminar/practical must be examined orally and confirmed by a seminar/practical instructor (colloquium) in order to be admitted to the final examination.

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

**ECTS grading system**

Students are graded in accordance with the current study regulations of the University of Rijeka and the Regulation on the Grading of Students at the Faculty of Medicine in Rijeka.

Students' work and performance are assessed and graded during the course, which is the basis for the final grade. Students' work and competencies are assessed during the course with a maximum of 70 points and up to 30 points in the final exam, which gives a total of 100 points. Students are graded according to the ECTS (A-E) and the numerical system (1-5). Grading according to the ECTS system is based on absolute redistribution as well as the graduate grading criteria.

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

**Attendance.** Attendance at lectures, seminars and practical courses is compulsory. The student can miss a maximum of 30% of the lectures and 30% of the seminars/practicals, whereby the absence must be justified. Any absence from the seminar/practical must be examined orally and confirmed by a seminar/practical instructor (colloquium) in order to be admitted to the final examination.

**Adopted knowledge (up to 70 points)**

During the course, the acquired knowledge is assessed by two mid-term exams (MTE) with 70 multiple-choice questions test, which take place in April (first mid-term exam) and June (second mid-term exam). A student can receive up to 35 grade points for each exam:

| Correct answers | Grade points | | Correct answers | Grade points |
|---|---|---|---|---|
| 68-70 | 35 | | 49 | 25 |
| 65-67 | 34 | | 48 | 24 |
| 62-64 | 33 | | 47 | 23 |
| 60-61 | 32 | | 45-46 | 22 |
| 58-59 | 31 | | 43-44 | 21 |
| 56-57 | 30 | | 41-42 | 20 |
| 54-55 | 29 | | 39-40 | 19 |
| 52-53 | 28 | | 37-38 | 18 |
| 51 | 27 | | 35-36 | 17,5 |
| 50 | 26 | | | |

**Examination conditions.** The mid-term examination takes the form of an online multiple-choice test with 70 questions, which can be completed in 75 minutes. It is recommended to provide a stable internet connection and a computer that fully supports online operation in Merlin and MS Teams. If a student is unable to provide a stable connection and/or computer, the exam can be organized in the faculty computer classroom. The exam will be conducted via the Safe Exam Browser (SEB), which must be installed on the computer and tried out before the exam. Students will be asked to enter the virtual exam room, which will be launched on the Microsoft Teams (MS Teams) platform. During the exam, students must be connected to MS Teams. The SEB should be run after starting and entering the MS Teams virtual exam room. If the internet connection is interrupted during the exam, students can log back in and resume the exam, with all attempts and interruptions automatically recorded in the Merlin program. Any interruption may result in solution attempts being saved without an answer being recorded, which may ultimately result in an incorrect and unrecognized answer. It is therefore the responsibility of each

student to ensure a good internet connection.

**Students who do not achieve the minimum score on one or both MTEs** may retake one or both MTEs, which will take place in June between the first and second term of final exams. For repeated MTEs, a student may earn grade points according to the table above and correct/improve the final grade.

**Improvement of the overall performance during the course.** Students who have achieved sufficient points in a regular MTEs can improve their final grade in the repeated MTEs/MTEs.

**Additional acquisition of minimum requirements for the final examination.** Students who have not achieved the minimum score in one of the MTEs can make up the minimum requirements for the final exam. This will be organized at the beginning of September. The minimum grade is acquired by writing one or both tests covering the material of the first and/or second MTE. Students cannot earn additional grade points on the minimum requirement tests. With a positive test result (more than 50%), a student can obtain the pass mark (20.0 + 20.0).

**II Final examination (up to 30 grade points)**

Students who have achieved 45-70 grade points in class are obliged to take the final examination, in which they can receive additional grade points. The final exam consists of a test with multiple-choice questions and an oral part.

Students who have achieved less than 35 points in class or have been absent for more than 30% of the lessons are not allowed to take the final exam (insufficient F).

Students can achieve 10-30 grade points in the final examination. The final examination consists of an oral and a written part in which students must demonstrate at least 50% of the knowledge, skills and competencies. A student who demonstrates at least 50% of the knowledge, skills and competences in the written and oral parts of the examination will be credited with points according to the result achieved, which will be added to the grade points achieved in class.

For the written part of the final examination, a student can receive 14-25 points according to the table:

| Correct answers | Grade points | | Correct answers | Grade points |
|---|---|---|---|---|
| 96-100% | 25 | | 72-75,9% | 19 |
| 92-95,9% | 24 | | 68-71,9% | 18 |
| 88-91,9% | 23 | | 64-67,9% | 17 |
| 84-87,9% | 22 | | 60-63,9% | 16 |
| 80-83,9% | 21 | | 56-59,9% | 15 |
| 76-79,9% | 20 | | 50-55,9% | 14 |

At the oral part of the final exam, a student can obtain 1-5 grade points that are divided into 5 categories (1, 2, 3, 4, 5). Minimum required in 1 point.

Points earned in the written and oral parts are added together. The final exam is considered passed if the student has achieved a minimum of 14 points in the written and a minimum of 1 point in the oral part of the exam.

The final exam is an integral unit, and if the student does not achieve a positive grade in the oral part of the exam, the results of the written part of the final exam are not valid in the next exam periods.

**III. The final grade (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 redistribution according to the following scale:

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| 90-100 grade points | A | excellent (5) |

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|---|---|---|
| 75-89,99 grade points | B | very good (4) |
| 60-74,99 grade points | C | good (3) |
| 50-59,99 grade points | D | sufficient (2) |
| less than 50-grade points | E | insufficient (1) |

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

Other important information regarding the course:

Course content and all information regarding the course, including exam information, can be found at Merlin.

### COURSE HOURS 2021/2022

Immunology

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### List of lectures, seminars and practicals:

### EXAM DATES (final exam):

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