[Medicinski fakultet u Rijeci]

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

[Za kolegij]

# Medical Chemistry And Biochemistry I

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|---|---|
| Study program: | **Medical Studies in English (R)**<br>[Sveučilišni integrirani prijediplomski i diplomski studij] |
| Department: | **[Katedra za medicinsku kemiju, biokemiju i kliničku kemiju]** |
| Course coordinator: | **prof. dr. sc. Čanadi Jurešić Gordana, dipl. ing.** |
| Year of study: | **1** |
| ECTS: | **8** |
| Incentive ECTS: | **0 (0.00%)** |
| Foreign language: | **Possibility of teaching in a foreign language** |

## Course information:

**Course Objectives:**
Acquire knowledge of chemical compounds, both inorganic and organic, that make up living cells or are used to synthesise them, chemical processes involved in their transformations, electrochemical processes, chemical kinetics, and thermochemistry. Acquire the ability to apply this knowledge to biological systems, which is important for understanding human metabolism under both physiological and pathological conditions.

**Development of general and specific competencies (knowledge and skills):**
Development of an awareness of the similarity and inseparability of chemical reactions in living and nonliving matter, the relationship between structure and reactivity, chemical and energetic transitions, the laws of thermodynamics. Development of the ability to use the acquired knowledge for the understanding of biochemical reactions in human organisms. Expanding knowledge of the relationships between the structure and physical/chemical properties of matter using simple molecules and their application to biomolecules. Solving numerical and logical problems in the field of Medical Chemistry and biochemistry. Development of skills necessary for experimental work, mastery of basic laboratory techniques and methods (chromatography, optical methods, pH measurement). Encouraging students to apply information technology and use the scientific literature. Building a sense of teamwork and developing the ability to think creatively and critically necessary to draw conclusions based on data obtained through analysis. Developing methods and skills necessary for presenting the results obtained.

**Course correlativity and correspondence:**
The content of the course Medical Chemistry and Biochemistry I correlates with and is complementary to the following courses: Medical Physics and Biophysics, Biochemistry II.

**Approaches to teaching and learning:**
Lectures, seminars, numerical and laboratory practicals.

## List of assigned reading:

B. Blagović and M. Tota (Eds.): Handbook for Seminars and Laboratory Practicals in Medical Chemistry and Biochemistry I, Faculty of Medicine, University of Rijeka, Rijeka, 2019;

R.H. Petrucci, F.G. Herring, J.D. Madura, C. Bissonnette: General Chemistry - Principles and Modern Applications, 10th edition, Pearson Canada Inc., Toronto, Ontario, 2011; McMurry, J.: Fundamentals of Organic Chemistry, 8th Edition, Cengage Learning, 2017;

McMurry, J.: Fundamentals of Organic Chemistry, 8th Edition, Cengage Learning, 2017;

Murray R.K., Bender D.A., Botham K.M., Kennelly P.J., Rodwell V.W., and Weil P.A. (Eds): Harper's Illustrated Biochemistry, 30th Edition,The McGraw-Hill Companies, 2015

## List of optional reading:

Reed, D.: Chemistry for Biologists, Pearson Education Ltd., Harlow, UK, 2013;

McMurry, J., Ballantine, D.S., Hoeger, C.A. and Peterson, V.E.: Fundamentals of General, Organic and Biological Chemistry, 7th Edition, Pearson Education Inc., USA, 2013.

Mahaffy, P., Tasker, R., Bucat, B., Kotz, J.C., Weaver, G.C. and Treichel, P.M.: Chemistry – Human activity, Chemical Reactivity, Nelson Education, USA, 2015.

## Curriculum:

## Student obligations:

All course announcements and class materials will be made available through the Merlin e-learning system. Classes are organized according to the schedule published in the Merlin e-learning system. Attendance at lectures, seminars, numerical and laboratory practicals and midterm exams is mandatory and is recorded separately for each of these forms and for each student. Classes will begin on time according to the established schedule, and tardiness will be counted as an absence. Entering and leaving the class during the lesson will not be allowed.
A student may be excused for up to 30% of the hours scheduled separately for practicals, seminars, and lectures solely for health reasons that must be excused by a doctor's note (including absences for midterm exams). In case of unexcused absence of more than 30 % of the hours of a specific form of instruction (11 hours of lecture, 13 hours of seminar, 10 hours of practicals), the student cannot continue the course and loses the possibility to take the final examination (0 ECTS points, grade F).

**It is mandatory that absences from laboratory practicals be compensated by an oral colloquium.**

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

Students may earn a total of 100 credits: a maximum of 70 credits during the semester (three midterm written exams and laboratory practicals) and a maximum of 30 credits on the final exam. Students who have earned at least 35 credits during the semester will be admitted to the final exam. On all written and oral exams, the student must answer at least 50% of the answers correctly. Students who do not score at least 50% on the midterm exams may retake the midterm exams once, during the time of the final exam. Students who are not satisfied with the credits earned may also retake their midterm exams, but only the credits from the repeated midterm exams will be considered.
SPECIFIC PROVISIONS FOR ONLINE TEACHING: In accordance with the University of Rijeka's current "Recommendations for Appropriate Conduct in Virtual Systems for the Delivery of Online Instruction and Other Forms of Work in a Virtual Environment" (3.3.2021), certain forms of instruction will be delivered in an online environment in real time according to the published schedule. Lectures, seminars, and practicals will be held on MS Teams, and students should have their camera on for the entire duration of class and a microphone available when interacting. Repeated inability to turn on the camera and/or microphone will be counted as an absence.

**The evaluation of students** is carried out in accordance with the valid study regulations of the University of Rijeka and the Regulation on the Evaluation of Students at the Faculty of Medicine in Rijeka (adopted by the Faculty Council of the Faculty of Medicine in Rijeka). Evaluation of students' progress during classes, midterms and the final exam is shown in the table:

| | | **CREDITS** |
|---|---|---|
| **Midterm exams** | I General and inorganic chemistry | 16 (x score) |
| | II Stoichiometry | 10 (x score) |
| | III Organic chemistry and biochemistry I | 26 (x score) |
| | **Total** | **52** |
| **Class activity** | **Total** | **4** |
| **Laboratory practicals** | Practicals and reports | **14** |
| **TOTAL** | | **70** |
| **Final exam** | Written exam | 15 (x score) |
| | Oral exam | 15 |
| | **Total** | **30** |
| **TOTAL** | | **100** |

**Midterm exams:**
There are three midterm exams during the semester. The first covers the content of bioinorganic, general, and physical chemistry, the second covers stoichiometry, and the third covers organic chemistry and biochemistry (theory, nomenclature, and structural formulas).

**Class activity:**

There are several ways to earn credits in this category, **(but only) during the semester.** There are several small tests that cover a specific part of the materia. In consultation with the course coordinator, students may also complete a small research paper on a specific topic. Activity and engagement in class as well as special preparation for class are also be rewarded. Students may receive 0.5-1 credit per activity.

**Laboratory practicals:**

Students may earn a maximum of 14 credits through 7 laboratory practicals. Each completed lab earns **2 credits: 1 for lab work successfully completed and 1 for a completed written report after each practical.** Grades for lab work will be based on the written entrance test (5 short questions; students with 2 or fewer correct answers will not be allowed to attend the practical), activity during the work, and laboratory skills. **A report must be written for each exercise and submitted by the due date**. Any errors must be corrected on resubmission, which will be done with a subsequent report. Only one correction is allowed, and the report is graded thereafter. Grading is based primarily on the quality of the original report (accuracy and neatness), but if corrections are not made appropriately or within a specified time, the report will be graded 0. If more than 30% of the lab work or 30% of the reports are graded 0, or if the total sum of all lab grades is less than 7 (i.e. 50% of the total lab grades), the student will not be allowed to take the final exam. Absence (for any reason) from a laboratory practical must be compensated **by an oral colloquium** within one week of the practical; a successful colloquium earns a total of 0.5 credits. Repetition of the colloquium is not permitted.

**Final exam**: The final examination consists of a written exam (15 credits) and an oral exam (15 credits). Students must pass both parts of the final exam. If students pass the written part of the final exam but not the oral part, they must repeat the written part in the next term of the final exam. There is therefore no transfer of points from the written part to the next exam.

**Assessment of the oral part of the final exam**:
7.5 – 8 credits: minimum criteria satisfied
9 – 11 credits: average criteria satisfied with noticeable errors
12 – 13 credits: answer with a few errors
14 – 15 credits: outstanding answer.

**The ECTS grading system** is defined by the following criteria:
A (5, excellent) 90-100 credits
B (4, very good) 75-89.99 credits
C (3, good) 60-74.99 credits
D (2, sufficient) 50-59.99 credits
F (1, insufficient, fail) less than 50 credits

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

A student who gains less than 35 credits during the pre-exam period, has failed the course.

Communication with professors and assistants: Contact with professors and assistants can be made directly during/after classes, through consultations, by e-mail or via the Merlin platform (Forum or Chat ).
Consultations are held in agreement with professors and assistants at the scheduled time. e-mails:
Course coordinator: Assoc. Prof. Gordana Čanadi Jurešić, gordanacj@medri.uniri.hr
Collaborators:
Prof. Srećko Valić, svalic@medri.uniri.hr
Assoc. prof. Marin Tota, marin.tota@medri.uniri.hr
Assoc. prof. Lara Batičić, lara.baticic@medri.uniri.hr
Assoc. prof. Mirna Petković Didović, mirnapd@medri.uniri.hr
Assist. prof. Jelena Marinić, Jelena.marinic@medri.uniri.hr
Assoc. prof. Damir Klepac, damir.klepac@medri.uniri.hr
Iva Vukelić, PhD, iva.vukelic@medri.uniri.hr

Midterm and final exam results, notifications, and all other course information will be posted regularly on the Merlin platform.

## COURSE HOURS 2021/2022

Medical Chemistry And Biochemistry I

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## List of lectures, seminars and practicals:

## EXAM DATES (final exam):

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