Medicinski fakultet u Rijeci

IZVEDBENI NASTAVNI PLAN
2026/2027

Za kolegij

Chemistry Essentials for Medical Practice

Studij:	**Medical Studies in English (R)** (izborni) Sveučilišni integrirani prijediplomski i diplomski studij
Katedra:	**Katedra za medicinsku kemiju, biokemiju i kliničku kemiju**
Nositelj kolegija:	**izv. prof. dr. sc. Petković Didović Mirna, dipl. ing. kemije**
Godina studija:	**1**
ECTS:	**1.5**
Stimulativni ECTS:	**0 (0.00%)**
Strani jezik:	**Mogućnost izvođenja na stranom jeziku**

Podaci o kolegiju:

The aim of this course is to apply the basic chemical concepts to problems pertaining to medical chemistry. Through topics relevant in modern medicine, the understanding and the interconnections of the concepts met in mandatory chemistry courses will be deepened and further integrated into medical studies.

Popis obvezne ispitne literature:

1. 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;
2. McMurry, J.: Fundamentals of Organic Chemistry, 8th Edition, Cengage Learning, 2017;

Popis dopunske literature:

1. Berg, Tymoczko, Stryer: Biochemistry, 5th edition, NY
2. Any general or medical chemistry textbook.
3. Any biochemistry textbook.

Nastavni plan:

Seminari popis (s naslovima i pojašnjenjem):

S1 Introduction. Assignment of the seminar topics.

Introduction to the course content and modus operandi. Discussion of the potential topics.

S 5 Intermolecular bond in biological molecules

Explain and exemplify the relevance of intermolecular bonds in the structure of major biological molecules.

S 7 Phosphate buffers.

Define the types and explain the mechanism and relevance of phosphate buffers in medicine.

S8 - 10 Redox processes.

Solve redox equations. Apply redox terminology to organic molecules.

S 13 Colligative properties.

Explain the relevence and peculiarities of the colligative properties. Apply stoichiometry to solve colligative properties assignments.

S 14 Acids in dermatology.

Explain the use and the molecular mechanism of acids in dermatological treatments.

S 15,16,17 Anaesthetics.

Explain the molecular mechanism behind different anaesthetics' action.

S 18 - 20 Aspirin. Osmolality.

Explain the molecular basis of the aspirin action. Explain osmolality/osmolarity vs. molality/molarity.

S 22, 23 Blood pH regulatory mechanisms

Explain how the buffers regulate blood pH on a molecular basis.

S 24,25 Thalidomide tragedy

The importance of sugar configurations, through the analysis of the molecular mechanism behind thalidomide tragedy.

S 2 - 4 Oxidation states, acids, bases, salts.

Oxidation states, acids, bases, salts.

S6 Buffers

Explain the molecular basis of various buffers' action, sans phosphate.

S11, 12 Stoichiometry.

Solve stoichiometric problems.

S 21 Lipids in general.

Give an overview of the lipids chategorisation.

Obveze studenata:

Regular class attendance and active participation in discussions. Preparing and holding the seminar on the chosen topic.

Ispit (način polaganja ispita, opis pisanog/usmenog/praktičnog dijela ispita, način bodovanja, kriterij ocjenjivanja):

Active attendance at a minimum of 70 % of classes. Succesfully held seminar on the chosen topic.

Ostale napomene (vezane uz kolegij) važne za studente:

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SATNICA IZVOĐENJA NASTAVE 2026/2027

Chemistry Essentials for Medical Practice

Seminari (mjesto i vrijeme / grupa)
16.10.2026
S1 Introduction. Assignment of the seminar topics.: • Katedra za med. kemiju, biokemiju i klin. kemiju 2 (14:00 - 14:45) [349]   ○ CEFMP00
izv. prof. dr. sc. Petković Didović Mirna, dipl. ing. kemije [349]
23.10.2026
S 2 - 4 Oxidation states, acids, bases, salts.: • P05 (10:00 - 11:00) [349]   ○ CEFMP00
izv. prof. dr. sc. Petković Didović Mirna, dipl. ing. kemije [349]
13.11.2026
S 2 - 4 Oxidation states, acids, bases, salts.: • P05 (14:00 - 15:00) [349]   ○ CEFMP00
izv. prof. dr. sc. Petković Didović Mirna, dipl. ing. kemije [349]

Popis predavanja, seminara i vježbi:

SEMINARI (TEMA)	Broj sati	Mjesto održavanja
S1 Introduction. Assignment of the seminar topics.	1	Katedra za med. kemiju, biokemiju i klin. kemiju 2
S 5 Intermolecular bond in biological molecules	1	
S 7 Phosphate buffers.	1	
S8 - 10 Redox processes.	3	
S 13 Colligative properties.	1	
S 14 Acids in dermatology.	1	
S 15,16,17 Anaesthetics.	3	
S 18 - 20 Aspirin. Osmolality.	3	
S 22, 23 Blood pH regulatory mechanisms	2	
S 24,25 Thalidomide tragedy	2	
S 2 - 4 Oxidation states, acids, bases, salts.	3	P05

S6 Buffers	1	
S11, 12 Stoichiometry.	2	
S 21 Lipids in general.	1	

ISPITNI TERMINI (završni ispit):
