UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
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Division: Basic and Pre-clinical Sciences Division
Department / Clinic: Department of chemistry and biochemistry
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Register no.:
File no.:
Zagreb, 31.08.2023.

COURSE SYLLABUS

Course name: Medical chemistry

Academic year 2023-2024

Course leader: assistant professor Luka Krstulović

Vice Course leader: assistant professor Kristina Starčević

Teachers: assistant professor Kristina Starčević

First day of classes: 25.09.2023.

Last day of classes: 11.1.2024.

Krstulo-1

Activities - Medical Chemistry (1/6)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
25/09/2023	12:30	14:00	p01 Introduction, Structure of substance	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
28/09/2023	10:15	11:45	v01 Chemical calculation basics	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
29/09/2023	14:15	15:45	v01 Chemical calculation basics	1E-3	Nastavnici na predmetu	P_kemija	1:30
02/10/2023	10:15	11:45	p02 Dispersed systems, H-bonds, colligative properties	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
06/10/2023	12:15	13:45	v02 Chemical calculation solutions I	1E-3	Nastavnici na predmetu	P_kemija	1:30
06/10/2023	14:15	15:45	v02 Chemical calculation solutions I	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
09/10/2023	10:15	11:45	p03 Acids and bases, Activation	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30

Krstulović

Activities - Medical Chemistry (2/6)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
13/10/2023	10:15	12:30	v03 Solution preparation and optical methods	1E-1, 1E-2	Nastavnici na predmetu	V_kemija	2:15
13/10/2023	13:00	15:15	v03 Solution preparation and optical methods	1E-3	Nastavnici na predmetu	V_kemija	2:15
17/10/2023	8:15	9:00	k01 preliminary exam 1	1E-1, 1E-2, 1E-3	Nastavnici na predmetu	P_kemija	0:45
20/10/2023	10:15	11:45	v04 Chemical calculation solutions II	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
20/10/2023	12:15	13:45	v04 Chemical calculation solutions II	1E-3	Nastavnici na predmetu	P_kemija	1:30
23/10/2023	10:15	11:45	p04 Isomers and Isomerism	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
27/10/2023	10:15	12:30	v05 Detection of cations and anions	1E-3	Nastavnici na predmetu	V_kemija	2:15
27/10/2023	13:00	15:15	v05 Detection of cations and anions	1E-1, 1E-2	Nastavnici na predmetu	V_kemija	2:15

Krstulović

Activities - Medical Chemistry (3/6)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
31/10/2023	8:15	9:45	p05 Organic compounds with oxygen	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
06/11/2023	10:15	11:45	v06 Chemical calculations pH, buffer I	1E-3	Nastavnici na predmetu	P_kemija	1:30
06/11/2023	12:15	13:45	v06 Chemical calculations pH, buffer I	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
07/11/2023	8:15	9:45	p06 Organic compounds with nitrogen	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
09/11/2023	10:15	12:30	v07 Experimental determination of pH	1E-3	Nastavnici na predmetu	V_kemija	2:15
09/11/2023	13:00	15:15	v07 Experimental determination of pH	1E-1, 1E-2	Nastavnici na predmetu	V_kemija	2:15
13/11/202	10:15	11:45	p07 Carbohydrates	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
16/11/2023	12:15	13:45	v08 Chemical calculations pH, buffer II	1E-3	Nastavnici na predmetu	P_kemija	1:30

Krstulović

Activities - Medical Chemistry (4/6)							
Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
16/11/2023	14:15	15:45	v08 Chemical calculations pH, buffer II	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
20/11/2023	10:15	11:45	p08 Lipids, Amino acids	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
22/11/2023	12:15	13:45	v10 Chemical calculations- Neutralisation	1E-3	Nastavnici na predmetu	P_kemija	1:30
23/11/2023	12:15	13:45	v10 Chemical calculations- Neutralisation	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
27/11/2023	10:15	11:45	p09 Proteins, Nucleic acids	1E-1, 1E-2, 1E-3	Krstulovic L.	P_kemija	1:30
29/11/2023	12:15	14:30	v09 Acidimetry and alkalimetry	1E-1, 1E-2	Nastavnici na predmetu	V_kemija	2:15
30/11/2023	12:15	14:30	v09 Acidimetry and alkalimetry	1E-3	Nastavnici na predmetu	V_kemija	2:15
06/12/2023	10:15	11:45	v11 Chemical calculations- Redox	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
06/12/2023	12:15	13:45	v11 Chemical calculations- Redox	1E-3	Nastavnici na predmetu	P_kemija	1:30

Activities - Medical Chemistry (5/6)

Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
07/12/2023	10:15	12:30	v12 Iodometry	1E-1, 1E-2	Nastavnici na predmetu	V_kemija	2:15
07/12/2023	13:00	15:15	v12 Iodometry	1E-3	Nastavnici na predmetu	V_kemija	2:15
11/12/2023	12:15	13:45	v14 Chemical calculations- Redox II	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
14/12/2023	10:15	11:45	v14 Chemical calculations- Redox II	1E-3	Nastavnici na predmetu	P_kemija	1:30
21/12/2023	10:15	12:30	v13 Detection of organic compounds	1E-3	Nastavnici na predmetu	V_kemija	2:15
21/12/2023	13:00	15:15	v13 Detection of organic compounds	1E-1, 1E-2	Nastavnici na predmetu	V_kemija	2:15
10/01/2024	10:15	11:45	v15 Organic chemistry	1E-1, 1E-2	Nastavnici na predmetu	P_kemija	1:30
11/01/2024	10:15	11:45	v15 Organic chemistry	1E-3	Nastavnici na predmetu	P_kemija	1:30
12/01/2024	12:30	13:30	k02 preliminary exam 02	3E-1, 3E-3	Nastavnici na predmetu	P_kemija	1:00

Activities - Medical Chemistry (6/6)

Start Dat	Start Tim	End Tim	Subject	Group	Instructor	Room	Length
15/01/2024	10:15	12:15	lab retakes	1E-1, 1E-2, 1E-3	Nastavnici na predmetu	V_kemija	2:00
							71:15
Total: 42							

STUDENT OBLIGATIONS

Lecture attendance	There are 18 lecture lessons. A student must attend 1 lesson to gain 0.33 point. The maximum number of points is 6 (18 lessons) and the minimum number of points is 3 (9 lessons).
Practicals attendance	There are 18 exercise lessons in the lecture-room (9 programmes). Each programme (two exercise lessons), is worth 0.66 points. Maximum number of points: 6 (18 lessons – 9 programmes). Minimum number of points: 4 (12 hours – 6 programmes) There are 6 exercises in the laboratory (6 programmes). A student must attend one exercise (1 programme) to gain 1 point. Maximum number of points: 6 (6 programmes), minimal number of points: 4 (4 programmes)
Active participation in seminars and practicals	Laboratory exercises: a student must solve a task from an exercise (programme) and present a report in order to get a signature for the exercise. Each correctly done and signed exercise is worth 1.67 points. The maximum number of points is 10 (6 programmes – coefficient 1.67), correspondingly: 8 points for 5 programmes, 7 points for 4 programmes and the minimum number of 5 points for 3 programmes.
Continuous knowledge-checking	Through out the semester there will be two preliminary exams. First preliminary exam consists of 6 questions with coefficient 2 (total of 12 points). Second preliminary exam consists of 5 questions with coefficient 4 (total of 20 points). Cumulative maximum number of points is 32. Student has to achive a minimum of 20 points.
Final exam	In order to take the final exam a student must gain the minimum number of points from each evaluation element, i.e. the total of minimal 36 points from the first four evaluation elements. The final exam is in written form and it consists of 20 questions. Each correct answer is worth 2 points. A student can gain 40 points max. (20 correct answers). The minimal number of points a student must gain at the final exam is 24 (12 correct answers).
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. **Article 41:** a student can justifiably be absent from up to 50 % of the lectures; 20% of the seminars and 20 % of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	Preliminary exam I: 17.10.2023. Preliminary exam II: 12.11.2023. Preliminary exam retakes: 26.01.2024. and 09.02.2023.
Final exams (dates)	30.01.2024. 23.02.2023.
Form of final exam	Written form

LITERATURE

Obligatory literature	F. A. Bettelheim, W. H. Brown, J. March (2004): Introduction to General, Organic, and Biochemistry, Thomson. M. M. Bloomfield (1992): Chemistry and the Living Organism, John Wiley & Sons, Inc. M. S. Silberberg (2000): Chemistry, The Molecular Nature of Matter and Change, McGraw Hill. L. Krstulović and K. Starčević (2020) Chemical calculation, Veterinary faculty, Zagreb L. Krstulović and K. Starčević (2020) Laboratory exercises in medical chemistry
Optional literature	F. A. Carey (2003): Organic chemistry, McGrawHill, New York J. G. Smith (2006): Organic chemistry, McGrawHill, New York

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	The objective of this course is that students acquire knowledge of: matter structure, basic inorganic chemical reactions, structures and reactions of organic compounds, main groups of natural compounds and practical knowledge of chemical calculation, qualitative and quantitative analysis. Knowledge acquired by the following syllabus is going to be a base for attending and understanding of courses

	during the Veterinary medicine studies.	
Learning outcomes	Learning outcomes at the level of the course: Ater successful completion of the course the student will be able to: 1. apply basic chemical reactions and physicochemical processes; 2. compare the structure and properties of simple organic compounds and complex biologically important molecules; 3. link the relationship of chemical structure of a molecule and its physical and chemical properties; 4. independently use basic methods of analytic chemistry for quantitative and qualitative analysis; 5. apply chemical calculations to solve the tasks.	

GRADING SCHEME

Points	*Grade*
Up to 59	1 (F)
60-68	2 (E)
69-76	2 (D)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

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GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES, SEMINARS and PRACTICALS

Type of activity	Minimum number of points	Maximum number of points
Lectures attendance	3	6
Seminar attendance	4	6
Practicals attendance	4	6
Active participation in seminars and practicals	5	10
Continuous knowledge checking (mid-terms)	20	32
Final exam	24	40
TOTAL	60	100

GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES and SEMINARS

Type of activity	Minimum number of points	Maximum number of points
Lecture attendance	3	6
Practicals attendance	8	12
Active participation in practicals	5	10
Continuous knowledge checking (mid-terms)	20	32
Final exam	24	40
TOTAL	60	100

GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH SEMINARS and EXCERCISES

Type of activity	Minimum number of points	Maximum number of points
Seminar / practicals attendance	11	18
Active participation in seminars and practicals	5	10
Continuous knowledge checking (mid-terms)	20	32
Final exam	24	40
TOTAL	60	100

Course leader:

Head of Department/Clinic:

Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Course.