

Course: Biochemistry in Veterinary Medicine

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
Tel. 01/2390301
Division: Pre-Clinical Sciences Division
Organizational unit: Chemistry and Biochemistry
E-mail of the course leader: jkules@vef.unizg.hr
Register No of the organisational unit:
Zagreb, 26.01.2026.

COURSE SYLLABUS

Course name: Biochemistry in Veterinary Medicine
Academic year 2025/2026

Course leader: Assist Prof Josipa Kuleš
Deputy course leader: Full Prof Renata Barić Rafaj

Teachers: Full Prof Renata Barić Rafaj, Assist. Prof Josipa Kuleš

First day of classes: 25/2/2026
Last day of classes: 28/5/2026

Activities - Biochemistry in Veterinary Medicine (1/3)

Start Date	Start T	End Ti	Course	Group	Note	Length	Instructor	Room
25/02/2026	11:45	13:15	p01 Aminoacids	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
26/02/2026	12:45	13:30	s01 Modifications	2E-1, 2E-2		0:45	Kuleš J.	P_kemija
04/03/2026	11:10	13:25	v01 Separation	2E-1, 2E-2		2:15	Kuleš J.	P_kemija, V_kemija
05/03/2026	8:00	9:30	p02 Proteins	2E-1, 2E-2		1:30	Kuleš J.	P_kemija
05/03/2026	9:45	10:30	s02 Proteins	2E-1, 2E-2, 2E-3, P_kemija		0:45	Barić Rafaj R.	P_kemija
11/03/2026	10:30	12:45	v02 Proteins	2E-1, 2E-2		2:15	Kuleš J.	P_kemija, V_kemija
16/03/2026	14:00	15:30	p03 Enzymes	2E-1, 2E-2		1:30	Kuleš J.	P_kemija
17/03/2026	13:30	15:45	v03 Enzims	2E-1, 2E-2		2:15	Kuleš J.	P_kemija, V_kemija
19/03/2026	14:00	14:45	s03 Enzymes	2E-1, 2E-2, 2E-3		0:45	Kuleš J.	P_kemija
20/03/2026	14:00	15:30	p04 Hemoglobin	2E-1, 2E-2		1:30	Kuleš J.	P_kemija
23/03/2026	9:00	11:15	p05 Collagen, Coagulation, Signals	2E-1, 2E-2		2:15	Barić Rafaj R.	P_kemija
24/03/2026	11:30	13:00	p06 ATP, Glycolysis	2E-1, 2E-2		1:30	Kuleš J.	P_kemija
30/03/2026	14:30	15:15	s04 Hemoglobin	2E-1, 2E-2, 2E-3		0:45	Kuleš J.	P_kemija
31/03/2026	14:00	15:30	p07 Glycolysis	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
01/04/2026	11:45	14:00	v04 Hemoglobin	2E-1, 2E-2		2:15	Kuleš J.	P_kemija, V_kemija
07/04/2026	14:00	14:45	s05 Glycolysis	2E-1, 2E-2, 2E-3, P_kemija		0:45	Kuleš J.	P_kemija
09/04/2026	8:00	9:30	p08 Citric acid cycle	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
13/04/2026	11:00	13:15	v05 Glucose	2E-1, 2E-2		2:15	Nastavnici na predmetu	P_kemija, V_kemija
16/04/2026	8:15	10:30	p09 Oxidative phosphorylation	2E-1, 2E-2		2:15	Barić Rafaj R.	P_kemija

Activities - Biochemistry in Veterinary Medicine (2/3)

Start Date	Start T	End Ti	Course	Group	Note	Length	Instructor	Room
20/04/2026	13:00	13:45	s06 Regulation	2E-1, 2E-2, 2E-3, P_kemija		0:45	Kuleš J.	P_kemija
22/04/2026	10:15	11:45	p10 Glycogen, Pentose Pathway	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
24/04/2026	9:30	11:00	v06 Glycogen	2E-1, 2E-2		1:30	Nastavnici na predmetu	P_kemija
27/04/2026	11:15	12:00	s07 Inhibitors	2E-1, 2E-2, 2E-3, P_kemija		0:45	Kuleš J.	P_kemija
04/05/2026	12:00	13:30	p11 Gluconeogen, Lipids	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
04/05/2026	13:40	14:25	s08 Glutation	2E-1, 2E-2, 2E-3, P_kemija		0:45	Kuleš J.	P_kemija
06/05/2026	10:00	10:45	s09 cAMP	2E-1, 2E-2, 2E-3, P_kemija		0:45	Barić Rafaj R.	P_kemija
06/05/2026	11:00	12:30	p12 Lipids, Ketones	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
11/05/2026	13:00	15:15	v07 Lipids	2E-1, 2E-2		2:15	Nastavnici na predmetu	P_kemija, V_kemija
12/05/2026	13:45	15:15	p13 Urea cycle	2E-1, 2E-2		1:30	Barić Rafaj R.	P_kemija
13/05/2026	14:00	14:45	s10 Ketones	2E-1, 2E-2, 2E-3		0:45	Kuleš J.	P_kemija
14/05/2026	11:00	12:30	v08 Urea	2E-1, 2E-2		1:30	Nastavnici na predmetu	P_kemija
18/05/2026	9:30	11:00	v09 Urine	2E-1, 2E-2		1:30	Nastavnici na predmetu	P_kemija
18/05/2026	13:00	13:45	s11 Aminoacids	2E-1, 2E-2, 2E-3		0:45	Kuleš J.	P_kemija
20/05/2026	11:00	11:45	s12 Vitamins	2E-1, 2E-2, 2E-3		0:45	Barić Rafaj R.	P_kemija

Activities - Biochemistry in Veterinary Medicine (3/3)

Start Date	Start T	End Ti	Course	Group	Note	Length	Instructor	Room
21/05/2026	8:15	10:30	p14 Integration of metabolism	2E-1, 2E-2		2:15	Barić Rafaj R.	P_kemija
22/05/2026	12:15	13:00	s13 Integration	2E-1, 2E-2, 2E-3		0:45	Kuleš J.	P_kemija
25/05/2026	12:15	13:00	s14 ATP	2E-1, 2E-2, 2E-3		0:45	Barić Rafaj R.	P_kemija
28/05/2026	11:00	13:15	v10 LDH	2E-1, 2E-2		2:15	Nastavnici na predmetu	P_kemija, V_kemija
Total: 38						54:00		

STUDENT OBLIGATIONS

Lecture attendance	Teaching takes place during 14 lectures. The attendance at each lecture is scored at 0.43 points (0.43 x 14L = 6 points maximum, 0.43 x 7L = 3 points minimum).
Seminars attendance	14 seminars: the attendance is scored at 0.43 points. (0.43 x 14S = 6 points maximum; 0.43 x 9S = 4 points minimum).
Practicals attendance	Students perform a total of 10 practicals, and the presence is scored with 0.6 points (0.6 x 10P = 6 points maximum, 0.6 x 7P = 4 points minimum).
Active participation in seminars and practicals	Practice exercises: a correctly performed exercise during 10 exercises is scored with 0.2 points, and the correct answers to 3 questions are scored with 0.3 points (0.5x10P = 5 points maximum, 2.5 points minimum). Seminar activity is evaluated with correct answers to a questions during 4 seminars, a total of 1.25 points (1.25 x 4 = 5 points maximum, 2.5 points minimum).
Final exam	It consists of a written exam containing 20 questions. The maximum number of points that can be achieved on the final exam is 40 and a minimum is 24. To attend to the exam, students have to pass colloquium with minimal 20 points (sum of all 3 colloquiums)
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine (2022). Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. Regulations On Intergraduate And Graduate Studies, Article 41: a student can justifiably be absent from up to 50% of the lectures; 30% of the seminars and 30% of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	1. COLL = 13/4/2026 G 1,2 2. COLL = 11/5/2026 G 1,2 + correction of 1 st coll 3. COLL = 28/5/2026 G 1, 2 + correction of 1 st and 2 nd coll Correction 16/6/2026, 30/6/2026.
Final exams (dates)	16/6/2026, 30/6/2026, 2/9/2026, 16/9/2026.
Form of final exam	Written exam

LITERATURE

Obligatory literature	BERG J. M., TYMOCZKO J. L., , STRYER L. (2014): Biochemistry, 7. Ed. Školska knjiga, Zagreb
Optional literature	DEVLIN, T. M. (2006): Textbook of Biochemistry with Clinical Correlations, A. J. Willey and sons, New York

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	Adopting knowledge about the structure and function of the most important proteins, carbohydrates and fats in the body, understanding the course and the connection of the metabolic pathways and how to regulate them
Learning outcomes	After successfully passing the course student will be able to: 1. to define the structure of most proteins, carbohydrates and fats in the body, and the importance of certain types of chemical bonds in metabolic processes 2. to explain the correlation of structure and main function of most proteins, carbohydrates and fats 3. to show the sequence of biochemical changes in the major metabolic pathways, explain the effect of the major enzyme systems in catalysis of certain reactions 4. to analyse the ways of regulation of biological activity 5. to apply a simple biochemical methods for measuring analytes in biological samples

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| | <p>6. to understand the connection of metabolic pathways and accept the theoretical basis for the selection and evaluation to the results of various laboratory measurements</p> <p>7. to understand changing of metabolic pathways using various treatment procedures</p> |
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GRADING SCHEME

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-76	2 (D,E)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

Course leader

Assist Prof Josipa Kuleš



Head of organizational unit:

Prof Renata Barić Rafaj



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