

2020-2021

COURSE NAME Biochemistry in Veterinary Medicine

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
Tel. 01/2390-301
Division: Department of Chemistry and Biochemistry
Email: rrafaj@vef.hr
Register no.:
File no.:
Zagreb, 05. Feb 2021.



117500	REPUBLIKA HRVATSKA	
Veterinarski fakultet u Zagrebu		
Primljeno:	05.02.2021	
Klasifikacijska oznaka	Org. jed.	
605-03/20-04/25	251-61-04;251-61-32;	
Uredbeni broj	Prilozi	Vrijednost
251-61-04-21-81	0	-

COURSE SYLLABUS

Course name: Biochemistry in Veterinary Medicine

Academic year 2020-21

Course leader: Prof. dr. sc. Renata Barić Rafaj

Teachers: Prof. dr. sc. Renata Barić Rafaj

Associate teachers: Andrea Tumpa, mag. med. biochem

First day of classes: 22.02.21.

Last day of classes: 28.05.21.

Timetable for LECTURES academic year 2020-2021

LECTURES				
Date	Methodological unit	Teacher	Location / time	Literature
22.02.21.	L1 Aminoacids	Prof. dr. sc. Barić Rafaj	MST, 12-14h	Stryer: Biochemistry
23.02.21.	L2 Proteins	Prof. dr. sc. Barić Rafaj	MST, 12-14h	Stryer: Biochemistry
02.03.21.	L3 Enzymes	Prof. dr. sc. Barić Rafaj	MST, 15-17h	Stryer: Biochemistry
12.03.21.	L4 Hemoglobin	Prof. dr. sc. Barić Rafaj	MST, 10-12h	Stryer: Biochemistry
16.03.21.	L5 Collagen, Coagulation, Signals	Prof. dr. sc. Barić Rafaj	MST, 09-11h	Stryer: Biochemistry
17.03.21.	L6 ATP, Glycolysis	Prof. dr. sc. Barić Rafaj	MST, 08-10h	Stryer: Biochemistry
18.03.21.	L7 Glycolysis	Prof. dr. sc. Barić Rafaj	MST, 11-13h	Stryer: Biochemistry
26.03.21.	L8 Citric acid cycle	Prof. dr. sc. Barić Rafaj	MST, 14-16h	Stryer: Biochemistry
29.03.21.	L9 Oxidative phosphorylation	Prof. dr. sc. Barić Rafaj	MST, 14-17h	Stryer: Biochemistry
06.04.21.	L10 Glycogen, Pentose Pathway	Prof. dr. sc. Barić Rafaj	BC, 11-13h	Stryer: Biochemistry
13.04.21.	L11 Gluconeogen., Lipids	Prof. dr. sc. Barić Rafaj	BC, 11-13h	Stryer: Biochemistry
15.04.21.	L12 Lipids, Ketones	Prof. dr. sc. Barić Rafaj	BC, 09-11h	Stryer: Biochemistry
29.04.21.	L13 Urea cycle	Prof. dr. sc. Barić Rafaj	BC, 14-16h	Stryer: Biochemistry
26.05.21.	L14 Integration of metabolism	Prof. dr. sc. Barić Rafaj	BC, 12-15h	Stryer: Biochemistry

BC = Department of Chemistry and Biochemistry

MST = Microsoft Teams Online

Timetable for SEMINARS academic year 2020-2021

SEMINARS					
Date	Methodological unit	Teacher	Group	Location / time	Literature
24.02.21.	S1 PTM	Prof. dr. sc. Barić Rafaj		BC, 08-09	Script: Seminars
24.02.21.	S2 Proteins	Prof. dr. sc. Barić Rafaj		BC, 09-10	Script: Seminars
03.03.21.	S3 Mich. Menten kinetics	Prof. dr. sc. Barić Rafaj		BC, 08-09	Script: Seminars
12.03.21.	S4 Degradation of Hb	Prof. dr. sc. Barić Rafaj		BC, 15-16	Script: Seminars
19.03.21.	S5 Anaerobic glycolysis	Prof. dr. sc. Barić Rafaj		BC, 14-15	Script: Seminars
07.04.21.	S6 Inhibitors of el. chain	Prof. dr. sc. Barić Rafaj		BC, 15-16	Script: Seminars
12.04.21.	S7 Glutathione	Prof. dr. sc. Barić Rafaj		BC, 14-15	Script: Seminars
16.04.21.	S8 Ketones	Prof. dr. sc. Barić Rafaj		BC, 13-14	Script: Seminars
28.04.21.	S9 cAMP	Prof. dr. sc. Barić Rafaj		BC, 10-11	Script: Seminars
30.04.21.	S10 Derivates of AA	Prof. dr. sc. Barić Rafaj		BC, 11-12	Script: Seminars
11.05.21.	S11 Vitamins	Prof. dr. sc. Barić Rafaj		BC, 11-12	Script: Seminars
27.05.21.	S12 Met. spec. of organs	Prof. dr. sc. Barić Rafaj		BC, 13-14	Script: Seminars

BC = Department of Chemistry and Biochemistry

Timetable for PRACTICALS academic year 2020-2021

PRACTICALS						
Date	Methodological unit	Teacher	Type of practical	Group	Location / time	Literature
26.02.21.	E1 Separation	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 11-13.30	Exercises - script
26.02.21.	E1 Separation	A.Tumpa, mag. med.biochem.	lab	3	BCL, 11.30-16	Exercises - script
01.03.21.	E2 Proteins	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	3	BCL, 12-14.30	Exercises - script
01.03.21.	E2 Proteins	A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 14.30-17	Exercises - script
04.03.21.	E3 Enzymes L	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 09-11.30	Exercises - script
04.03.21.	E3 Enzymes L	A.Tumpa, mag. med.biochem.	lab	3	BCL, 11.30-14	Exercises - script
08.03.21.	E Enzymes C	A.Tumpa, mag. med.biochem.	simulation	1	AH, 15-16	Exercises - script
11.03.21.	E Enzymes C	Prof. dr. sc. Barić Rafaj	simulation	2	AH, 10-11	Exercises - script
11.03.21.	E Enzymes C	Prof. dr. sc. Barić Rafaj	simulation	3	AH, 11-12	Exercises - script
15.03.19.	E4 Hemoglobin	A.Tumpa, mag. med.biochem.	lab	3	BCL, 10-12.30	Exercises – script
15.03.19.	E4 Hemoglobin	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 12.30-15	Exercises - script
24.03.21.	E5 Carbohydrates MC, EC1	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 07.30-10	Exercises - script
24.03.21.	E5 Carbohydrates MC, EC1	A.Tumpa, mag. med.biochem.	lab	3	BCL, 12-14.30	Exercises - script

2020-2021

COURSE NAME Biochemistry in Veterinary Medicine

08.04.21.	E6 Glycogen		Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 08-10	Exercises - script
08.04.21.	E6 Glycogen		A.Tumpa, mag. med.biochem.	lab	3	BCL, 13-15	Exercises – script
26.04.21.	E7 Lipids	MC, EC2	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	3	BCL, 08-10.30	Exercises - script
26.04.21.	E7 Lipids	MC, EC2	A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 10.30-13	Exercises - script
05.05.21.	E8 Urea		A.Tumpa, mag. med.biochem.	lab	3	BCL, 10-13	Exercises - script
07.05.21.	E8 Urea		Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 13-15.30	Exercises - script
17.05.21.	E9 Urine		A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 10-13	Exercises - script
18.05.21.	E9 Urine		Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	3	BCL, 12-15	Exercises - script
28.05.21.	E10 Integration,	MC, EC3	A.Tumpa, mag. med.biochem.	lab	3	BCL, 10-12.30	Exercises - script
28.05.21.	E10 Integration,	MC, EC3	Prof. dr. sc. Barić Rafaj A.Tumpa, mag. med.biochem.	lab	1,2	BCL, 12.30-15	Exercises - script

BCL = Laboratory of the Department of Chemistry and Biochemistry

AH = Department of Animal Husbandry

MC = Mandatory colloquium

EC = Exam colloquium (optional)

PR = Physiology and Radiobiology

STUDENT OBLIGATIONS

Lecture attendance	Teaching takes place during 14 lectures. The attendance at each lecture is scored at 0.43 points (maximum $0.43 \times 14 = 6$ points, minimum 3).
Seminars attendance	12 seminars: the maximum number of points to be collected is 6 (0.5×12 seminars = 6 points maximum and minimum is 4).
Practicals attendance	Students perform a total of 11 exercises, and the presence of exercises is scored with 0.55 points (0.55×11 exercises = 6 points maximum, minimum 4 points).
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 (0.5×10 exercises = 5 points maximum, minimum 2.5 points). Seminar activity is evaluated with correct answers to a few short questions during 4 seminars, a total of 1.25 points ($1.25 \times 4 =$ maximum 5 points, minimum 2.5 points).
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 MC (min 20 points).
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 45: 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)	Continuous monitoring of students' activities will be done by 3 colloquiums - the first of which is mandatory (MC)– the students need to collect at least 20 points, which is a condition for admission to the exam. The maximum number of points is 32. During the course, students may also attend to 3 optional, exam colloquium (EC = substitute for the exam), but just if they passed MC . If the student pass successfully all 3 exam colloquiums (minimum for every 24 points, maximum 40), the points are converted as a successfully passed biochemistry exam (if all others parameters are fulfilled).
---	--

	MC = 24.03.21., 26.04.21., 28.05.21. 1.EC = 24.03.21., 2.EC = 26.04.21., 3.EC = 28.05.21.
Final exams (dates)	23.04., 09.06.21., 23.06.21., 07.07.21., 01.09.21., 15.09.21.
Form of final exam	written

LITERATURE

Obligatory literature	Jeremy M. Berg, John L. Tymoczko, Lubert Stryer , Biochemistry, 7. Ed. Publisher: W. H. Freeman
Optional literature	T. M. 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	<p>After successfully passing the course student will be able to:</p> <ol style="list-style-type: none"> 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 6. to understand the connection of metabolic pathways and accept the theoretical basis for the selection and evaluation to the results of varuous laboratory measurements 7. to understand changing of metabolic pathways using various treatment procedures

GRADING SCHEME

<i>Points</i>	<i>Grade</i>
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)

Course leader:

Prof. dr. sc. Renata Barić Rafaj



Head of Department/Clinic:

Prof. dr. sc. Renata Barić Rafaj



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