BIOCHEMISTRY I

1	Course Title:	BIOCHEMISTRY I	
2	Course Code:	VET1008	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	2.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	-	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. MELTEM TANRIVERDİ	
15	Course Lecturers:	Prof.Dr. Ümit Polat, Prof.Dr. Nazmiye Güneş	
16	Contact information of the Course Coordinator:	melcetin@uludag.edu.tr 0 224 2941181 U.Ü.Veteriner Fakültesi Biyokimya ABD	
17	Website:		
18	Objective of the Course:	Comprehension of biological molecules, carbohydrates, lipids, proteins, enzymes, minerals, and their classification and basic biochemical knowledge about their physical, chemical and functional properties	
19	Contribution of the Course to Professional Development:	Being able to define carbohydrates, lipids, and proteins which constitute the energy sources and building blocks of the living organisms,Comprehension of basic knowledge that may be essential to other courses in veterinary medicine,Being able to disseminate knowledge gained about basic biochemical subjects both verbally and in writing.	
20	Learning Outcomes:		
		1	Comprehension of biophysical processes that are essential to survival of the living organisms.
		2	Being able to define carbohydrates, lipids, and proteins which constitute the energy sources and building blocks of the living organisms
		3	Comprehension of classification of enzymes and minerals, their properties and functions; being able to assess situations characterized by their excess and deficiency.
		4	Being able to comprehend laboratory safety regulations and being able to gain qualification to work in the laboratory.
		5	Being able to define basic reactions utilizing biochemical substances and apply them in the laboratory.
		6	Being able to interpret results obtained from studies in the laboratory.
		7	Comprehension of basic knowledge that may be essential to other courses in veterinary medicine.
		8	Being able to disseminate knowledge gained about basic biochemical subjects both verbally and in writing.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Description and subjects of biochemistry, functions, distribution and metabolism of cell water, properties of biochemical solutions	Introduction to biochemistry laboratory, the working principles in the laboratory, laboratory accidents, first aid informations
2	Diffusion, osmotic pressure, dialysis, surface tension, absorption, freezing point depression, hydrogen ion concentration and isotopes, the definition and classification of carbohydrates, aldoses and ketoses, the formulation and D and L forms of monosaccharides and epimerism.	Kinds of biochemical analysis, learning how to use the equipments and materials used for the qualitative analyses
3	Asymmetric carbon atom, stereoisomerism, optical activity, enantiomers, structure of the hemiacetal, 3 and a isomers, mutarotation, specific rotation	Molisch, Seliwanoff and Moore experiments, their principles and interpretations
4	Osazone formation, the effects of acids and alkalines on monosaccharides, enolisation, reduction and oxidation products of sugars, amino and deoxy sugars, phosphate derivative	Fehling, Benedict and Nylander experiments, their principles and interpretations
5	Glycosides, properties of monosaccharides and disaccharides, maltose and trehalose type glycosidic binding, properties of maltose, lactose, saccharose and cellobiose, structure	Fermentation, osazone formation and interpretation of test results
6	Description, classification and properties of lipids, saturated, unsaturated and essential properties, simple and complex glycerids	Hydrolysis of saccharose, investigating the properties and structure of saccharose reaction
7	The physical, chemical properties and neutral lipids, the simple and conjugated glycerides	Hydrolysis of polysaccharides, investigation of hydrolysis
8	Phospholycerides, sphingolipids, alcohol and waxes,terpenes, carotenoids, bile acids.	The formation of steroid, demonstration of double bound in unsaturated fatty acids, esterification, Salkowski
9	The physical properties, chemical reactions essential amino acids and their importance	Xanthoprotein, Biuret and Ninhydrine experiments, their
10	The formation of peptid bound, the structure denaturation of protein molecules, simple and conjugated proteins	Pettenkofer, Hay, Gmelin and Rosin experiments, their
11	Nucleic acids, structures, properties and types of DNA and RNA, chromoproteins, heme and phorphyrins, ETS's proteins, bilirubin and biliverdin	Precipitation of proteins with ammonium sulphate and heat
12	Properties of minerals, macrominerals and microelements, presence in the blood, deficiencies of minerals and malfunctions	Precipitation of proteins with mineral acids, heavy metals and alkaloids
13	Enzyme, catalyser, apoenzyme, prosthetic group, the structure and properties of enzymes, the mechanisms of enzyme reactions, action way, nomenclature of enzymes	Urease experiment, inhibition of urease

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	10	3.00	30.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	5.00	5.00
Others	1	5.00	5.00
Final Exams	1	10.00	10.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

14	Classification of enzymes, the factors affecting enzyme activity, enzyme inhibition, allosteric enzymes, coenzymes	The determination of catalase in the blood and liver

22	Textbooks, References and/or Other Materials:
23	Assesment

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	30.00
Quiz	1	10.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Quizz, Mid exam, Final exam

24 ECTS / WORK LOAD TABLE

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	1	4	2	1	3	1	1	1	1	1	1	0	0	0	0
ÖK2	4	1	4	2	1	4	1	1	1	1	1	1	0	0	0	0
ÖK3	5	1	4	5	2	2	1	1	1	1	1	1	0	0	0	0
ÖK4	4	1	5	3	3	2	1	1	1	1	1	1	0	0	0	0
ÖK5	4	1	4	4	2	2	1	1	1	1	1	1	0	0	0	0
ÖK6	4	1	4	4	2	1	1	1	1	1	1	1	0	0	0	0
ÖK7	4	1	4	1	1	5	1	1	1	1	1	1	0	0	0	0
ÖK8	4	1	4	1	4	1	1	1	1	4	1	1	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**