

Course Title		Biochemistry II							
Course Code		VET202		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	4	Workload	100 (<i>Hours</i>)	Theory	3	Practice	2	Laboratory	0
Objectives of the Course		Biyomolecules' metabolisms which takes place in metabolism of living organisms. Metabolism's control pathways. Chemical structure and biological importance of vitamins. Insufficiency, surplus and functions of the minerals acting important roles on organism							
Course Content		Vitamines, minerals, carbohydrates lipids and protein metabolism							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Experiment, Demonstration, Discussion					
Name of Lecturer(s)									

Prerequisites & Co-requisites

ECTS Requisite	40
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Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	28
Final Examination	1	48
Quiz	1	6
Assignment	1	6
Laboratory	1	12

Recommended or Required Reading

1	Kaya, N. (1993) Biyokimya, Atatürk Üniversitesi, Erzurum.
2	Ersoy, E., Bayşu, N. (1986) Biyokimya, Ankara Üniversitesi Veteriner Fakültesi, Ankara.
3	Murray, R.K. (1993) Harper's Biochemistry, Appleton and Lange, Norwalk.
4	Sittman, D. (2000) Biyokimya, çev. Güner G., Nobel, İstanbul
5	Onat, T., Emerk, K. (1997) Biyokimya, Saray, İzmir...

Week	Weekly Detailed Course Contents	
1	Theoretical	Vitamins and classifications, structure of lipid soluble vitamins, synthesis and biological acts
	Practice	Nucleic acid assays
2	Theoretical	Structure of water soluble vitamins, synthesis and biological acts, matters similar vitamin
	Practice	Assay of milk sugar
3	Theoretical	Ca, P, Na, K, Cl, Mg, Zn, Cu, Fe, Mn, F, Mo, Co, S, Cr, I, Se
	Practice	eggs experiments
4	Theoretical	Glycogenesis, glycogenolysis, glyconeogenesis, degradation of glucose to energy providing, steps of glycolysis, control mechanisms of glycolysis, key reactions in glycolysis, control of degradation of glucose by hormones
	Practice	Wool experiments
5	Theoretical	Degradation of glycogen into glucose residues, entrance of fructose and galactose into glycolysis, pathways of pyruvate end product of glycolysis, explanation of Cori-cycle, sorbitol pathway.
	Practice	bone tests
6	Theoretical	Citric acid cycle (TCA cycle, Krebs cycle), explaining of biological importance of crossroad between carbohydrate and lipid metabolisms, reaction of substances produced in citric acid cycle and interactions of this substances with other metabolic pathways, control mechanisms of citric acid cycle.
	Practice	Physical examination of the urine
7	Theoretical	Glikosilat döngüsü, Pentoz fosfat yolu ve önemi ruminantların enerji metabolizmasındaki farklılıklar, Glyoxilat cycle, pentose-phosphat pathway, and their important, differences in energy metabolism of ruminants
	Practice	Searching for protein in the urine



8	Theoretical	Lipids, digestion, absorption, β -oxidation
	Practice	Searching for sugar in the urine
9	Theoretical	Synthesis of fatty acids, ketone bodies and metabolism
	Practice	Assay of keton in urine
10	Theoretical	Eikazonoids, Lipoproteins, Triacylglycerols
	Practice	Searching for bile-colored substances in the urine
11	Theoretical	Sphingolipids, Cholesterol and metabolism
	Practice	assay blood in the urine
12	Theoretical	Protein synthesis, protein digestion, amino acid pool, nitrogen balance, specific molecules that synthesis from amino acids
	Practice	Microscopic examination of the urine
13	Theoretical	Amino acid metabolism, amino acids's general changing pathways, urea cycle, ammonia metabolism
	Practice	Assay of Cl in urine
14	Theoretical	Oksidatif fosforilasyon, elektron transport zinciri Oxidative phosphorylation, Electron transport chain
	Practice	Determine if a liquid urine
15	Theoretical	Nutrition biochemistry
	Practice	Practice exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	15	0	3	45
Lecture - Practice	15	0	2	30
Term Project	1	5	0	5
Reading	1	4	1	5
Quiz	2	1	0.5	3
Midterm Examination	1	5	0	5
Final Examination	1	7	0	7
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = ECTS				4

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To be able to have knowledge about basic issues related to the metabolism of biomolecules forming chemical structures of organisms
2	To be able to express general information about connection of metabolic pathways
3	To be able to understand the general information about control pathways of biomolecules' metabolisms
4	To be able to understand the vitamins' chemical structure and biological importance which acts an important role on metabolic reactions
5	To be able to obtain information about the chemical structure and functions of minerals
6	To be able to have knowledge of the biochemical changes in nutritional status
7	To be able to apply urine analyses

Programme Outcomes (Veterinary Medicine)

1	The student knows anatomy, structure/function of organs and tissues as well as physiological mechanisms of especially farm animals.
2	The student successfully executes the clinical applications on the basis of theoretical and applied knowledge.
3	The student diagnoses diseases using various examination methods.
4	The student can perform differential diagnosis by evaluating clinical findings in the light of laboratory findings.
5	The student is able to treat microbial, viral, parasitic and metabolic diseases successfully.
6	The student is able to perform basic surgical operations in animals.
7	The student is able to intervene in any type of parturition.
8	The student knows and executes basic principles of artificial insemination.
9	If the need arises, the student is able to perform necropsy and pathological evaluation for the aim of diagnosis and differential diagnosis.
10	The student knows and executes principles of preventive medicine.



11	The student applies needed applications on veterinary public health and food safety issues
12	The student recognizes different races of within a species on the basis of morphology and physiology
13	The student knows management practices concerning farm animals and is capable of managing of a farm
14	The student prepares animal nutrition rations for farm animals.
15	The student organizes feeding and nutrition programs in animal farms.
16	The student knows and executes the code of veterinary practice
17	The student knows and applies current legislative rules on animal welfare/rights
18	The student takes into account all scientific as well as professional ethic rules in executing veterinary practice
19	The student involves in all fields and practices concerning veterinary medicine

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5	L6	L7
P1	5	4	3	3	3	5	5
P4	4	4	4	4	4	4	4
P12	5	5	5	5	5	5	5
P19	4	4	5		4	4	4

