

BIOCHEMISTRY I

1	Course Title:	BIOCHEMISTRY I
2	Course Code:	MBG3005-BH
3	Type of Course:	Compulsory
4	Level of Course:	Third Cycle
5	Year of Study:	0
6	Semester:	0
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Dr. Öğr. Üyesi BURCU ERBAYKENT TEPEDELEN
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Dr. Öğr. Üyesi Burcu ERBAYKENT TEPEDELEN e-posta: berbaykent@uludag.edu.tr 0 224 29 42847 Fen-Edebiyat Fakültesi, Moleküler Biyoloji ve Genetik Bölümü, Görükle Kampüsü, 16059 Bursa
17	Website:	
18	Objective of the Course:	With the Biochemistry I course, the main objective is to provide information on the structure, organization and function of living material at molecular level. In this introductory lesson; It is aimed to associate the chemistry of biological components with biological function and to give basic information about biological macromolecules.
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, Being able to disseminate knowledge gained about basic biochemical subjects both verbally and in writing.
20	Learning Outcomes:	
	1	Ability to use basic knowledge of Biomolecules in living systems
	2	Understanding the structure, function and roles of biomolecules in the organism
	3	Ability to recognize different biomolecules and understand their essential properties for life
	4	Comprehension of classification of enzymes and minerals, their properties and functions; being able to assess situations characterized by their excess and deficiency.
	5	Understanding the reaction mechanisms in biological processes
	6	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	Introduction to biochemistry, weak interactions in aqueous media, non-covalent interactions			
2	Amino acids; structure / stereochemistry, classification and properties of sidechains, essential amino acids, ionization of amino acids and isoelectric point, amino acid reactions and amino acid composition analysis			
3	Peptides: classification, peptide bond and structure; stability and peptide bond formation, rotations, conformations, polypeptide property of peptides, Peptide N-, C- Terminal analysis: Sanger and Edman Degradation			
4	Proteins; Functional and structural classification, Organization of protein structure, Primary Structure: Nature of protein sequences, Secondary structure: helices, layer structures, β -Loop, irregular spiral structures, stability, characteristic features, Ramachandran curves, super secondary structure, protein motifs and domains			
5	Tertiary structure: Factors affecting tertiary			
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	keratin, collagen, elastin, protein isolation and purification	14	3.00	42.00
Practicals/Labs		0	0.00	0.00
Self study	storage of Hemoglobin / Myoglobin, concentration and allosteric changes	14	4.00	56.00
Homeworks		2	20.00	40.00
Projects	behavior, Bohr effect	0	0.00	0.00
Field Studies		0	0.00	0.00
Midterm Exams	general properties	1	15.00	15.00
8	Enzymes: Principles of catalysis, enzyme	0	0.00	0.00
Others	enzyme inhibition, regulation of enzyme activity	1	20.00	20.00
Final Exams				
Total Work Load				188.00
Total work load/ 30 hr	Classification, structures of metabolite and vitamin derived coenzymes, their role in			5.77
ECTS Credit of the Course				6.00
	vitamins as essential precursors, water and fat-soluble vitamins			
10	Nucleic acids: Nature of nucleic acids, primary, secondary and tertiary structures; base pairing, double helices, circular DNA and super helices, denaturation and renaturation, melting point of DNA			
11	Biological functions of nucleic acids, overview of molecular biology, storage of genetic information, genome, central dogma			

12	Protein Biosynthesis; Overview of gene expression, Replication: semiconservative replication, replication mechanisms, Telomeres and telomerases, DNA damage and repair, mutations, Transcription: genes and operons, regulation and inhibition of transcription, introns and exons, RNA processing: capping, cleavages, polyadenylation	
13	Carbohydrates: General properties, functions, classification	
14	Lipids: General properties, functions, classification	
22	Textbooks, References and/or Other Materials:	1) Lehninger Principles of Biochemistry”, 5 th Edn. Palgrave Macmillan, (2008) 2) Voet D., Fundamentals of Biochemistry: Life at the molecular Level.(2008) 3) Horton R., Principles of Biochemistry, Prentis Hall (2005) 4) Boyer R. Interactive Concepts in Biochemistry 2/e, Wiley (2008)
23	Assesment	
TERM LEARNING ACTIVITIES		NUMBER
Midterm Exam		1
Quiz		0
Home work-project		0
Final Exam		1
Total		2
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		Written examination
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	0	5	0	0	0	5	0	3	3	3	0	0	0	0	0	0
ÖK2	5	4	5	2	2	0	0	3	3	3	0	0	0	0	0	0
ÖK3	5	4	5	2	2	0	0	3	3	3	0	0	0	0	0	0
ÖK4	5	4	5	2	2	0	0	3	3	3	0	0	0	0	0	0
ÖK5	5	4	5	2	2	0	0	3	3	3	0	0	0	0	0	0
ÖK6	5	4	5	2	2	0	0	3	3	3	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low		2 low		3 Medium		4 High		5 Very High							

