

Chemistry (English)			
Bachelor	TR-NQF-HE: Level 6	QF-EHEA: First Cycle	EQF-LLL: Level 6

Course Introduction and Application Information

Course Code:	CHEM312						
Course Name:	General Biochemistry						
Semester:	Spring						
Course Credits:	<table border="1"> <tr> <td>ECTS</td> </tr> <tr> <td>5</td> </tr> </table>			ECTS	5		
ECTS							
5							
Language of instruction:	English						
Course Condition:							
Does the Course Require Work Experience?:	No						
Type of course:	Compulsory Courses						
Course Level:	<table border="1"> <tr> <td>Bachelor</td> <td>TR-NQF-HE:6. Master`s Degree</td> <td>QF- EHEA:First Cycle</td> <td>EQF-LLL:6. Master`s Degree</td> </tr> </table>			Bachelor	TR-NQF-HE:6. Master`s Degree	QF- EHEA:First Cycle	EQF-LLL:6. Master`s Degree
Bachelor	TR-NQF-HE:6. Master`s Degree	QF- EHEA:First Cycle	EQF-LLL:6. Master`s Degree				
Mode of Delivery:	Face to face						
Course Coordinator:	Dr. Öğr. Üy. MELİKE ATAKOL						
Course Lecturer(s):	Çiğdem Bilici						
Course Assistants:							

Course Objective and Content

Course Objectives:	<ol style="list-style-type: none"> 1. Introduction to basic concepts of biochemistry and development of biochemistry perspective for chemistry 2. Understanding of the roles and structural features of biomolecules such as protein, enzyme, DNA and RNA, which are fundamental for the basic functions of a cell. 3. Understanding the fundamental events for cells such as transcription, translation and glucose catabolism.
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Course Content:	This course explores the roles of essential biological molecules such as amino acids, nucleotides, vitamins and so forth. Subsequently, the course targets investigating macro structures formed of basic biological molecules. Students will examine the structure of proteins and nucleic acids in association with their function, their binding to other molecules. In addition, numerous cellular events linked to nucleic acids will be covered in detail. Also, the course aims giving insight to metabolism. Accordingly, principles of carbohydrate metabolism are examined from thermodynamic and regulatory perspectives.
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Learning Outcomes

The students who have succeeded in this course;

- 1) Learning the fundamental concepts of biochemistry.
- 2) Comprehending the structure and the function of biomolecules such as amino acids, nucleotides and nucleosides.
- 3) Comprehending the structures and function of macromolecules such as proteins, nucleic acids
- 4) Understanding basic cellular events
- 5) Investigating basic principles of metabolic pathways.

Course Flow Plan

Week	Subject	Related Preparation
1)	Introduction to Biochemistry	
2)	Amino Acids and Primary Structure of Proteins	
3)	Three-Dimensional Structures of Proteins	
4)	Nucleotides, Nucleic Acids and Nucleic Acids	
5)	Enzymes	
6)	Proteins	
7)	Carbohydrates	
8)	Take-home exam	
9)	Translation, Transcription	
10)	Introduction to Metabolism	
11)	Glycolysis, Fermentation	
12)	Citric Acid Cycle, Gluconeogenesis	
13)	Electron Transport and Oxidative Phosphorylation	

14)	Purification of Proteins	
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Sources

Course Notes / Textbooks:	Fundamentals of Biochemistry 3rd Edition, Donald Voet Judith G. Voet, Charlotte W. Pratt.
References:	<p>Concepts in Biochemistry 3rd Edition, Rodney Boyer</p> <p>Genes V, Benjamin Lewin</p> <p>Bioorganic Chemistry - Proteins, Sidney M. Hecht</p> <p>Bioorganic Chemistry – Nucleic Acids, Sidney M. Hecht</p>

Course - Program Learning Outcome Relationship

Course Learning Outcomes	1	2	3	4	5
Program Outcomes					
1) Knows the basic concepts related to the theory and applications of chemistry, uses theoretical and applied knowledge, can select, develop and design methods.	2	2	2		
2) Makes experimental planning and application for analysis, synthesis, separation and purification methods, provide solutions to the problems encountered and interpret the results.					
3) Expresses the basic principles of sample preparation techniques and instrumental analysis methods used in qualitative and quantitative analysis of items, discusses their application areas.					
4) Has knowledge about the sources, production, industrial applications and technologies of chemical substances.					
5) Makes structural analyzes of chemical substances and interprets the results.					2
6) Work individually and in multidisciplinary groups, take responsibility, plan their tasks and use time effectively.					
7) Follows the information in the field and communicates with colleagues by using English at a professional level.					
8) Uses information and communication technologies along with computer software at the level required by the field.					
9) Follows the national and international chemistry literature, transfers the knowledge gained orally or in writing.					
10) Determines self-learning needs, manages/directs his/her learning.					

Course Learning Outcomes	1	2	3	4	5
11) Takes responsibility and adheres to the ethical values required by these responsibilities.					

Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	Knows the basic concepts related to the theory and applications of chemistry, uses theoretical and applied knowledge, can select, develop and design methods.	2
2)	Makes experimental planning and application for analysis, synthesis, separation and purification methods, provide solutions to the problems encountered and interpret the results.	
3)	Expresses the basic principles of sample preparation techniques and instrumental analysis methods used in qualitative and quantitative analysis of items, discusses their application areas.	
4)	Has knowledge about the sources, production, industrial applications and technologies of chemical substances.	
5)	Makes structural analyzes of chemical substances and interprets the results.	2
6)	Work individually and in multidisciplinary groups, take responsibility, plan their tasks and use time effectively.	2
7)	Follows the information in the field and communicates with colleagues by using English at a professional level.	
8)	Uses information and communication technologies along with computer software at the level required by the field.	
9)	Follows the national and international chemistry literature, transfers the knowledge gained orally or in writing.	
10)	Determines self-learning needs, manages/directs his/her learning.	
11)	Takes responsibility and adheres to the ethical values required by these responsibilities.	

Assessment & Grading

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Semester Requirements	Number of Activities	Level of Contribution
Homework Assignments	2	% 25
Midterms	1	% 25
Final	1	% 50
total		% 100
PERCENTAGE OF SEMESTER WORK		% 50
PERCENTAGE OF FINAL WORK		% 50
total		% 100

Workload and ECTS Credit Calculation

Activities	Number of Activities	Preparation for the Activity	Spent for the Activity Itself	Completing the Activity Requirements	Workload
Course Hours	13	3			39
Homework Assignments	2	20			40
Midterms	1	15			15
Final	1	30			30
Total Workload					124