

Medical Laboratory Techniques			
Associate	TR-NQF-HE: Level 5	QF-EHEA: Short Cycle	EQF-LLL: Level 5

## Course Introduction and Application Information

Course Code:	SHM103		
Course Name:	Biochemistry		
Semester:	Fall		
Course Credits:	<div>ECTS</div> <div>3</div>		
Language of instruction:	Turkish		
Course Condition:			
Does the Course Require Work Experience?:	Yes		
Type of course:	Compulsory Courses		
Course Level:	<div>Associate</div> <div>TR-NQF-HE:5. Master`s Degree</div> <div>QF-EHEA:Short Cycle</div> <div>EQF-LLL:5. Master`s Degree</div>		
Mode of Delivery:	Face to face		
Course Coordinator:	Dr. Öğr. Üy. EBRU NUR AY		
Course Lecturer(s):	Asst. Prof. Ebru Nur AY		
Course Assistants:			

## Course Objective and Content

Course Objectives:	It is aimed to give the students competencies related to biochemistry, to introduce the biomolecules in the human organism, to convey the relations with metabolism.
Course Content:	Definition of biochemistry, aqueous environments where biochemical reactions take place and their properties, structure and functions of macromolecules, cell structure and membrane transport systems, degradation reactions of glucose, degradation reactions of lipids.

## Learning Outcomes

The students who have succeeded in this course;

- 1) Defines the structure of water, acid and base properties.
- 2) Defines intermolecular and intramolecular chemical bonds.
- 3) Defines the structure of macromolecules (protein, carbohydrates and fats).
- 4) Define the cell, cell organelles, cell membrane structure and selective permeability of the membrane.
- 5) Defines the metabolism of glucose in an oxygenated and anaerobic environment.
- 6) Lists the options for metabolizing lipids.

## Course Flow Plan

Week	Subject	Related Preparation
1)	Introduction to Biochemistry	Lecturer notes
2)	Structure of Water, Acids and Bases	Lecturer notes
3)	Macromolecules/Proteins	Lecturer notes
4)	Macromolecules/Carbohydrates	Lecturer notes
5)	Macromolecules/Lipids	Lecturer notes
6)	Macromolecules/Nucleic Acids	Lecturer notes
7)	Midterm	
8)	Osmosis, Body Buffer Systems	Lecturer notes
9)	Cells and organelles	Lecturer notes
10)	Cell membrane and membrane transport	Lecturer notes
11)	Biological Membranes and Membrane Transport Systems	Lecturer notes
12)	Osmosis, Body Buffer Systems I	Lecturer notes
13)	Metabolism	Lecturer notes
14)	Osmosis, Body Buffer Systems II	Lecturer notes

## Sources

Course Notes / Textbooks:	Öğretim üyesi ders notları Sağlık Bilimleri için Temel Biyokimya kitabı
References:	Lippincott Biyokimya

## Course - Program Learning Outcome Relationship

Course Learning Outcomes	1	2	3	4	5	6
Program Outcomes						
1) Medical laboratory techniques apply the basic knowledge and skills on the path to diagnosis from the patient samples, which are deemed necessary by the physicians, by gaining the competence towards the general and applied sciences of basic medicine fields such as microbiology, biochemistry, hematology and immunology for human health.						
2) It takes part in the acceptance of samples to be examined in the medical laboratory.						
3) Performs pre-analysis, prepares preparations, applies disinfection and sterilization techniques.						
4) It has the knowledge of the preparation of the chemical materials, microbiological materials and media used for the analysis process, the methods of the patient samples taken and the methods to be applied to these materials and materials.						
5) In the medical laboratory, he / she makes the medical tests required by the relevant specialist physician and submits it to the laboratory chief and / or specialist doctor to check the results and to report and approve.						
6) It is responsible for the storage and storage of laboratory equipment and consumables in accordance with biosafety levels.						
7) Medical laboratory equipment in accordance with the rules and techniques to use, controls and maintains the most efficient work by maintaining.						
8) It follows the disposal of waste according to the biosecurity rules and provides urgent information to the responsible personnel in critical situations related to laboratory safety.						
9) The organization organizes work in the medical laboratory and undertakes the responsibility of team work and takes individual responsibility when fulfilling its professional duties.						
10) Establishes effective communication with colleagues, patients, physicians and other health professionals by considering professional and ethical values related to the field.						
11) As an individual working in the field of medical laboratory, he acts in accordance with the laws, regulations and legislation related to his duties, rights and responsibilities.						

Course Learning Outcomes	1	2	3	4	5	6
12) Has enough awareness about individual and public health, environmental protection and occupational safety. Develops itself in communication, takes an active role in group work.						
13) It has the awareness of lifelong learning and directs its education to an advanced level of education in the same field or to a profession at the same level.						
14) It follows information in the field by using a foreign language at least at the level of European Language Portfolio A2 General Level.						
15) Uses information and communication technologies together with computer software at the basic level of at least European Computer Driving License required by the field.						

### Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	Medical laboratory techniques apply the basic knowledge and skills on the path to diagnosis from the patient samples, which are deemed necessary by the physicians, by gaining the competence towards the general and applied sciences of basic medicine fields such as microbiology, biochemistry, hematology and immunology for human health.	
2)	It takes part in the acceptance of samples to be examined in the medical laboratory.	
3)	Performs pre-analysis, prepares preparations, applies disinfection and sterilization techniques.	
4)	It has the knowledge of the preparation of the chemical materials, microbiological materials and media used for the analysis process, the methods of the patient samples taken and the methods to be applied to these materials and materials.	
5)	In the medical laboratory, he / she makes the medical tests required by the relevant specialist physician and submits it to the laboratory chief and / or specialist doctor to check the results and to report and approve.	
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8)	It follows the disposal of waste according to the biosecurity rules and provides urgent information to the responsible personnel in critical situations related to laboratory safety.	
9)	The organization organizes work in the medical laboratory and undertakes the responsibility of team work and takes individual responsibility when fulfilling its professional duties.	
10)	Establishes effective communication with colleagues, patients, physicians and other health professionals by considering professional and ethical values related to the field.	
11)	As an individual working in the field of medical laboratory, he acts in accordance with the laws, regulations and legislation related to his duties, rights and responsibilities.	
12)	Has enough awareness about individual and public health, environmental protection and occupational safety. Develops itself in communication, takes an active role in group work.	
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### Assessment & Grading

Semester Requirements	Number of Activities	Level of Contribution
Midterms	1	% 40
Final	1	% 60
<b>total</b>		<b>% 100</b>
PERCENTAGE OF SEMESTER WORK		% 40
PERCENTAGE OF FINAL WORK		% 60
<b>total</b>		<b>% 100</b>

### Workload and ECTS Credit Calculation

Activities	Number of Activities	Workload
Course Hours	13	26

Study Hours Out of Class	13	39
Midterms	1	1
Total Workload		66