

Course Name	Code	Semester	Theory (hrs/week)	Application (hrs/week)	Laboratory (hrs/week)	ECTS
<b>Carbohydrate metabolism</b>	BIK502	Spring	3	0	0	3
Prerequisites	No					
Course language	Turkish					
Course Type	Imperative					
Learning and teaching techniques of the course	Lecture, question-answer, brainstorming, discussion					
Course instructor(s)	Assist. Asst. Prof. Meltem GÜNGÖR					
Course objectives	Carbohydrate digestion and absorption, glycolysis, gluconeogenesis, TCA cycle, electron transport chain, glycogenesis, glycogenolysis, pentose phosphate pathway and uronic acid pathway.					
Learning outcomes of the course	<ol style="list-style-type: none"> <li>1. Explains carbohydrate digestion and absorption</li> <li>2. Describes cell respiration and glycolysis and summarizes the energy gain and control of glycolysis</li> <li>3. Enumerates the reaction steps of gluconeogenesis and summarizes the reciprocal regulation of glycolysis and gluconeogenesis</li> <li>4. Pyruvate dehydrogenase explains enzyme structure, reaction, and control</li> <li>5. Defines TCA cycle steps and control</li> <li>6. Summarizes glycerophosphate and malate-aspartate shuttles</li> <li>7. Describes the electron transport chain and ATP synthesis</li> <li>8. Explain glycogenesis and glycogenolysis reactions</li> <li>9. Explain the pentose-phosphate pathway and the uronic acid pathway</li> </ol>					
Resources	<ol style="list-style-type: none"> <li>1. Gürdöl F, Ademoğlu E. Biochemistry. Nobel Medical Bookstores, 4. Edition, 2019</li> <li>2. Nelson DL, Cox MM. Lehninger Principles of Biochemistry, W.H. Freeman; 7th Ed., 2017</li> <li>4. Rodwell VW, Bender DA, Botham KM, Kennelly PJ, Weil PA. Harper's Illustrated Biochemistry, McGraw-Hill Education, 31th Ed. 2018</li> <li>5. Onat T, Emerk K, Sözmen EY. Human Biochemistry, Palme Publishing, 2. Edition, 2006</li> </ol>					

### Weekly Course Topics:

WEEKS	TOPICS TO BE DISCUSSED
1. Week	Digestion and absorption of carbohydrates
2. Week	Cell respiration and glycolysis
3. Week	Energy gain and control of glycolysis
4. Week	Gluconeogenesis
5. Week	Reciprocal regulation of glycolysis and gluconeogenesis
6. Week	Pyruvate dehydrogenase reaction
7. Week	TCA cycle
8. Week	Control of the TCA cycle
9. Week	Glycerol phosphate and malate-aspartate shuttle
10. Week	Electron transport and ATP synthesis
11. Week	Glykonejenez
12. Week	Glykoyenolysis

13. Week	Pentose-phosphate pathway
14. Week	Uronic acid pathway and metabolism of important hexoses
15. Week	<b>Final Exam</b>

### Student Workload Table

Events	Number	Time	Total Workload
Lesson	14	3	42
Laboratory			
Application			
Fieldwork			
Out-of-Class Study Time (Freelancing/Group Work/Pre-Study)	5	4	20
Presentation (Shooting videos/Preparing posters/Making Oral Presentations/Focus Group Interviews/Conducting Surveys/Observation and Report Writing)	1	6	6
Seminar Preparation			
Project			
Case Study			
Role Playing, Dramatizing			
Writing an article-Criticizing			
Mid-term exams	1	7	7
Final exams			
<b>Total workload (hours) / 25(s)</b>	75 seconds /25 seconds =3		
<b>Ders ACT</b>	<b>3</b>		

### Evaluation System

Semester Studies	Number	Contribution
Midterm Exam	1	%40
Quiz		
Laboratory		
Application		
Fieldwork		
Course-Specific Internship (If Available)		
Assignments		
Presentation and Seminar		
Projects		
Other		
<b>Total of Semester Studies</b>		%40
<b>Final Work</b>		
Finale		
Homework		
Application	1	%60
Laboratory		
<b>Total of Final Studies</b>		%60
The Contribution of Semester Studies to the Success Grade		%40
The Contribution of the Final Exam to the Success Grade		%60
<b>Sum of Success Grade</b>		<b>100</b>

## THE RELATIONSHIP BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM COMPETENCIES

No	PROGRAM QUALIFICATIONS	Learning Outcomes								
		ÖÇ1	ÖÇ2	ÖÇ3	ÖÇ4	ÖÇ5	ÖÇ6	ÖÇ7	ÖÇ8	ÖÇ9
1	Have up-to-date knowledge at the level of expertise in the field of medical biochemistry based on undergraduate level competencies, develop and deepen them.	5	5	5	5	5	5	5	5	5
2	Have knowledge about information technologies, technical equipment and devices and instruments specific to the field at the level required by the field of medical biochemistry	2	2	3	3	2	2	3	3	3
3	Integrates the knowledge in the field of medical biochemistry with the information from different disciplines and interprets it to create new information, analyzes and synthesizes using different research methods and proposes solutions.	4	4	4	4	4	4	4	4	4
4	He writes the report of his research.	3	3	3	3	3	3	3	3	3
5	Plans and conducts experimental research.	4	4	4	4	4	4	4	4	4
6	Constructs issues that require expertise in the field of medical biochemistry, proposes solutions, solves problems, evaluates the results obtained and applies them when necessary.	4	4	5	5	4	4	5	5	5
7	Conducts scientific, clinical and/or descriptive research/presentation/publication on priority issues related to the field of medical biochemistry and public health.	5	5	5	5	5	5	5	5	5
8	Critically evaluates the information related to the field of medical biochemistry and directs learning.	5	5	5	5	5	5	5	5	5
9	Apply the principles of professional development and lifelong learning related to the field of medical biochemistry in the studies they carry out.	5	5	5	5	5	5	5	5	5
10	Discuss and share their knowledge, current developments and their own studies in the field of medical biochemistry with groups in the same field or outside the same field in a systematic way in written, oral and visual forms.	5	5	5	5	5	5	5	5	5
11	Critically examines the social relations in the professional and professional environment and the norms that guide these relations and does what is necessary to improve them.	5	5	5	5	5	5	5	5	5
12	Observes and teaches social, scientific and ethical values in the stages of collecting,	5	5	5	5	5	5	5	5	5

	recording, interpreting and announcing data related to the field of medical biochemistry.									
13	Evaluates current developments in the field of medical biochemistry in line with national values and country realities, including the child and family, which are the basic units of society.	5	5	5	5	5	5	5	5	5
14	Knows the importance of ethical principles and ethical committees for the individual and society, and behaves ethically.	4	4	4	4	4	4	4	4	4
15	Develops strategies, policies and implementation plans on issues related to the field of medical biochemistry and evaluates the results obtained within the framework of quality processes.	5	5	5	5	5	5	5	5	5
<b>Qualification level: 1: Low, 2: Low/Medium, 3: Medium, 4: High, 5: Excellent</b>										