

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY

Course Details					
<b>Code</b>				<b>Academic Year</b>	<b>Semester</b>
MBT222				2	4
<b>Title</b>	<b>T</b>	<b>A</b>	<b>L</b>	<b>ECTS</b>	
Molecular Biotechnology I	2	1	2	6	
<b>Language</b>	German				
<b>Level</b>	<b>Undergraduate</b>	X	<b>Graduate</b>		<b>Postgraduate</b>
<b>Department / Program</b>	Molecular Biotechnology				
<b>Forms of Teaching and Learning</b>	Face-to-face				
<b>Course Type</b>	<b>Compulsory</b>	X	<b>Elective</b>		
<b>Objectives</b>	<p>To become familiar with essential molecular biology processes and key mechanisms of gene regulation.</p> <p>Learning theoretical principles of the main techniques of molecular biology</p> <p>Summarizing and presenting scientific facts and their possible relevance to society</p>				
<b>Content</b>	<p>Basic knowledge of principles and mechanisms of storage, transmission and modification of biological genetic information.</p> <p>Central aspects of molecular biology and genomics, gene regulation in pro- and eukaryotes, DNA-protein interactions, processing of RNA, non-coding RNAs, retroviruses, RNA technologies and proteomics</p> <p>Major molecular biology techniques (DNA sequencing, cDNA/ and genomic libraries, cloning techniques, recombinant expression, identification of genes of inherited diseases, PCR).</p>				
<b>Prerequisites</b>	-				
<b>Coordinator</b>	-				
<b>Lecturer(s)</b>	-				
<b>Assistant(s)</b>	Res. Asst. Melis Işık Toksoy, Res. Asst. Şeyma İş				
<b>Work Placement</b>	-				
Recommended or Required Reading					
<b>Books / Lecture Notes</b>	-				
<b>Other Sources</b>	-				
Additional Course Material					
<b>Documents</b>	-				
<b>Assignments</b>	-				
<b>Exams</b>	-				
Course Composition					
<b>Mathematics and Basic Sciences</b>					%

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Engineering	10	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	90	%
Health Sciences		%
Expert Knowledge	100	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	25
Quiz	-	-
Assignments	2	30
Attendance	-	-
Recitations	-	-
Projects	-	-
Final Exam	1	45
<b>Total</b>		<b>100</b>

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	13	2	26
Self-Study	13	4	65
Assignments	2	10	20
Presentation / Seminar Preparation	1	10	10
Midterm Exam	1	2	2
Recitations	13	1	13
Laboratory	13	2	26
Projects	-	-	-
Final Exam	1	2	2
<b>Total Work Load</b>			<b>164</b>
<b>ECTS Points (Total Work Load / Hour)</b>			<b>6</b>

Learning Outcomes

1	Knowledge of molecular biology and genomics
2	The ability to apply knowledge of the basic sciences to applications in biotechnology
3	Understanding of molecular biology methods

Weekly Content

1	Biotechnology, areas of biotechnology (red, green and white biotechnology), model organisms.
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2	Structure and function of DNA&chromatin, replication of DNA
3	Development of eukaryotic genome (transposons, mutations, evolution)
4	DNA repair mechanisms, homologous recombination
5	Transcription and Translation
6	Control of gene expression
7	DNA Cloning, PCR, Recombinant Protein Expression ( Recombinant DNA Technology)
8	DNA analysis methods, sequencing of DNA, Southern blot, Northern blot, FISH, qPCR
9	Genomics and genetic screens
10	RNA technologies
11	Proteomics and protein analysis methods
12	Seminar - presentation of publications from the above-mentioned subject areas
13	Seminar - presentation of publications from the above-mentioned subject areas

**Contribution of Learning Outcomes to Program Objectives (1-5)**

	P1	P2	P3	P4	P5	P6	P7
1	5	5	5	5	-	4	4
2	5	5	5	5	-	4	4
3	5	5	5	5	-	4	4
<b>Contribution Level</b>	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
<a href="https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&amp;curSunit=5707">https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&amp;curSunit=5707</a>							
<b>Compiled by:</b>	Res. Asst. Dr. Betül Uluca						
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