

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY  
COURSE SYLLABUS

Course Details					
<b>Code</b>				<b>Academic Year</b>	<b>Semester</b>
MBT323				3	5
<b>Title</b>	<b>T</b>	<b>A</b>	<b>L</b>	<b>ECTS</b>	
Molecular Biotechnology II	2	1	2	6	
<b>Language</b>	German				
<b>Level</b>	<b>Undergraduate</b>	<b>X</b>	<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>	<b>X</b>	<b>Elective</b>		
<b>Objectives</b>	<p>The module provides in-depth knowledge in the field of red biotechnology and aims to familiarize the students with the scientific way of thinking and the experimental procedures with a special focus on therapeutic applications. Students will learn the ability to independently plan and carry out cloning in practice. In doing so, they will learn different strategies and techniques. The module teaches the basics of gene therapy as well as of modern antibody technologies. The students get to know the modern and biotechnological methods and are able to propose suitable concepts for solving current problems in the above-mentioned fields. The students learn how to deal with English-language technical articles.</p>				
<b>Content</b>	<ul style="list-style-type: none"> <li>- Model organisms and vectors</li> <li>- Cloning techniques (restriction enzymes, homologous recombination, CRISPR/Cas)</li> <li>- The molecular basis of tumorigenesis and modern therapeutic approaches (antibody technology, alternative scaffolds, therapeutic peptides)</li> <li>- Aging, apoptosis</li> <li>- Prion and viral infections</li> <li>- Non-infectious diseases</li> <li>- Genetic fingerprinting</li> <li>- Gene therapy - genetic engineering law</li> <li>- Current examples from the literature</li> <li>- Laboratory experiments (cloning)</li> </ul>				
<b>Prerequisites</b>	-				
<b>Coordinator</b>	-				
<b>Lecturer(s)</b>	-				
<b>Assistant(s)</b>	Res. Asst. Melis Işık Toksoy, Res. Asst. Ogün Morkoç				
<b>Work Placement</b>	-				
Recommended or Required Reading					
<b>Books / Lecture Notes</b>	D. Clark, N. Pazdernik, Molekulare Biotechnologie: Grundlagen und Anwendungen				
<b>Other Sources</b>	Original articles and reviews on the respective topics				
Additional Course Material					

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Documents	-		
Assignments	-		
Exams	-		
<b>Course Composition</b>			
Mathematics und Basic Sciences			%
Engineering	20		%
Engineering Design			%
Social Sciences			%
Educational Sciences			%
Natural Sciences	80		%
Health Sciences			%
Expert Knowledge	100		%
<b>Assessment</b>			
<b>Activity</b>	<b>Count</b>		<b>Percentage (%)</b>
Midterm Exam	1		25
Quiz	-		-
Assignments	2		30
Attendance	-		-
Recitations	-		-
Projects	-		-
Final Exam	1		45
		<b>Total</b>	<b>100</b>
<b>ECTS Points and Work Load</b>			
<b>Activity</b>	<b>Count</b>	<b>Duration</b>	<b>Work Load (Hours)</b>
Lectures	13	2	26
Self-Study	13	5	65
Assignments	1	10	10
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>154</b>
	<b>ECTS Points (Total Work Load / Hour)</b>		<b>6</b>

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Learning Outcomes							
1	Gain technical and application knowledge of cloning and gene therapy.						
2	Learning of modern and biotechnological methods and current problems from the specialties.						
Weekly Content							
1	Aging and apoptosis						
2	Molecular biology of cancer						
3	Biology of stem cells - stem cell therapy						
4	Non-infectious diseases						
5	Virus and prion infections						
6	Cloning strategies, targeted mutagenesis						
7	Genetic disorders and gene therapy (gene editing)						
8	Immunotechnology - Infectious Diseases - Antibody Technologies						
9	Forensic Molecular Biology - Genetic Fingerprinting - Analytical Biotechnology						
10	Bioethics in Biotechnology						
11	Seminar - presentation of publications from the above-mentioned subject areas						
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	3	5	5
2	5	5	5	5	-	5	5
<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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