

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY  
COURSE SYLLABUS

Course Details				
<b>Code</b>	<b>Academic Year</b>			<b>Semester</b>
MAT112	1			2
<b>Title</b>	<b>T</b>	<b>A</b>	<b>L</b>	<b>ECTS</b>
Analysis II and Linear Algebra	3	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>	The students are able to work with differential and integral calculus to solve different kinds of problems in mathematics. They gain an understanding about the important concepts of linear algebra.			
<b>Content</b>	Differential and integral calculus			
<b>Prerequisites</b>	-			
<b>Coordinator</b>	-			
<b>Lecturer(s)</b>	Asst. Prof. Dr. Neşe Aral Sözüner			
<b>Assistant(s)</b>	RA Rumeysa Fayetörbay			
<b>Work Placement</b>	-			
Recommended or Required Reading				
<b>Books / Lecture Notes</b>	1)Matematik für Ingenieure und Naturwissenschaftler, Band 1 & 2; Lothar Papula 2) Lineare Algebra; Strang, Dellnitz			
<b>Other Sources</b>	-			
Additional Course Material				
<b>Documents</b>	-			
<b>Assignments</b>	-			
<b>Exams</b>	-			
Course Composition				
<b>Mathematics und Basic Sciences</b>	100			%
<b>Engineering</b>				%
<b>Engineering Design</b>				%
<b>Social Sciences</b>				%
<b>Educational Sciences</b>				%

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Natural Sciences			%
Health Sciences			%
Expert Knowledge			%
<b>Assessment</b>			
<b>Activity</b>	<b>Count</b>		<b>Percentage (%)</b>
Midterm Exam	1		40
Quiz	-		-
Assignments	-		-
Attendance	-		-
Recitations	-		-
Projects	-		-
Final Exam	1		60
		<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	14	5	70
Self-Study	14	4	56
Assignments	-	-	-
Presentation / Seminar Preparation	-	-	-
Midterm Exam	1	2	2
Recitations	-	-	-
Laboratory	-	-	-
Projects	-	-	-
Final Exam	1	2	2
		<b>Total Work Load</b>	<b>130</b>
		<b>ECTS Points (Total Work Load / Hour)</b>	<b>6</b>
<b>Learning Outcomes</b>			
1	Ability to work with the concepts of differential and integral calculus, along with linear algebra		
<b>Weekly Content</b>			
1	Definite and indefinite integrals		
2	Calculation of surface areas		
3	Calculation of volumes		
4	Calculation of curve lengths		
5	Calculation of surface of rotational bodies		

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6	Calculation of center of mass
7	Exercise problems
8	Infinite series, Taylor Series
9	Complex numbers
10	Vectors and real matrices
11	Vector spaces
12	Determinants
13	Inverse of a matrix, orthogonal matrices
14	Linear equation systems
15	Eigenvalues and eigenvectors

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

	P1	P2	P3	P4	P5	P6	P7	P8
1	4	5	4	5	5	5	1	-

**Contribution Level** 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

**OBS LINK:**

**Compiled by:** Asst. Prof. Dr. Neşe Aral Sözener

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