

**DEPARTMENT OF MOLECULAR BIOTECHNOLOGY
COURSE SYLLABUS**

Course Details					
Code				Academic Year	Semester
MBT451				2	4
Title	T	A	L	ECTS	
Bioinformatics	2	0	2	6	
Language	German				
Level	Undergraduate	X	Graduate		Postgraduate
Department / Program	Molecular Biotechnology				
Forms of Teaching and Learning	Face-to-face				
Course Type	Compulsory	X	Elective		
Objectives	Bioinformatics combines questions, methods and concepts from biology, computer science and statistics. The contents of this module are chosen in such a way that they enable the students to get a first coherent overall picture of bioinformatics.				
Content	Sequence Analysis, Magic RNA, Genomes, Metabolism Modeling, System Biology and Diseases, Signaling Cascades, Complex Systems, Evolution, Design Principles of a Cell and R Programming.				
Prerequisites	-				
Coordinator	Assoc. Prof. Dr. Orkide Coşkuner Weber				
Lecturer(s)	Assoc. Prof. Dr. Orkide Coşkuner Weber				
Assistant(s)	-				
Work Placement	-				
Recommended or Required Reading					
Books / Lecture Notes	Thomas Dandekar und Meik Kunz, Bioinformatik: Ein Einführendes Lehrbuch, Springer Spektrum, ISBN 978-3-662-54697-0				
Other Sources	-				
Additional Course Material					
Documents	-				
Assignments	-				
Exams	-				
Course Composition					
Mathematics und Basic Sciences					%
Engineering					%

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

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	40%
Quiz	-	-
Assignments	-	-
Attendance	-	-
Recitations	-	-
Projects	-	-
Final Exam	1	60%
Total		100

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	13	2	26
Self-Study	7	10	70
Assignments	4	10	40
Presentation / Seminar Preparation	1	10	10
Midterm Exam	1	4	4
Recitations	-	-	-
Laboratory	13	2	26
Projects	-	-	-
Final Exam	1	4	4
Total Work Load			180
ECTS Points (Total Work Load / Hour)			6

Learning Outcomes

1	Knowledge of biological databases and software.
2	Be able to use bioinformatic tools to perform proteomic and genomic analysis.
3	To be able to combine biology, computer science and statistics.

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4	Learning R programming.						
Weekly Content							
1	Sequence analysis						
2	Magic RNA						
3	Genomes						
4	Modelling metabolism						
5	Systems Biology and Diseases						
6	Antibiotics discovery						
7	Detect superfast sequence comparisons						
8	Signal cascades						
9	When does a computer stop calculating?						
10	Complex systems						
11	Evolution						
12	Design principles of a cell						
13	New informatics languages in biology						
Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	P2	P3	P4	P5	P6	P7
1	1	2	3	-	-	-	-
2							
3							
4							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5707							
Compiled by:	Assoc. Prof. Dr. Orkide Coşkuner Weber						
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