DEPARTMENT OF MATERIALS SCIENCE AND TECHOLOGY
COURSE SYLLABUS

Course Details							
Code					**Academic Year**		**Semester**
BIO111					1		1
Title					**T**	**A**	**L**	**ECTS**
Biology					2	1	2	6
Language	German						
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**		
Department / Program	Materials Science and Technology						
Forms of Teaching and Learning	Face to face						
Course Type	**Compulsory**	**X**	**Elective**				
Objectives	The aim is to introduce the students of all programs in the faculty of natural sciences to biology starting with the fundamental basics and covering all disciplines of biology in order to show its application possibilities in their respective field.						
Content	Chemical principles of biology, role of water and carbon in biology, structure and function of biological macromolecules - Biological membranes, structures of plant and animal cells and their organelles - Basic principles of metabolism, respiratin and fermentation, photosynthesis - Cell cycle, mitosis and meiosis - Inharitance of traits, the gene concept, gene regulation - Viruses and genetic methods in biotechnology - Evolution and emerence of species - Introduction to pllants and their physiology - Introduction to animals and their physiology						
Prerequisites							
Coordinator	None						
Lecturer(s)	Associate Prof.Dr. Can Murat Ünal						
Assistant(s)	Research Assist. Semih Alpsoy						
Work Placement	No						
Recommended or Required Reading							
Books / Lecture Notes	Biology, Neil A. Campbell /Jane B. Reece, Pearson Publishing Biology, Purves, 2012, Jürgen Markl (ed.) Springer International Publishing						
Other Sources							
Additional Course Material							
Documents							
Assignments							
Exams							

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Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		100%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	35
Quiz		
Assignments	2	15
Attendance		
Recitations	5	20
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	14	2	28
Assignments	5	10	50
Presentation / Seminar Preparation	1	4	4
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	14	2	28
Projects			
Final Exam	1	2	2
		Total Work Load	**156**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes	
1	The student defines basic terms of biology.
2	The student explains the contribution of physical and chemical principles to the field of biology.

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3	The student defines the building blocks of living organisms, the cell architecture and its organelles including their functions.
4	The student explains the basic principles that ensure the operation of living systems o molecular, cellular, organ and organismal levels.
5	The student defines the basic mecahnisms that govern the transmission of traits and the emergence of species.
6	The student can transfer biological principles to other fields of natural sciences.
7	
8	
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11	
12	

Weekly Content	
1	Chemical fundamentals of life
2	Introduction to biology and its key issues
3	Water and life/Carbon and the molecular diversitz of life
4	Structure and function of biological macromolecules
5	Cells and their organelles/Structure and function of biological membranes
6	Introduction to metabolism/Cellular respiration and fermentation
7	Photosynthesis
8	Cell cycle, mitosis, meiosis
9	Transmission of genetic traits/From gene to protein
10	Regulation of gene expression.
11	Viruses/Genetic engineering in biotechnology
12	Evolution theory/Emergence of species
13	Introduction to plants and plant physiology
14	
15	

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

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**
1	5	3		3	2		5	3
2			5					
3								
4								
5								
6			5			5		

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7								
8								
9								
10								
11								
12								

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	