

**Üsküdar University**  
**Faculty of Engineering and Natural Sciences**  
**Bioengineering (English) Department**  
**2023-2024 Academic Year**

YEAR ONE															
1st Term							2nd Term								
Code	Course Name	T	U	L	C	ECTS	Prerequisite	Code	Course Name	T	U	L	C	ECTS	Prerequisite
PHYS101	Physics I*	3	0	2	4	6		PHYS102	Physics II*	3	0	2	4	6	
MATH101	Calculus I*	3	2	0	4	6		MATH102	Calculus II*	3	2	0	4	6	
CHEM103	Fundamentals of Chemistry*	3	0	2	4	6		CHEM104	Organic Chemistry*	3	0	2	4	6	
TURK101	Turkish Language I	2	0	0	2	3		TURK102	Turkish Language II	2	0	0	2	3	
RPS109	Positive Psychology and Communication Skills	3	0	0	3	5		BEN102	Introduction to Bioengineering	2	0	0	2	3	
RCUL101	University Culture I*	0	2	0	1	1		MBG154	General Biology*	2	0	2	3	4	
ENG101	English I	3	0	0	3	3		ENG102	English II	3	0	0	3	3	
								RCUL102	University Culture II*	0	2	0	1	1	
<b>Total Credits</b>								<b>Total Credits</b>							
17								18							
YEAR TWO															
3rd Term							4th Term								
Code	Course Name	T	U	L	C	ECTS	Prerequisite	Code	Course Name	T	U	L	C	ECTS	Prerequisite
BEN205	Stoichiometry	3	0	0	3	4		BEN202	Biochemistry	3	0	0	3	4	
CHEM203	Physical Chemistry	3	0	0	3	4		BEN207	Bioengineering Laboratory I*	0	0	4	2	3	
BEN209	Cell Biology**	3	0	2	4	5		CHE206	Fluid Mechanics and Applications	3	0	0	3	5	
MATH203	Differential Equations*	2	2	0	3	5		ATA102	Principles of Atatürk and History of Revolutions II	2	0	0	2	3	
XXXXXX	Social Elective I	3	0	0	3	5		BEN216	Kinetics and Reactor Design	3	0	0	3	5	
ATA101	Principles of Atatürk and History of Revolutions I	2	0	0	2	3		COME102	Introduction to Algorithms and Programming*	2	0	2	3	4	
RPE104	Entrepreneurship and Project Culture	2	0	0	2	3		BEN284	Summer Practice I**	0	0	0	0	5	
<b>Total Credits</b>								<b>Total Credits</b>							
18								13							
YEAR THREE															
5th Term							6th Term								
Code	Course Name	T	U	L	C	ECTS	Prerequisite	Code	Course Name	T	U	L	C	ECTS	Prerequisite
BEN301	Heat and Mass Transfer	3	0	0	3	5		BEN304	Bioengineering Laboratory II*	0	0	4	2	3	
COME211	Introduction to Programming for Engineers*	1	0	2	2	3		BEN326	Bioinformatics I	3	0	0	3	4	
BEN341	Human Physiology	2	0	0	2	3		XXXXXX	Social Elective III	3	0	0	3	5	
BEN333	General Microbiology*	2	0	2	3	5		MATH204	Statistics	3	0	0	3	5	
BENXXX	Departmental Elective I	3	0	0	3	5		BEN328	Genetic Engineering**	3	0	2	4	5	
XXXXXX	Field Elective I	3	0	0	3	5		BENXXX	Departmental Elective II	3	0	0	3	5	
XXXXXX	Social Elective II	3	0	0	3	5		BEN384	Summer Practice II**	0	0	0	0	5	
<b>Total Credits</b>								<b>Total Credits</b>							
17								15							
YEAR FOUR															
7th Term							8th Term								
Code	Course Name	T	U	L	C	ECTS	Prerequisite	Code	Course Name	T	U	L	C	ECTS	Prerequisite
BEN489	Graduation Project*	2	2	0	3	5		BEN492	Graduation Thesis*	1	8	0	5	8	BEN489
BEN409	Process Dynamics and Control	3	0	0	3	5		BENXXX	Departmental Elective V	3	0	0	3	5	
MBG408	Bioethics	2	0	0	2	3		BENXXX	Departmental Elective VI	3	0	0	3	5	
XXXXXX	Field Elective II	3	0	0	3	5		XXXXXX	Field Elective III	3	0	0	3	5	
BENXXX	Departmental Elective III	3	0	0	3	5		XXXXXX	Field Elective IV	3	0	0	3	5	
BENXXX	Departmental Elective IV	3	0	0	3	5		OHS402	Occupational Health and Safety II	2	0	0	2	2	
OHS401	Occupational Health and Safety I	2	0	0	2	2									
<b>Total Credits</b>								<b>Total Credits</b>							
18								15							

2023-2024	Total Course ECTS for Graduation	155
	Total Course Credits for Graduation	243
	Total Elective Courses ECTS	65
	Elective Course Ratio (%)	27

\*These courses are under the Applied Course status.  
 \*\*These courses are under the Internship Course status.

Elective Course Pool															
Code	Departmental Elective Courses	T	U	L	K	ECTS	Prerequisite	Code	Elective Foreign Languages	T	U	L	K	ECTS	Prerequisite
BEN206	Biomaterials	3	0	0	3	5		ESP123	Spanish I	3	0	0	3	5	
BEN213	Biosensors	3	0	0	3	5		ESP124	Spanish II	3	0	0	3	5	ESP123
BEN215	Engineering Economics	3	0	0	3	5		CHN123	Chinese I	3	0	0	3	5	
BEN217	Bio-CAD Modeling*	2	0	2	3	5		CHN124	Chinese II	3	0	0	3	5	CHN123
BEN218	Introduction to Astrophysics	3	0	0	3	5		ARB123	Arabic I	3	0	0	3	5	
BEN221	Biochemistry	3	0	0	3	5		ARB124	Arabic II	3	0	0	3	5	ARB123
BEN302	Bioprocess Design	3	0	0	3	5		RSN123	Russian I	3	0	0	3	5	
BEN310	Bioreactors	3	0	0	3	5		RSN124	Russian II	3	0	0	3	5	RSN123
BEN312	Downstream Processes	3	0	0	3	5		GER123	German I	3	0	0	3	5	
BEN313	Biothermodynamics	3	0	0	3	5		GER124	German II	3	0	0	3	5	GER123
BEN314	Introduction to Pathology	3	0	0	3	5		FRN123	French I	3	0	0	3	5	
BEN315	Bioprocess Engineering	3	0	0	3	5		FRN124	French II	3	0	0	3	5	FRN123
BEN317	Introduction to Biotechnology	3	0	0	3	5									
BEN321	Medicinal Chemistry	3	0	0	3	5									
BEN322	Nanoneuroscience	3	0	0	3	5									
BEN323	Metabolic Engineering	3	0	0	3	5									
BEN324	Measurement Techniques: Sensors	3	0	0	3	5									
BEN325	Bioelectromagnetic Interactions	3	0	0	3	5									
BEN327	Molecular Techniques in Bioengineering*	2	0	2	3	5	MBG314								
BEN329	Biological Clocks	3	0	0	3	5									
BEN331	Genomics	3	0	0	3	5									
BEN332	History of Science	3	0	0	3	5									
BEN334	Introduction to Nanotechnology	3	0	0	3	5									
BEN335	Animal and Plant Physiology	3	0	0	3	5									
BEN337	Drug Delivery	3	0	0	3	5									
BEN339	Virology	3	0	0	3	5									
BEN342	Fundamentals of Immunology	3	0	0	3	5									
BEN346	Mathematical Modelling	3	0	0	3	5									
BEN351	Bioengineering Project I	3	0	0	3	5									
BEN352	Bioengineering Project II	3	0	0	3	5									
BEN354	Special Topics in Bioengineering	3	0	0	3	5									
BEN355	Biomedical Engineering Principles	3	0	0	3	5									
BEN402	Computational Bioengineering	3	0	0	3	5									
BEN403	Parallel Algorithms for Bioengineers	3	0	0	3	5	BEN326								
BEN404	Protein Chemistry	3	0	0	3	5									
BEN405	Protein Engineering and Synthetic Vaccines	3	0	0	3	5									
BEN406	Tissue Engineering	3	0	0	3	5									
BEN407	Molecular Modeling	3	0	0	3	5									
BEN408	Quantum Chemistry	3	0	0	3	5									
BEN410	Basic Principles of Animal Experiments	3	0	0	3	5									
BEN412	Bioinformatics I	3	0	0	3	5	BEN326								
BEN413	Introduction to Radiation Physics	3	0	0	3	5									
BEN414	Artificial Intelligence Techniques in Bioengineering	3	0	0	3	5									
BEN415	Modeling in Process Safety	3	0	0	3	5									
BEN416	Introduction to Biomechanics	3	0	0	3	5									
BEN417	Bioengineering Laboratory III*	2	0	2	3	5									
BEN418	Molecular Mechanisms of Cancer	3	0	0	3	5									
BEN420	Bioprocess Design	3	0	0	3	5									
BEN421	Introduction to Cosmology	3	0	0	3	5									

**Field Elective Courses**  
 For Field Elective courses, any departmental elective course having appropriate credits from other departments of Faculty of Engineering and Natural Sciences can be elected.

**Social Elective Courses**  
 For Social Elective courses any course having appropriate credits from other faculties can be elected.