

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	
Total Credits		17	4	4	21	30		Total Credits		18	4	6	23	32	
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	
Total Credits		18	2	2	20	29		Total Credits		13	0	6	16	29	
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	
Total Credits		17	0	4	19	31		Total Credits		15	0	6	18	32	
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		Total Credits		15	8	0	19	30	

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									
BEN329	Biological Clocks	3	0	0	3	5		MBG314							
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.