

Üsküdar University
Faculty of Engineering and Natural Sciences
Bioengineering (English) Department
2024-2025 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	
TURK103	Turkish Language I	2	0	0	2	2		TURK104	Turkish Language II	2	0	0	2	2	
RPSC109	Positive Psychology and Communication Skills	3	0	0	3	5		BEN102	Introduction to Bioengineering	2	0	0	2	3	
RCUL103	University Culture I*	0	2	0	1	4		MBG154	General Biology*	2	0	2	3	4	
ENG103	English I	2	0	0	2	2		ENG104	English II	2	0	0	2	2	
RCUL104	University Culture II*	0	2	0	1	4									
Total Credits		16	4	4	20	31		Total Credits		17	4	6	22	33	
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		ATA104	Principles of Atatürk and History of Revolutions II	2	0	0	2	2	
XXXXXX	Social Elective I	3	0	0	3	5		BEN216	Kinetics and Reactor Design	3	0	0	3	5	
ATA103	Principles of Atatürk and History of Revolutions I	2	0	0	2	2		COAE102	Introduction to Algorithms and Programming*	2	0	2	3	4	
RPRE104	Entrepreneurship and Project Culture	2	0	0	2	3		BEN284	Summer Practice I**	0	0	0	0	5	
Total Credits		18	2	2	20	28		Total Credits		13	0	6	16	28	
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	
COAE111	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		BEN326	Bioinformatics I	3	0	0	3	4	
BEN419	Bioethics for Engineering	2	0	0	2	3		BENXXX	Departmental Elective V	3	0	0	3	5	
XXXXXX	Field Elective II	3	0	0	3	5		BENXXX	Departmental Elective VI	3	0	0	3	5	
BENXXX	Departmental Elective III	3	0	0	3	5		XXXXXX	Field Elective III	3	0	0	3	5	
BENXXX	Departmental Elective IV	3	0	0	3	5		XXXXXX	Field Elective IV	3	0	0	3	5	
OHS404	Occupational Health and Safety	4	0	0	4	4									
Total Credits		16	2	0	17	28		Total Credits		17	8	0	21	32	

Total Course Credits for Graduation	153
Total ECTS 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	Biometrics	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	Biopolymers	3	0	0	3	5		ARB124	Arabic II	3	0	0	3	5	ARB123
BEN302	Bioprocess Process	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		JAP123	Japanese I	3	0	0	3	5	
BEN321	Medicinal Chemistry	3	0	0	3	5		JAP124	Japanese II	3	0	0	3	5	JAP123
BEN322	Nanoneuroscience	3	0	0	3	5		ITA123	Italian I	3	0	0	3	5	
BEN323	Metabolic Engineering	3	0	0	3	5		ITA124	Italian II	3	0	0	3	5	ITA123
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 Modeling	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 Bioprocessors	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 II	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									

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

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