Üsküdar University
Faculty of Engineering and Natural Sciences
Department of Molecular Biology and Genetics (English)
2025-2026 Academic Year

YEAR ONE

1st Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG101	General Biology I*	3	0	2	4	7	
MATH101	Calculus I*	3	2	0	4	6	
PHYS101	Physics I*	3	0	2	4	6	
CHEM101	General Chemistry I*	3	0	2	4	6	
RCUL103	University Culture I*	0	2	0	1	4	
RPSC109	Positive Psychology and Communcation Skills	3	0	0	3	5	
Total Credits		**15**	**4**	**6**	**20**	**34**	

2nd Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG102	General Biology II*	3	0	2	4	7	
MBG108	Introduction to Programming*	1	0	2	2	3	
MATH102	Calculus II*	3	2	0	4	6	
PHYS102	Physics II*	3	0	2	4	6	
CHEM102	General Chemistry II*	3	0	2	4	6	
RCUL104	University Culture II*	0	2	0	1	4	
Total Credits		**13**	**4**	**8**	**19**	**32**	

YEAR TWO

3rd Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG209	Microbiology*	3	0	2	4	6	
MBG211	Genetics*	3	0	2	4	7	
MBGXXX	Departmental Elective I	3	0	0	3	5	
TURK103	Turkish Language I	2	0	0	2	2	
ATA103	Principles of Atatürk and History of Turkish Revolution I	2	0	0	2	2	
ENG103	English I	2	0	0	2	2	
RPRE104	Entrepreneurship and Project Culture	2	0	0	2	3	
Total Credits		**17**	**0**	**4**	**19**	**27**	

4th Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG204	Introduction to Bioinformatics*	2	2	0	3	5	
MBG210	Physiology*	3	0	2	4	6	
MBG212	Molecular Genetics	3	0	0	3	4	
CHEM104	Organic Chemistry*	3	0	2	4	6	MBG 211
TURK104	Turkish Language II	2	0	0	2	2	
ATA104	Principles of Atatürk and History of Turkish Revolution II	2	0	0	2	2	
ENG104	English II	2	0	0	2	2	
Total Credits		**17**	**2**	**4**	**20**	**27**	

YEAR THREE

5th Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG309	Biochemistry I*	3	0	2	4	7	CHEM 104
MBG325	Biotechnology	3	0	0	3	4	MBG 212
MBG331	Current Developments in Molecular Biology*	0	2	0	1	1	
MBGXXX	Project I	3	0	0	3	5	
XXXXXX	Departmental Elective II	3	0	0	3	5	
XXXXXX	Social Elective I	3	0	0	3	5	
XXXXXX	Social Elective II	3	0	0	3	5	
Total Credits		**18**	**2**	**2**	**20**	**32**	

6th Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG304	Recombinant DNA Technology*	3	2	0	4	7	MBG 212
MBG310	Biochemistry II*	3	0	2	4	7	CHEM 104
MBG314	Molecular Cell Biology*	3	0	2	4	7	
MBG384	Summer Practice**	0	0	0	0	5	
MBGXXX	Project II	3	0	0	3	5	
Total Credits		**12**	**2**	**4**	**15**	**31**	

YEAR FOUR

7th Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG447	Ecology and Sustainability	3	0	0	3	5	
MBG449	Biostatistics	3	0	0	3	5	
MBG451	Population Genetics	2	0	0	2	3	
XXXXXX	Departmental Elective III	0	6	0	3	5	
XXXXXX	Field Elective I	3	0	0	3	5	
XXXXXX	Social Elective III	3	0	0	3	5	
Total Credits		**14**	**6**	**0**	**17**	**28**	

8th Term

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MBG408	Bioethics	2	0	0	2	3	
MBG446	Graduation Thesis*	0	0	8	4	10	
MBGXXX	Departmental Elective IV	3	0	0	3	5	
MBGXXX	Departmental Elective V	3	0	0	3	5	
XXXXXX	Field Elective II	3	0	0	3	5	
OHS404	Occupational Health and Safety	4	0	0	4	4	
Total Credits		**15**	**0**	**8**	**19**	**32**	

2025-2026		
	Total Course Credits for Graduation	149
	Total Course ECTS for Graduation	243
	Total Elective Courses ECTS	60
	Elective Course Ratio	25%

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

Elective Courses Pool

DEPARTMENTAL ELECTIVES

Code	Course Name	T	P	L	C	ECTS
	Field : Biotechnology					
	Departmental Electives With Project (3rd Year & 4th Year)					
MBG318	Microbial Metabolism	3	0	0	3	5
MBG321	Plant Genetics and Biotechnology	3	0	0	3	5
MBG441	Advanced Methods in Molecular Biology	3	0	0	3	5
MBG427	Biochemical Ecology	3	0	0	3	5
MBG453	Enzymology	3	0	0	3	5
MBG450	Tissue Engineering	3	0	0	3	5
MBG452	Nanobiotechnology	3	0	0	3	5
MBG454	Biofuel Biotechnology	3	0	0	3	5
	Departmental Electives (4th Year)					
MBG440	Forensic Biology	3	0	0	3	5
	Field : Cell Biology					
	Departmental Electives With Project (3rd Year & 4th Year)					
MBG313	Cancer Molecular Biology	3	0	0	3	5
MBG341	Introduction to Toxicology	3	0	0	3	5
MBG342	Stem Cell Technologies	3	0	0	3	5
MBG458	Signal Transduction	3	0	0	3	5
MBG455	Free Radicals and Antioxidants	3	0	0	3	5
MBG457	Theoretical Organic Chemistry	3	0	0	3	5
MBG458	Drug Design in Organic Chemistry	3	0	0	3	5
MBG460	Nucleus Chemistry	3	0	0	3	5
MBG459	Hormones	3	0	0	3	5
MBG461	Immunology	3	0	0	3	5
	Departmental Electives (4th Year)					
MBG442	Nutritional Biochemistry	3	0	0	3	5
MBG463	Protein Biochemistry	3	0	0	3	5
MBG448	Evolution and Biodiversity	3	0	0	3	5
MBG456	Climate Change	3	0	0	3	5
MBG465	Instrumental Analysis	3	0	0	3	5
	Field : Genetics					
	Departmental Electives With Project (3rd Year & 4th Year)					
MBG316	Genes, Environment and Behavior	3	0	0	3	5
MBG319	Functional Genomics and Transciptomics	3	0	0	3	5
MBG330	Epigenetics	3	0	0	3	5
MBG333	Molecular Evolution	3	0	0	3	5
MBG343	Genetic Disorders	3	0	0	3	5
MBG467	CRISPR Genetic Engineering	3	0	0	3	5
MBG469	Molecular Mechanism of Diseases	3	0	0	3	5
MBG462	GMO and Biosecurity	3	0	0	3	5
MBG464	Nutrigenetics	3	0	0	3	5
MBG471	Molecular Principles of Development	3	0	0	3	5
MBG466	Artificial Intelligence and Genetics	3	0	0	3	5
MBG473	Stress Biology	3	0	0	3	5
MBG475	Special Projects	0	6	0	3	5
	Departmental Electives (4th Year)					
MBG418	Pharmacogenetics	3	0	0	3	5
MBG419	Sports and Performance Genetics	3	0	0	3	5
	Field : Neurobiology					
	Departmental Electives With Project (3rd Year & 4th Year)					
MBG435	Neurochemistry	3	0	0	3	5
MBG317	Memory	3	0	0	3	5
MBG323	Special Topics in Neuroscience	3	0	0	3	5
MBG326	Neurodevelopment	3	0	0	3	5
MBG417	Neurophysics	3	0	0	3	5
	Departmental Electives (4th Year)					
MBG411	Animal Behavior	3	0	0	3	5
MBG307	Neurobiology	3	0	0	3	5

Departmental Elective Courses (2nd Year)

Code	Course Name	T	P	L	C	ECTS
MBG205	Plant Biology	3	0	0	3	5
MBG340	Human Anatomy	3	0	0	3	5
MBG213	Histology and Embryology	3	0	0	3	5
MBG215	Animal Physiology	3	0	0	3	5
MBG214	History of Biology	3	0	0	3	5
MBG217	Scientific Research Methods	3	0	0	3	5
MBG219	Medicinal and Aromatic Plants	3	0	0	3	5
MBG221	Health Physics	3	0	0	3	5
MBG216	Biocosmetics	3	0	0	3	5
MBG218	Astrobiology	3	0	0	3	5
MBG220	Trace Elements	3	0	0	3	5

Social Elective Courses (Foreign Languages)

Code	Course Name	T	P	L	C	ECTS	Prerequisite
ESP123	Spanish I	3	0	0	3	5	
ESP124	Spanish II	3	0	0	3	5	ESP123
CHN123	Chinese I	3	0	0	3	5	
CHN124	Chinese II	3	0	0	3	5	CHN123
RSN123	Russian I	3	0	0	3	5	
RSN124	Russian II	3	0	0	3	5	RSN123
FRN123	French I	3	0	0	3	5	
FRN124	French II	3	0	0	3	5	FRN123
GER123	German I	3	0	0	3	5	
GER124	German II	3	0	0	3	5	GER123
JAP123	Japanese I	3	0	0	3	5	
JAP124	Japanese II	3	0	0	3	5	JAP123
ITA123	Italian I	3	0	0	3	5	
ITA124	Italian II	3	0	0	3	5	ITA123
ARB123	Arabic I	3	0	0	3	5	
ARB124	Arabic II	3	0	0	3	5	ARB123

Field Elective Courses

Code	Course Name	T	P	L	C	ECTS	Prerequisite
MDB402	Industrial Microbiology	3	0	0	3	5	
MDB403	Problems and Progress in Biomedical Science	3	0	0	3	5	

Field Elective Courses

For Field Elective courses, any departmental elective course (in English) 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 (in English) having appropriate credits from other faculties can be elected.

Project I and II

Courses in Project I and Project II elective pools will be conducted project based