GTU Bioengineering Course Schedule

08.02.2021 tarih ve 2021/01-06 Fakülte Kurulu Kararı; 17.02.2021 tarih ve 2021/03-12 Senato Kararı

1st Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
MATH 101	Calculus I	7	5	4	2	0	TB
PHYS 121	Physics I	6	4	4	0	0	TB
PHYS 151	Physics Laboratory I	1	1	0	0	2	TB
CHEM 101	General Chemistry I	5	3	3	0	0	TB
CHEM 113	General Chemistry Laboratory	1	1	0	0	2	TB
MBG 101	Principles of Biology	5	4	4	0	0	TB
MBG 103	Principles of Biology Laboratory	2	1	0	0	2	TB
TUR 101	Turkish I	2	2	2	0	0	SOS
BENG 100	Bioengineering Orientation and Career Planning	1	1	0	2	0	TM
	Total	**30**	**22**				

2nd Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
MATH 102	Calculus II	7	5	4	2	0	TB
PHYS 122	Physics II	6	4	4	0	0	TB
PHYS 152	Physics Laboratory II	1	1	0	0	2	TB
MATH 116	Linear Algebra	5	3	3	0	0	TB
CHEM 106	Organic Chemistry I	5	3	3	0	0	TB
TUR 102	Turkish II	2	2	2	0	0	SOS
BENG 101	Fundamentals of Bioengineering	4	3	3	0	0	TM
	Total	**30**	**21**				

3rd Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
MATH 215	Differential Equations I	5	3	2	2	0	TB
HİS 101	Principles Of Atatürk And The History Of Turkish Revolution I	2	2	2	0	0	SOS
	Non-Technical Elective I	3	3	3	0	0	TM
BENG 215	Python for Bioengineers	6	3	2	0	2	TB
BENG 201	Physical Chemistry	4	3	3	0	0	TB
BENG 211	Mass and Energy Balances	6	3	3	0	0	TM
BENG 223	Molecular Biology of the Cell	5	3	3	0	0	TB
	Total	**31**	**20**				

4th Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
MATH 214	Numerical Methods	5	3	3	0	0	TB
HİS 102	Principles Of Atatürk And The History Of Turkish Revolution II	2	2	2	0	0	SOS
ENGL 112	Academic English	2	2	2	0	0	SOS
BENG 212	Thermodynamics for Bioengineering	5	3	3	0	0	TM
BENG 214	Fluid Mechanics	6	3	3	0	0	TM
BENG 222	Biochemistry	5	3	3	0	0	TB
BENG 232	Fundamentals of Biomaterials	4	3	3	0	0	TM
	Total	**29**	**19**				

5th Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
ENG 300	Summer Practice I	1	0,5	0	1	0	TM
ENG 401	Occupational Health and Safety I	1	1	1	0	0	TM
ENGL 111	Business English	2	2	2	0	0	SOS
	Free Elective I	2	2	0	0	0	SOS
BENG 301	Bioengineering Laboratory I	4	2	0	0	4	TM
BENG 311	Heat and Mass Transfer in Bioengineering	6	3	3	0	0	TM
BENG 323	Fundamentals of Biotechnology	5	3	3	0	0	TB
BENG 331	Biostatistics	5	3	3	0	0	TM
BENG 4XX	Department Elective I	5	3	3	0	0	TM
	Total	**31**	**19,5**				

6th Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
ENG 402	Occupational Health and Safety II	1	1	1	0	0	TM
	Non-Technical Elective II	3	3	3	0	0	SOS
BENG 302	Bioengineering Laboratory II	4	2	0	0	4	TM
BENG 312	Bioreactors and Reaction Kinetics	6	3	3	0	0	MT
BENG 314	Mathematical Modelling & Control in Bioengineering	6	3	3	0	0	MT
BENG 316	Bioseparation	5	3	3	0	0	TM
BENG 332	Fundamentals of Biomechanics	4	3	3	0	0	TM
	Total	**29**	**18**				

7th Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
BENG 4XX	Department Elective III	5	3	3	0	0	TM
ENG 400	Summer Practice II	1	0,5	0	1	0	TM
BENG 411	Bioengineering Design	8	3	3	0	0	MT
BENG 433	Biomedical Engineering and Physiology	5	3	3	0	0	TM
BENG 491	Graduation Project I	6	4	4	0	0	TM
BENG 4XX	Department Elective II	5	3	3	0	0	TM
	Total	**30**	**16,5**				

8th Semester

Code	Course	ECTS	GTÜ	T	U	L	Türü
BENG 492	Graduation Project II	6	4	4	0	0	TM
	Technical Elective I	4	3	3	0	0	TM
BENG 4XX	Department Elective IV	5	3	3	0	0	TM
BENG 4XX	Department Elective V	5	3	3	0	0	TM
BENG 4XX	Department Elective VI	5	3	3	0	0	TM
BENG 4XX	Department Elective VII	5	3	3	0	0	TM
	Total	**30**	**19**				

8th Semester - Alternative

Code	Course	ECTS	GTÜ	T	U	L	Türü
BENG 492	Graduation Project II	6	4	4	0	0	TM
ENG498	Industrial Applications	24	0	0	0	0	TM
	Total	**30**	**4**				

Akreditasyon Ölçütleri ile Uyum Göstergeleri

Total Credits (ECTS)	240	155

Önşart Kuralları

Ders kodu ve adı		Ön şart dersi		
BENG 212	Biothermodynamics	BENG 201	Physicochemistry	
BENG 214	Fluid Mechanics	MATH 215	Differential Equations I	
BENG 311	Heat and Mass Transfer in Bioengineering	BENG 211	Mass and Energy Balances	
BENG 314	Mathematical Modelling & Control in Bioengineering	INF 215 MATH 215	Introduction to Computing Differential Equations I	
BENG 411	Bioengineering Design	BENG 211	Mass and Energy Balances	
BENG 491	Graduation Project I	BENG 301	Bioengineering Laboratory I	(2021-2022 Güz döneminden itibaren kaldırılmasına karar verilmiştir.)
BENG 492	Graduation Project II	BENG 301	Bioengineering Laboratory I	

	Non-Technical Elective					
ENG 250	Economics	3	3	0	0	TM
ENG 251	Methodology of Science	3	3	0	0	TM
ENG 451	Entrepreneurship	3	2	0	0	TM
ENG 255	Technical Writing	3	2	0	0	TM

	Departmental Elective	ECTS	T	U	L	Türü
BENG 361	Enzyme Engineering	5	3	0	0	TM
BENG 435	Introduction to Bioinformatics	5	3	0	0	TM
BENG 4XX	Systems Biology	5	3	0	0	TM
BENG400	Advanced Orthopaedic and Dental Biomechanics Laboratory	5	0	0	3	TM
BENG463	Protein Engineering	5	0	0	3	TM
BENG465	Advanced Applications of Biomaterials Lab	5	0	0	3	TM
BENG459	Genetics, Cell Biology and Biotechnological Applications of Yeast	5	3	0	0	TM
BENG461	Molecular Genetics	5	3	0	0	TM
BENG 454	Optimization in Bioengineering	5	3	0	0	TM
BENG 456	Biopolymers	5	3	0	0	TM
BENG 458	Bioinformatics and Systems Biology Laboratory	5	3	0	0	TM
BENG 460	Advanced Methods in Yeast Genetics	5	3	0	0	TM
BENG 462	Fundamental Methods for Biofabrication	5	3	0	0	TM
BENG 464	Advanced Bioprocess Design	5	3	0	0	TM
BENG 466	Biochemical Engineering	5	3	0	0	TM
BENG 468	Medical Biotechnology	5	3	0	0	TM
BENG 470	Microbiology in Bioengineering	5	3	0	0	TM
BENG 472	Omics Technologies	5	3	0	0	TM
BENG 232	Biomaterials Applications	5	3	0	0	TM
BENG 441	Enzyme Biotechnology	5	3	0	0	TM
BENG 431	Computational Systems Biology	5	3	0	0	TM