

## GTU Bioengineering Course Schedule

20.06.2023 tarih ve 2023/02-04 sayılı Fakülte Kurulu Kararı ve 03.08.2023 tarih ve 2023/22-04 sayılı Senato Kararı

1st Semester							2nd Semester								
Code	Course	ECTS	GTÜ	T	U	L	Türü	Code	Course	ECTS	GTÜ	T	U	L	Türü
MATH 101	Calculus I	7	5	4	2	0	TB	MATH 102	Calculus II	7	5	4	2	0	TB
PHYS 121	Physics I	6	4	4	0	0	TB	PHYS 122	Physics II	6	4	4	0	0	TB
PHYS 151	Physics Laboratory I	1	1	0	0	2	TB	PHYS 152	Physics Laboratory II	1	1	0	0	2	TB
CHEM 101	General Chemistry I	5	3	3	0	0	TB	MATH 116	Linear Algebra	5	3	3	0	0	TB
CHEM 113	General Chemistry Laboratory	1	1	0	0	2	TB	CHEM 106	Organic Chemistry I	5	3	3	0	0	TB
MBG 101	Principles of Biology	5	4	4	0	0	TB	TUR 102	Turkish II	2	2	2	0	0	SOS
MBG 103	Principles of Biology Laboratory	2	1	0	0	2	TB	BENG 101	Fundamentals of Bioengineering	4	3	3	0	0	TM
TUR 101	Turkish I	2	2	2	0	0	SOS								
BENG 100	Bioengineering Orientation and Career Planning	1	1	0	2	0	TM								
	<b>Total</b>	<b>30</b>	<b>22</b>					<b>Total</b>	<b>30</b>	<b>21</b>					
3rd Semester							4th Semester								
Code	Course	ECTS	GTÜ	T	U	L	Türü	Code	Course	ECTS	GTÜ	T	U	L	Türü
MATH 215	Differential Equations I	5	3	2	2	0	TB	MATH 214	Numerical Methods	5	3	3	0	0	TB
HIS101	Principles Of Atatürk And The History Of Turkish Revolution I	2	2	2	0	0	SOS		The History Of Turkish Revolution II	2	2	2	0	0	SOS
	Non-Technical Elective I	3	3	3	0	0	TM	ENGL 112	Academic English	2	2	2	0	0	SOS
BENG 215	Python for Bioengineers	6	3	2	0	2	TB	BENG 212	Thermodynamics for Bioengineers	5	3	3	0	0	TM
BENG 203	Bioengineering Laboratory I	4	2	0	0	4	TB	BENG 214	Fluid Mechanics	6	3	3	0	0	TM
BENG 211	Mass and Energy Balances	6	3	3	0	0	TM	BENG 222	Biochemistry	5	3	3	0	0	TB
BENG 223	Molecular Biology of the Cell	5	3	3	0	0	TB	BENG 232	Fundamentals of Biomaterials	4	3	3	0	0	TM
	<b>Total</b>	<b>31</b>	<b>19</b>					<b>Total</b>	<b>29</b>	<b>19</b>					
5th Semester							6th Semester								
Code	Course	ECTS	GTÜ	T	U	L	Türü	Code	Course	ECTS	GTÜ	T	U	L	Türü
ENG 300	Summer Practice I	1	0,5	0	1	0	TM	ENG 402	Safety II	1	1	1	0	0	TM
ENG 401	Occupational Health and Safety I	1	1	1	0	0	TM		Non-Technical Elective II	3	3	3	0	0	SOS
ENGL 111	Business English	2	2	2	0	0	SOS	BENG 302	Bioengineering Laboratory II	4	2	0	0	4	TM
	Free Elective I	2	2	0	0	0	SOS	BENG 312	Bioprocess Engineering Principles	6	3	3	0	0	MT
BENG 333	Cell Biology and Cellular Mechanisms	4	3	3	0	0	TB	BENG 314	Mathematical Modelling & Control in Bioengineering	6	3	3	0	0	MT
BENG 311	Bioengineering	6	3	3	0	0	TM	BENG 316	Bioseparation	5	3	3	0	0	TM
BENG 361	Enzyme Engineering	5	3	3	0	0	TB	BENG 332	Fundamentals of Biomechanics	4	3	3	0	0	TM
BENG 331	Bioengineering	6	3	3	0	0	TM								
BENG 361	Enzyme Engineering	5	3	3	0	0	TB	<b>Total</b>	<b>29</b>	<b>18</b>					
BENG 331	Bioengineering	6	3	3	0	0	TM								
BENG 361	Enzyme Engineering	5	3	3	0	0	TB								
BENG 331	Bioengineering	6	3	3	0	0	TM								
BENG 4XX	Department Elective I	5	3	3	0	0	TM								
	<b>Total</b>	<b>31</b>	<b>20,5</b>												
7th Semester							8th Semester								
Code	Course	ECTS	GTÜ	T	U	L	Türü	Code	Course	ECTS	GTÜ	T	U	L	Türü
BENG 4XX	Department Elective III	5	3	3	0	0	TM	BENG 492	Graduation Project II	6	2	0	4	0	TM
ENG 400	Summer Practice II	1	0,5	0	1	0	TM		Technical Elective I	4	3	3	0	0	TM
BENG 411	Bioengineering Design	8	3	3	0	0	MT	BENG 4XX	Department Elective IV	5	3	3	0	0	TM
BENG 433	Physiology	5	3	3	0	0	TM	BENG 4XX	Department Elective V	5	3	3	0	0	TM
BENG 491	Graduation Project I	6	2	0	4	0	TM	BENG 4XX	Department Elective VI	5	3	3	0	0	TM
BENG 4XX	Department Elective II	5	3	3	0	0	TM	BENG 4XX	Department Elective VII	5	3	3	0	0	TM
	<b>Total</b>	<b>30</b>	<b>14,5</b>					<b>Total</b>	<b>30</b>	<b>17</b>					
8th Semester - Alternative															
Code	Course	ECTS	GTÜ	T	U	L	Türü	Code	Course	ECTS	GTÜ	T	U	L	Türü
BENG 492	Graduation Project II	6	4	4	0	0	TM	BENG 498	Industrial Applications	24	0	0	0	0	TM
								<b>Total</b>	<b>30</b>	<b>4</b>					

Akreditasyon Ölçütleri ile Uyum Göstergeleri

Total Credits (ECTS)	240	151
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Ön şart Kuralları			
Ders kodu ve adı		Ön şart	
MATH102	Calculus II	MATH101	Calculus I
BENG 214	Fluid Mechanics	MATH 215	Differential Equations I
BENG 314	Mathematical Modelling & Control in Bioengineering	BENG 215	Python for Bioengineers
		MATH 215	Differential Equations I
BENG 411	Bioengineering Design	BENG 211	Mass and Energy Balances
BENG 491	Graduation Project I	BENG 301	Bioengineering Laboratory I
		160 AKTS kredisi başarı ile tamamlanmış olmalıdır.	
BENG 492	Graduation Project II	BENG 301	Bioengineering Laboratory I
		BENG 491	Graduation Project I

	Departmental Elective	ECTS	T	U	L	Türü
BENG 323	Fundamentals of Biotechnology	5	3	0	0	
BENG 451	Introduction to Bioinformatics	5	3	0	0	TM
BENG 455	Introduction to Systems Biology	5	3	0	0	TM
BENG 400	Advanced Orthopaedic and Dental Biomechanics Laboratory	5	0	0	3	
BENG 463	Protein Engineering	5	0	0	3	
BENG 464	Advanced Bioprocess Design	5	0	0	3	
BENG 465	Advanced Applications of Biomaterials Lab	5	0	0	3	
BENG 458	Bioinformatics and Systems Biology Laboratory	5	0	0	3	
BENG 459	Genetics, Cell Biology and Biotechnological Applications of Yeast	5	3	0	0	
BENG 460	Advanced Methods in Yeast Genetics	5	0	0	3	
BENG 461	Molecular Genetics	5	3	0	0	
BENG 462	Fundamental Methods for Biofabrication	5	0	0	3	
BENG 415	Bioinformatic Data Analysis	5	3	0	0	TM
BENG 416	Introduction to Microbiology	5	3	0	0	TM
BENG 417	Rapid Prototyping for Medical Product Design	5	3	0	0	TM
BENG 426	Theoretical Neuroscience	5	3	0	0	TM
BENG 432	Advanced Biostatistics	5	3	0	0	TM
BENG 466	Structural Bioinformatics and Computational Drug Design	5	3	0	0	TM
BENG 467	Biosorption	5	3	0	0	TM
BENG 468	Mammalian Cell Cultures for Biopharmaceutical Production	5	3	0	0	TM
BENG 424	Biosensors	5	3	0	0	TM
BENG 423	Biomedical Electronics	5	3	0	0	TM
BENG 425	Bioinstrumentation	5	3	0	0	
BENG 434	Data Mining in Bioengineering	5	3	0	0	
BENG 456	Applications of Cancer Biology in Bioengineering	5	3	0	0	
BENG 457	Biopolymers	5	3	0	0	
BENG 477	Innovation for Sustainable Agriculture and Food Security	5	3	0	0	
BENG 480	Research Techniques and Project Writing	5	3	0	0	