

**ABDULLAH GÜL ÜNİVERSİTESİ / ABDULLAH GÜL UNIVERSITY**  
**Biyomühendislik Lisans Programı /**  
**Bioengineering Undergraduate Program**

**1. SINIF / GÜZ YARIYILI (Freshman Year / FALL Semester)**

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
MATH 151	Calculus I		5	0	5	6
BENG 103	Biology for Life Sciences		3	0	3	4
BENG 102	Chemistry for Bioengineers I		3	2	4	5
ENG 101	English I		4	0	4	4
GLB 101	AGU Ways		3	0	3	4
BENG 101	Introduction to Bioengineering		2	0	0	2
PHYS 101	Physics I		3	2	4	5
Total Credits						30

**1. SINIF / BAHAR YARIYILI (Freshman Year / SPRING Semester)**

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
MATH 152	Calculus II	MATH 151	5	0	5	6
GLB XXX	Global Issues Elective I		3	0	3	4
ENG 102	English II		4	0	4	4
BENG 104	Chemistry for Bioengineers II		3	2	4	5
PHYS 102	Physics II		3	2	4	5
COMP 101	Art of Computing		3	2	4	6
Total Credits						30

**2. SINIF / GÜZ YARIYILI (Sophomore Year / FALL Semester)**

Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 201	Biochemistry		3	0	3	6
BENG 202	Fluid Dynamics in Bioengineering	MATH 152	3	0	3	6
GLB XXX	Global Issues Elective II		3	0	3	4
TURK 101	Turkish I		2	0	2	2
BENG 203	Thermodynamics for Bioengineers	MATH 152	3	0	3	6
MATH 205	Differential Equations	MATH152	3	0	4	5
Total Credits						29

**2. SINIF / BAHAR YARIYILI (Sophomore Year / SPRING Semester)**

Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 204	Cell and Molecular Biology	BENG103	3	0	4	5
BENG 205	Heat and Mass Transfer	MATH 152	3	0	3	5
MBG 210	Sciences and Ethics		2	0	2	4
BENG 207	Microbiology		3	0	4	5
BENG 216	Bioengineering Laboratory I		3	2	4	6
GLB XXX	Global Issues Elective III		3	0	3	4
TURK 102	Turkish II		2	0	2	2
Total Credits						31

## TRACK –I- BIOMATERIALS AND TISSUE ENGINEERING

### 3. SINIF / GÜZ YARIYILI (Junior Year / FALL Semester)

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 316	Bioengineering Laboratory II		3	2	4	7
GLB XXX	Global Issues Elective IV		3	0	3	4
HIST 201	History of Modern Turkey I		2	2	2	2
BENG 302	Biomaterials Science		3	0	3	6
BENG 303	Bioprocess Engineering		3	0	3	6
	Concentration Area Electives					5
						30

### 3. SINIF / BAHAR YARIYILI (Junior Year / SPRING Semester)

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 318	Bioengineering Laboratory III		3	2	4	7
HIST 202	History of Modern Turkey II		2	0	2	2
BENG 304	Cell and Tissue Engineering		3	0	3	6
BENG 305	Artificial Organs		3	0	3	6
XXX	Nontechnical Elective					4
	Concentration Area Electives					5
	Total Credits					30

### 4. SINIF / GÜZ YARIYILI (Senior Year / FALL Semester)

Course Code	Course Name	PreReq.	Lec.	Lab	Credits	ECTS
BENG 491	Capstone Project I*		0	4	4	8
	Concentration Area Elective					5
	Concentration Area Elective					5
	Concentration Area Elective					5
XXX	Nontechnical Elective Course					3
OHS 401	Occupational Health and Safety I		2	0	2	1
BENG 493	Summer Internship		0	0	0	6
	Total Credits					33

\* 1<sup>st</sup> and 2<sup>nd</sup> year core courses must be completed (passed).

### 4. SINIF / BAHAR YARIYILI (Senior Year / SPRING Semester)

Course Code	Course Name	PreReq.	Lec.	Lab	Credits	ECTS
BENG 492	Capstone Project II**	BENG491	0	6	6	8
OHS 402	Occupational Health and Safety II		1	0	1	1
	Concentration Area Elective					5
	Concentration Area Elective					5
	Concentration Area Elective					5
XXX	Nontechnical Elective Course					3
	Total Credits					27

\*\* Capstone Project I should be passed.

## TRACK –II- GENETICS

### 3. SINIF / GÜZ YARIYILI (Junior Year / FALL Semester)

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 316	Bioengineering Laboratory II		3	2	4	7
GLB XXX	Global Issues Elective IV		3	0	3	4
HIST 201	History of Modern Turkey I		2	2	2	2
BENG 303	Genetics		3	0	3	6
BENG 304	Bioprocess Engineering		3	0	3	6
	Concentration Area Electives					5
						30

### 3. SINIF / BAHAR YARIYILI (Junior Year / SPRING Semester)

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 318	Bioengineering Laboratory III		3	2	4	7
HIST 202	History of Modern Turkey II		2	0	2	2
MBG 204	Biostatistics		3	2	4	6
BENG 305	Recombinant DNA Technology		3	0	3	6
XXX	Nontechnical Elective					4
	Concentration Area Elective					5
	Total Credits					30

### 4. SINIF / GÜZ YARIYILI (Senior Year / FALL Semester)

Course Code	Course Name	PreReq.	Lec.	Lab	Credits	ECTS
BENG 491	Capstone Projects I*		0	4	4	8
	Concentration Area Elective					5
	Concentration Area Elective					5
	Concentration Area Elective					5
XXX	Nontechnical Elective Course					3
OHS 401	Occupational Health and Safety I		2	0	2	1
BENG 493	Summer Internship		0	0	0	6
	Total Credits					33

\* 1st and 2nd year core courses must be completed (passed).

### 4. SINIF / BAHAR YARIYILI (Senior Year / SPRING Semester)

Course Code	Course Name	PreReq.	Lec.	Lab	Credits	ECTS
BENG 492	Capstone Project II**	BENG 491	0	6	6	8
OHS 402	Occupational Health and Safety II		2	0	2	1
	Concentration Area Elective					5
	Concentration Area Elective					5
	Concentration Area Elective					5
XXX	Nontechnical Elective Course					3
	Total Credits					27

\*\* Capstone Project I should be passed.

## TRACK –III- BIOMEDICAL ENGINEERING

### 3. SINIF / GÜZ YARIYILI (Junior Year / FALL Semester)

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 316	Bioengineering Laboratory II		3	2	4	7
GLB XXX	Global Issues Elective IV		3	0	3	4
HIST 201	History of Modern Turkey I		2	0	2	2
BENG 306	Bioinstrumentation		3	2	4	6
BENG 303	Bioprocess Engineering		3	0	3	6
	Concentration Area Elective					5
						30

### 3. SINIF / BAHAR YARIYILI (Junior Year / SPRING Semester)

Course Code	Course Name	PreReq	Lec.	Lab	Credits	ECTS
BENG 318	Bioengineering Laboratory III		3	2	4	7
HIST 202	History of Modern Turkey II		2	0	2	2
BENG 307	Biomedical Sensors and Transducers		3	0	4	6
BENG 308	Microprocessors and Microcontrollers in Biomedical Engineering		3	0	4	6
XXX	Nontechnical Elective					4
	Concentration Area Elective					5
	Total Credits					30

### 4. SINIF / GÜZ YARIYILI (Senior Year / FALL Semester)

Course Code	Course Name	PreReq.	Lec.	Lab	Credits	ECTS
BENG 491	Capstone Project I*		0	4	4	8
	Concentration Area Elective					5
	Concentration Area Elective					5
	Concentration Area Elective					5
XXX	Nontechnical Elective Course					3
OHS 401	Occupational Health and Safety I		2	0	2	1
BENG 493	Summer Internship		0	0	0	6
	Total Credits					33

\* 1st and 2nd year core courses must be completed (passed).

### 4. SINIF / BAHAR YARIYILI (Senior Year / SPRING Semester)

Course Code	Course Name	PreReq.	Lec.	Lab	Credits	ECTS
BENG 492	Capstone Projects II**	BENG 491	0	6	6	8
OHS 402	Occupational Health and Safety II		2	0	2	1
	Concentration Area Elective					5
	Concentration Area Elective					5
	Concentration Area Elective					5
XXX	Nontechnical Elective Course					3
	Total Credits					27

\*\* Capstone Project I should be passed.

**Concentration Area Electives\***

<b>TRACK –III- BIOMEDICAL ENGINEERING</b>					
Code	Course Name	Lec.	Lab	Credits	ECTS
BENG 410	Biomedical Signals and Systems	3	0	3	5
BENG 411	Cardiovascular Engineering	3	0	3	5
BENG 412	Numerical Methods for Biomedical Engineering	3	0	3	5
BENG 413	Neural Engineering	3	0	3	5
BENG 414	Biomechatronics	3	0	3	5
BENG 415	Clinical Engineering	3	0	3	5
BENG 416	Biophotonics	3	0	3	5
BENG 418	Machine Learning	3	0	3	5
BENG 419	Fundamental of BioMEMS	3	0	3	5
BENG 420	Data Mining	3	0	3	5
BENG 421	Biomedical Image Processing	3	0	3	5
BENG 422	Biomedical Signal Processing	3	0	3	5
BENG 423	Medical Imaging Systems	3	0	3	5
BENG 424	Computational Biology	3	0	3	5
<b>TRACK –I- BIOMATERIALS AND TISSUE ENGINEERING</b>					
BENG 425	Immunology	3	0	3	5
BENG 426	Polymer Science	3	0	3	5
BENG 427	Artificial Organs	3	0	3	5
BENG 429	Controlled Drug Delivery	3	0	3	5
BENG 430	Biomedical Polymers	3	0	3	5
BENG 431	Nanofabrication	3	0	3	5
BENG 432	Tissue Engineering and Regenerative Medicine	3	0	3	5
BENG 433	Nanoparticles for Biomedical Applications	3	0	3	5
BENG 434	Stem Cells	3	0	3	5
BENG 430	Tissue Biomaterial Interaction	3	0	3	5
BENG 435	Separation Techniques	3	0	3	5
BENG 436	Drug Design and Discovery	3	0	3	5
BENG 437	Bioorganic and Medicinal Chemistry	3	0	3	5
BENG 438	Introduction to Bionanotechnology	3	0	3	5
BENG 439	Metabolic Engineering	3	0	3	5
<b>TRACK –II- GENETICS</b>					
MBG 409	Cancer Biology	3	0	3	5
MBG 410	Micro Array Data Analysis	3	0	3	5
MBG 411	Model Organisms	3	0	3	5
MBG 413	Biotechnology	3	0	3	5
MBG 416	Developmental Biology	3	0	3	5
MBG 417	Basics of Neuroscience	3	0	3	5
MBG 419	Functional Genomics	3	0	3	5
MBG 421	RNA biology	3	0	3	5
MBG 426	Histology of Tumors	3	0	3	5
MBG 430	Virology	3	0	3	5
MBG 431	Human Physiology	3	0	3	5
MBG 435	Disease and Genetics	3	0	3	5

MBG 436	Bioinformatics				
<b>OTHER AREA ELECTIVES</b>					
BENG 440	Regulations and IP Rights in Bioengineering	3	0	3	5
BENG 441	Scientific Writing and Understanding	3	0	3	5
BENG 442	Entrepreneurship in Bioengineering	3	0	3	5

\*It is not obligated to take an elective course from a different track than student choose.

**GLB Electives**

**(4 out of all GLB courses must be taken / GLB kodlu derslerin dördü alınmak zorundadır)**

GLB 102	Innovation and Entrepreneurship	3	0	3	4
GLB 201	Food and Health	3	0	3	4
GLB 202	Immigration and Population	3	0	3	4
GLB 301	Sustainability	3	0	3	4