

### M.Sc. Program in Bioengineering Curriculum

Semester	Course Code	Course Name	T	P	C	ECTS
1 <sup>st</sup>	GCC1001.01	Introduction to Scientific Research Methods and Scientific Publication Ethics	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
2 <sup>nd</sup>	BENG550	Bioengineering; A Conceptual Approach	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
3 <sup>rd-4</sup> <sup>th</sup>	BENG500	Seminar	0	2	0	5.0
	BENG597	MSc Special Topics	4	0	0	10.0
	BENG599	MSc Thesis	0	1	0	45.0
semester credit			<b>4</b>	<b>3</b>	<b>0</b>	<b>60</b>
<b>Total Credits</b>			<b>28</b>	<b>3</b>	<b>24</b>	<b>120</b>

### Curriculum Summary

%		Courses	Credit	ECTS
6.3	<b>YÖK/HEC Courses</b> GCC1001	1	3	7.5
6.3	<b>Compulsory</b> BENG550	1	3	7.5
37.5	<b>Electives</b> BENGXXX	6	18	45
4.2	<b>Seminar</b> BENG500	1	0	5
8.3	<b>MSc Special Topics</b> BENG597	1	0	10
37.5	<b>MSc Thesis</b> BENG599	1	0	45
<b>100.0</b>	<b>TOTAL</b>	<b>11</b>	<b>24</b>	<b>120</b>

### Ph.D. Program in Bioengineering Curriculum

Semester	Course Code	Course Name	T	P	C	ECTS
<b>1<sup>st</sup></b>	GCC1001.01	Introduction to Scientific Research Methods and Scientific Publication Ethics	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
<b>2<sup>nd</sup></b>	BENG550	Bioengineering; A Conceptual Approach	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
<b>3<sup>rd</sup>-8<sup>th</sup></b>	BENG600	Seminar	0	2	0	5
	BENG697	PhD Special Topics	4	0	0	30
	BENG699	PhD Thesis	0	1	0	145
semester credit			<b>10</b>	<b>3</b>	<b>6</b>	<b>180</b>
<b>Total Credits</b>			<b>28</b>	<b>3</b>	<b>24</b>	<b>240</b>

### Curriculum Summary

%		Courses	Credit	ECTS
<b>3.1</b>	<b>YÖK/HEC Courses</b> GCC1001	1	3	7.5
<b>3.1</b>	<b>Compulsory</b> BENG550	1	3	7.5
<b>18.8</b>	<b>Electives</b> BENGXXX	6	18	45
<b>2.1</b>	<b>Seminar</b> BENG600	1	0	5
<b>12.5</b>	<b>PhD Special Topics</b> BENG697	1	0	30
<b>60.4</b>	<b>PhD Thesis</b> BENG699	1	0	145
<b>100.0</b>	<b>TOTAL</b>	<b>11</b>	<b>24</b>	<b>240</b>

**Integrated Ph.D. Program in Bioengineering Curriculum**

Semester	Course Code	Course Name	T	P	C	ECTS
1 <sup>st</sup>	GCC1001.01	Introduction to Scientific Research Methods and Scientific Publication Ethics	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
2 <sup>nd</sup>	BENG550	Bioengineering; A Conceptual Approach	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
3 <sup>rd</sup>	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
4 <sup>th</sup>	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
	BENGXXX	Elective	3	0	3	7.5
semester credit			<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>
5 <sup>th</sup> -10 <sup>th</sup>	BENG600	Seminar	0	2	0	5
	BENG697	PhD Special Topics	4	0	0	30
	BENG699	PhD Thesis	0	1	0	145
semester credit			<b>4</b>	<b>3</b>	<b>12</b>	<b>180</b>
<b>Total Credits</b>			<b>52</b>	<b>3</b>	<b>48</b>	<b>300</b>

**Curriculum Summary**

%	Courses	Credit	ECTS
2.5	<b>YÖK/HEC Courses</b> GCC1001	1	3
2.5	<b>Compulsory</b> BENG550	1	3
35	<b>Electives</b> BENGXXX	14	42
1.7	<b>Seminar</b> BENG600	1	5
10	<b>PhD Special Topics</b> BENG697	1	30
48.3	<b>PhD Thesis</b> BENG699	1	145
<b>100.0</b>	<b>TOTAL</b>	<b>19</b>	<b>48</b>

**Elective course**

BENG501 Molecular Biology for Engineers  
BENG503 Advances in Bionanotechnology  
BENG504 Advanced Molecular Biology  
BENG505 Current Topics in Molecular Biology  
BENG506 Bioinformatics  
BENG507 Human Molecular Genetics  
BENG508 Advanced Cell Biology  
BENG510 Advanced Biochemistry  
BENG511 Molecular Biology Laboratory for Engineers  
BENG512 Biotechnology and Biosafety  
BENG514 Cancer Biology and Treatment  
BENG517 Polymeric Biomaterials  
BENG518 Biomaterials  
BENG519 Physiology  
BENG521 Biomedical Electronics  
BENG523 Multifunctional Polymeric Nanocarriers  
BENG524 Materials Design and Fabrication for Tissue Engineering  
BENG525 Instrumental Analysis  
BENG526 Basic Patent Principles in Science and Engineering  
BENG530 Basic Engineering for Bioengineers  
BENG531 Biosignal and Image Analysis  
BENG532 Medical Imaging  
BENG534 Research Techniques in Bioengineering  
BENG537 Stem Cells  
BENG538 Biological Sciences for Bioengineers  
BENG539 Nanocarriers and Drug Delivery  
BENG541 Molecular Cell Biology for Engineers  
BENG542 Molecular Basis of Diseases  
BENG543 Computational Biology  
BENG544 Neuroscience  
BENG545 Protein Expression&Purification  
BENG546 Data Mining  
BENG547 Bioconjugate Techniques  
BENG548 Cell Culture Techniques  
BENG549 Genome Editing: CRISPR  
BENG551 Immunology  
BENG552 Natural Product Discovery and Biosynthesis  
BENG553 Principles of Drug Discovery and Development  
BENG554 Microbial Fermentation Process Development  
BENG555 Immunoglobulin G: Production, Structure and Function  
BENG601 Emerging Topics in Biotechnology  
BENG602 Introduction to Nanobiotechnology: Concepts and Applications  
BENG603 Ethics in Biotechnology  
BENG604 Tissue Engineering and Regenerative Medicine  
BENG605 Artificial Organs  
BENG606 Biomechanics  
BENG608 Biosensors  
BENG609 Advanced Polymer Science  
BENG610 Nanofabrication for Biological Applications  
BENG612 Cell Death  
BENG613 Implant-Cell Interactions  
BENG617 Glyco-protein Engineering  
BENG618 Recombinant DNA Technology  
BENG619 Proteomics and Metabolomics  
BENG620 Mass Spectrometry  
BENG621 Cell Signaling  
BENG622 Machine Learning  
BENG623 Transgenic Mice  
BENG624 Metastasis and Tumor Microenvironment  
BENG626 Human Drug Metabolism

