


Bachelor's Degree in Genetics And Bioengineering
 Faculty Of Engineering

HOME

INFORMATION ON
ECTS / DS & LLPINFORMATION ON
DEGREE PROGRAMSINFORMATION ON
THE INSTITUTIONGENERAL INFORMATION
FOR STUDENTS
Course Structure Diagram

First Semester		Theo.	Prac	Credits	ECTS
<u>TURK 101</u>	TURKISH LANGUAGE I	2	0	2	2
<u>PHYS 103</u>	GENERAL PHYSICS I	3	2	4	7
<u>MATH 113</u>	CALCULUS I	4	2	5	7
GBE 107	GENERAL CHEMISTRY FOR BIOENGINEERING	3	2	4	6
GBE 103	ESSENTIALS OF BIOLOGICAL SYSTEMS	3	0	3	4
GBE 101	INTRODUCTION TO GENETICS AND BIOENGINEERING	2	0	2	4
		17	6	20	30

Second Semester		Theo.	Prac	Credits	ECTS
<u>TURK 102</u>	TURKISH LANGUAGE II	2	0	2	2
<u>PHYS 104</u>	GENERAL PHYSICS II	3	2	4	7
<u>MATH 114</u>	CALCULUS II	4	0	4	7
GBE 108	ORGANIC CHEMISTRY FOR BIOENGINEERING	3	0	3	6
<u>ENGR 104</u>	ENGINEERING GRAPHICS	2	2	3	5
<u>ENGR 100</u>	INTRODUCTION TO ENGINEERING DESIGN	2	0	2	3
		16	4	18	30

Third Semester		Theo.	Prac	Credits	ECTS
GBE 221	MATHEMATICAL METHODS FOR BIOENGINEERING	3	0	3	4
GBE 209	GENETICS	3	0	3	5
<u>GBE 205</u>	BIOCHEMISTRY	3	2	4	6
GBE 203	CELL BIOLOGY	3	0	3	4
<u>GBE 201</u>	BIOMECHANICS	3	0	3	5
<u>CENG 103</u>	FUNDAMENTALS OF COMPUTER PROGRAMMING I	3	2	4	6
		18	4	20	30

Fourth Semester		Theo.	Prac	Credits	ECTS
GBE 214	BIOMATERIALS	3	0	3	5
GBE 212	MOLECULAR GENETICS	3	0	3	5
<u>GBE 210</u>	BIO THERMODYNAMICS	3	0	3	5
<u>GBE 208</u>	HUMAN PHYSIOLOGY	3	0	3	5
<u>GBE 204</u>	MICROBIAL BIOTECHNOLOGY	3	2	4	5
<u>ECON 388</u>	ENGINEERING ECONOMICS	3	0	3	5
		18	2	19	30

Fifth Semester		Theo.	Prac	Credits	ECTS
GBE 391	BIOSTATISTICS	3	0	3	5
GBE 309	PLANT BIOTECHNOLOGY	3	0	3	5
<u>GBE 305</u>	BIOCHEMICAL ENGINEERING	3	0	3	5
<u>GBE 303</u>	CELL AND TISSUE ENGINEERING	3	2	4	6
<u>GBE 299</u>	INDUSTRIAL TRAINING I	0	0	0	2
<u>APHR 101</u>	ATATURK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION I	2	0	2	2
XXX xxx	TECHNICAL ELECTIVE I	3	0	3	5
		17	2	18	30

Sixth Semester		Theo.	Prac	Credits	ECTS
GBE 331	SEMINAR AND TECHNICAL TRIP	0	2	1	1
<u>GBE 310</u>	TECHNIQUES IN GENETIC ENGINEERING	3	2	4	6
<u>GBE 308</u>	BIOINFORMATICS	3	2	4	6
<u>GBE 306</u>	BIOFLUID MECHANICS	3	0	3	5
GBE 302	BIOMEDICAL INSTRUMENTATION	3	0	3	5
<u>APHR 102</u>	ATATURK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION II	2	0	2	2
XXX xxx	TECHNICAL ELECTIVE II	3	0	3	5
		17	6	20	30

Seventh Semester		Theo.	Prac	Credits	ECTS
GBE 401	SENIOR PROJECT I	0	4	2	8
GBE 399	INDUSTRIAL TRAINING II	0	0	0	2
XXX xxx	NON-TECHNICAL ELECTIVE I	3	0	3	5
GBE 4xx	TECHNICAL ELECTIVE III	3	0	3	5
XXX xxx	TECHNICAL ELECTIVE IV	3	0	3	5

XXX xxx	TECHNICAL ELECTIVE V	3	0	3	5
		12	4	14	30
Eight Semester		Theo.	Prac	Credits	ECTS
GBE 402	SENIOR PROJECT II	0	4	2	10
XXX xxx	NON-TECHNICAL ELECTIVE II	3	0	3	5
GBE 4xx	TECHNICAL ELECTIVE VI	3	0	3	5
GBE 4xx	TECHNICAL ELECTIVE VII	3	0	3	5
XXX xxxxx	TECHNICAL ELECTIVE VIII	3	0	3	5
		12	4	14	30

* Non-technical elective courses could be selected with the consent of the advisor.

**three Technical electives with GBE 4xx codes must be chosen from the restricted technical electives or elective courses with GBE 4xx codes lists below.

***Technical electives XXX xxx can be chosen from 2xx, 3xx, 4xx, PHYS, MATH, CHEM, IE, EEE, ENVE, CENG, GBE courses, or with the consent of the advisor. OR at most one of them can be chosen from BIOL 4xx courses.

Total Credits Required in Degree Program: 143 / Total ECTS Credits: 240

INFORMATION: All of the following elective courses aren't opened each semester. Please take information about potential open courses from the head of department.

Elective Courses

TECHNICAL ELECTIVES (3+0) 3		Theo.	Prac	Credits	ECTS
<u>GBE 403</u>	BIOLOGICAL ALGORITHMS AND COMPUTING	3	0	3	6
<u>GBE 404</u>	HUMAN BODY DYNAMICS	3	0	3	6
<u>GBE 405</u>	BIONICS	3	0	3	6
<u>GBE 406</u>	MCRO/NANO ROBOTICS	3	0	3	6
<u>GBE 407</u>	BIOMECHATRONICS	3	0	3	6
<u>GBE 408</u>	DIGITAL BIOSIGNAL PROCESSING	3	0	3	6
<u>GBE 409</u>	BIOSENSORS	3	0	3	6
GBE 410	BIOHEAT TRANSFER	3	0	3	6
<u>GBE 411</u>	BIOREACTOR DESIGN	3	0	3	6
<u>GBE 412</u>	PROCESS DYNAMICS AND CONTROL	3	0	3	6
<u>GBE 413</u>	MOLECULAR DIAGNOSTICS	3	0	3	6
<u>GBE 414</u>	INDUSTRIAL BIOTECHNOLOGY	3	0	3	6
<u>GBE 415</u>	GENERAL BIOTECHNOLOGY	3	0	3	6
<u>GBE 416</u>	DEVELOPMENTAL BIOLOGY	3	0	3	6
<u>GBE 417</u>	SYSTEMS BIOLOGY	3	0	3	6
<u>GBE 418</u>	SYNTHETIC BIOLOGY	3	0	3	6
<u>GBE 419</u>	MOLECULAR BIOLOGY OF THE GENE	3	0	3	6
<u>GBE 420</u>	HUMAN GENOMICS AND PROTEOMICS	3	0	3	6
<u>GBE 421</u>	GENE THERAPY	3	0	3	6
<u>GBE 422</u>	PROTEIN DESIGN	3	0	3	6
<u>GBE 423</u>	GENOMICS AND PROTEOMICS	3	0	3	6
<u>GBE 424</u>	GENETIC DISORDERS AND COUNSELING	3	0	3	6
<u>GBE 425</u>	TISSUE ENGINEERING	3	0	3	6
<u>GBE 426</u>	ANTIBODY ENGINEERING	3	0	3	6
<u>GBE 427</u>	FUNDAMENTALS OF NEUROSCIENCE	3	0	3	6
<u>GBE 428</u>	NEUROPSYCHOLOGY	3	0	3	6
<u>GBE 429</u>	SENSORY AND MOTOR NEUROSCIENCE	3	0	3	6
<u>GBE 430</u>	BIOPHARMACEUTICALS	3	0	3	6
<u>GBE 431</u>	FORENSIC TECHNOLOGY	3	0	3	6
<u>GBE 433</u>	BIONANOTECHNOLOGY	3	0	3	6
<u>GBE 434</u>	CELL CYCLE	3	0	3	6
GBE 435	BIOROBOTICS	3	0	3	5
<u>GBE 436</u>	SYNTHETIC BIOLOGY AND METABOLIC ENGINEERING	3	0	3	5
GBE 437	BIOLOGICAL DATA ANALYSIS	3	0	3	5
GBE 438	HEALTHCARE INFORMATICS	3	0	3	5
GBE 439	COMPUTER-AIDED DRUG DESIGN	3	0	3	5
GBE 440	BIOMOLECULAR MODELING METHODS	3	0	3	5
GBE 441	OPTICAL IMAGING METHODS IN BIOSCIENCES	3	0	3	5
GBE 442	LASERS IN MEDICINE	3	0	3	5
GBE 443	BIOMEDICAL OPTICS	3	0	3	5
GBE 444	BIOMICROFLUIDICS	3	0	3	5
GBE 445	NANOMEDICINE	3	0	3	5
GBE 446	BIOTRANSPORT PROCESSES	3	0	3	5
GBE 447	METABOLIC BIOCHEMISTRY	3	0	3	5
GBE 448	ANALYTICAL BIOCHEMISTRY	3	0	3	5
<u>GBE 471</u>	SPECIAL TOPICS IN GENETICS AND BIOENGINEERING I	3	0	3	5
<u>GBE 472</u>	SPECIAL TOPICS IN GENETICS AND BIOENGINEERING II	3	0	3	5
<u>GBE 481</u>	DYNAMICS SYSTEMS MODELING	3	0	3	7
<u>GBE 491</u>	BIOENGINEERING PROJECT	3	0	3	9
<u>GBE 492</u>	GENETIC ENGINEERING PROJECT	3	0	3	9
<u>CENG 204</u>	PROGRAMMING LANGUAGES	3	0	3	6
<u>CENG 252</u>	COMPUTER ORGANIZATION	3	0	3	7
<u>CENG 305</u>	ANALYSIS OF ALGORITHMS	3	0	3	8
<u>CENG 310</u>	WEB PROGRAMMING	3	0	3	7

<u>CENG 362</u>	COMPUTER NETWORKS	3	2	4	8
<u>CENG 401</u>	SOFTWARE ENGINEERING	3	0	3	5
<u>CENG 403</u>	PROFESSIONAL DEVELOPMENT FOR ENGINEERS	3	0	3	5
<u>CENG 404</u>	COMBINATORICS & GRAPH THEORY	3	0	3	6
<u>CENG 410</u>	INTRO. TO DESIGN PATTERNS & FRAMEWORKS	3	0	3	5
<u>CENG 411</u>	INTRODUCTION TO WEB ENGINEERING	3	0	3	5
<u>CENG 420</u>	AUTOMATA TH. & FORMAL LANG.	3	0	3	5
<u>CENG 421</u>	INTRO. TO LOGIC PROGRAMMING	3	0	3	5
<u>CENG 431</u>	INTRO. TO PROGRAMING LANG. DESIGN	3	0	3	5
<u>CENG 433</u>	HUMAN-COMPUTER INTERACTION	3	0	3	5
<u>CENG 451</u>	INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS	3	0	3	5
<u>CENG 452</u>	INTRODUCTION TO DATA MINING	3	0	3	5
<u>CENG 453</u>	INTRODUCTION TO E-BUSINESS/E-COMMERCE	3	0	3	5
<u>CENG 454</u>	INTRO. TO EXTENSIBLE MARKUP LANGUAGE (XML)	3	0	3	5
<u>CENG 455</u>	DATABASE MANAGEMENT SYSTEMS II	3	0	3	5
<u>CENG 456</u>	MULTIMEDIA SYSTEMS	3	0	3	5
<u>CENG 457</u>	DIGITAL IMAGE PROCESSING	3	0	3	5
<u>CENG 458</u>	COMPUTER VISION	3	0	3	5
<u>CENG 459</u>	MACHINE LEARNING	3	0	3	5
<u>CENG 460</u>	INTRO.TO NATURAL LANG. PROCESSING	3	0	3	5
<u>CENG 461</u>	SIGNAL PROC. FOR COMP. ENGINEERING	3	0	3	5
<u>CENG 463</u>	NETWORK PROGRAMMING	3	0	3	5
<u>CENG 464</u>	DISTRIBUTED SYSTEMS	3	0	3	5
<u>CENG 465</u>	MOBILE AND WIRELESS NETWORKING	3	0	3	5
<u>CENG 471</u>	SPECIAL TOPICS IN COMPUTER ENGINEERING I	3	0	3	5
<u>CENG 481</u>	INTRODUCTION TO COMPUTER GRAPHICS	3	0	3	5
<u>CENG 482</u>	NETWORK SECURITY	3	0	3	5
<u>CENG 483</u>	COMPUTER ARCHITECTURE	3	0	3	5
<u>CENG 484</u>	EMBEDDED SYSTEMS	3	0	3	5
<u>CENG 485</u>	INTRODUCTION TO CRYPTOGRAPHY	3	0	3	5
<u>CENG 490</u>	INTRODUCTION TO ARTIFICIAL INTELLIGENCE	3	0	3	5
<u>CENG 491</u>	INTRO. TO NEURAL NETWORKS	3	0	3	5
<u>CENG 492</u>	INTRODUCTION TO PATTERN RECOGNITION	3	0	3	5
<u>CENG 493</u>	INTRODUCTION TO EVOLUTIONARY COMPUTING	3	0	3	5
<u>CENG 497</u>	SENIOR DESIGN PROJECT I	0	4	2	3
<u>CENG 498</u>	SENIOR DESIGN PROJECT II	0	6	3	8
<u>BIOL 401</u>	TOXICOLOGY	3	0	3	8
<u>BIOL 402</u>	SUMMER TRAINING AND PRESENTATION	3	0	3	8
<u>BIOL 403</u>	MEDICAL MICROBIOLOGY	3	0	3	6
<u>BIOL 404</u>	IMMUNOLOGY	3	0	3	7
<u>BIOL 405</u>	VIROLOGY	3	0	3	6
<u>BIOL 406</u>	HISTOLOGY AND EMBRYOLOGY	3	0	3	6
<u>BIOL 407</u>	MICROBIAL GENETICS	3	0	3	6
<u>BIOL 408</u>	CANCER BIOLOGY	3	0	3	6
<u>BIOL 409</u>	SPECIAL TOPICS IN MOLECULAR BIOLOGY	3	0	3	6
<u>BIOL 410</u>	FOOD MICROBIOLOGY	3	0	3	6
<u>BIOL 411</u>	BIOSTATISTICS	3	0	3	6
<u>BIOL 412</u>	IMMUNITY TO MICROBIAL AGENTS	3	0	3	6
<u>BIOL 415</u>	PLANT BIOLOGY	3	0	3	6
<u>BIOL 417</u>	MUSHROOMS & POISONING	3	0	3	6
<u>BIOL 418</u>	BIOTECHNOLOGY & GENETIC ENGINEERING	3	0	3	6
<u>BIOL 419</u>	BIOINFORMATICS	3	0	3	7
<u>BME 502</u>	HUMAN ANATOMY	3	0	3	7.5
<u>BME 504</u>	ULTRASONIC ENERGY AND ITS USAGE IN MEDICINE	3	0	3	7.5
<u>BME 505</u>	CARDIOVASCULAR FLUID MECHANICS	3	0	3	7.5
<u>BME 506</u>	CARDIOVASCULAR PHYSIOLOGY AND PHARMACOLOGY	3	0	3	7.5
<u>BME 507</u>	BIOMEDICAL INSTRUMENTATION	3	0	3	7.5
<u>BME 508</u>	BIOMEDICAL TESTING AND MEASUREMENT	3	0	3	7.5
<u>BME 509</u>	BIOLOGY OF CANCER AND TREATMENT METHODS	3	0	3	7.5
<u>BME 510</u>	BIOMEDICAL IMPLANT CHARACTERIZATION	3	0	3	7.5
<u>BME 511</u>	HEALTH ECONOMY AND MANAGEMENT	3	0	3	7.5
<u>BME 512</u>	ETHICS IN HEALTHCARE	3	0	3	7.5
<u>BME 513</u>	INTRODUCTION TO TISSUE ENGINEERING	3	0	3	7.5
<u>BME 514</u>	NANOSTRUCTURES AND NANOTECHNOLOGY	3	0	3	7.5
<u>BME 515</u>	LASER-TISSUE INTERACTION MECHANISMS	3	0	3	7.5
<u>BME 516</u>	BIOMEDICAL OPTICS	3	0	3	7.5
<u>BME 517</u>	NEUROBIOLOGY	3	0	3	7.5
<u>BME 518</u>	MICROPROCESSORS IN BIOMEDICAL DEVICES	3	0	3	7.5
<u>BME 519</u>	BIOMEDICAL SENSORS AND TRANSDUCERS	3	0	3	7.5
<u>BME 520</u>	ROBOTICS	3	0	3	7.5
<u>BME 521</u>	TISSUE BIOMECHANICS	3	0	3	7.5
<u>BME 522</u>	FORENSIC MEDICINE APPLICATIONS	3			