



## Bachelor's Degree in Physics

Faculty Of Arts And Sciences

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### Course Structure Diagram

First Semester		Theo.	Prac	Credits	ECTS
<a href="#">PHYS 103</a>	GENERAL PHYSICS I	3	2	4	7
<a href="#">MATH 113</a>	CALCULUS I	4	2	5	7
<a href="#">CHEM 105</a>	GENERAL CHEMISTRY I	3	2	4	9
<a href="#">BIOL 107</a>	ESSENTIALS OF BIOLOGY	3	0	3	5
<a href="#">APHR 101</a>	ATATURK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION I	2	0	2	2
		<b>15</b>	<b>6</b>	<b>18</b>	<b>30</b>

Second Semester		Theo.	Prac	Credits	ECTS
<a href="#">PHYS 104</a>	GENERAL PHYSICS II	3	2	4	7
<a href="#">MATH 114</a>	CALCULUS II	4	0	4	7
<a href="#">CHEM 106</a>	GENERAL CHEMISTRY II	3	2	4	9
<a href="#">CENG 103</a>	FUNDAMENTALS OF COMPUTER PROGRAMMING I	3	2	4	6
<a href="#">APHR 102</a>	ATATURK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION II	2	0	2	2
		<b>15</b>	<b>6</b>	<b>18</b>	<b>31</b>

Third Semester		Theo.	Prac	Credits	ECTS
<a href="#">TURK 101</a>	TURKISH LANGUAGE I	2	0	2	2
<a href="#">PHYS 261</a>	MATHEMATICS METHODS IN PHYSICS	3	0	3	5
<a href="#">PHYS 251</a>	PHYSICS LABORATORY III	0	2	1	2
<a href="#">PHYS 201</a>	VIBRATION AND WAVES	3	0	3	5
<a href="#">MATH 271</a>	DIFFERENTIAL EQUATIONS	3	0	3	5
<a href="#">EEE 201</a>	CIRCUIT THEORY I	3	2	4	7
<a href="#">CENG 217</a>	OBJECT ORIENTED PROGRAMMING	3	0	3	7
		<b>17</b>	<b>4</b>	<b>19</b>	<b>33</b>

Fourth Semester		Theo.	Prac	Credits	ECTS
<a href="#">TURK 102</a>	TURKISH LANGUAGE II	2	0	2	2
<a href="#">PHYS 252</a>	PHYSICS LABORATORY IV	0	2	1	2
<a href="#">PHYS 210</a>	MODERN PHYSICS	3	0	3	6
<a href="#">PHYS 208</a>	CLASSICAL MECHANICS	4	0	4	7
<a href="#">PHYS 206</a>	OPTICS	3	0	3	6
<a href="#">EEE 202</a>	CIRCUIT THEORY II	3	2	4	7
		<b>15</b>	<b>4</b>	<b>17</b>	<b>30</b>

Fifth Semester		Theo.	Prac	Credits	ECTS
<a href="#">PHYS 351</a>	PHYSICS LABORATORY V	0	2	1	2
<a href="#">PHYS 321</a>	HEAT AND THERMODYNAMICS	3	0	3	6
<a href="#">PHYS 305</a>	ELECTROMAGNETIC THEORY I	3	0	3	6
<a href="#">PHYS 303</a>	QUANTUM MECHANICS I	3	0	3	6
<a href="#">MATH 375</a>	NUMERICAL ANALYSIS I	3	0	3	5
XXX xxx	NON-TECHNICAL ELECTIVE I	3	0	3	5
		<b>15</b>	<b>2</b>	<b>16</b>	<b>30</b>

Sixth Semester		Theo.	Prac	Credits	ECTS
<a href="#">PHYS 352</a>	PHYSICS LABORATORY VI	0	2	1	2
<a href="#">PHYS 324</a>	STATISTICAL PHYSICS	3	0	3	6
<a href="#">PHYS 306</a>	ELECTROMAGNETIC THEORY II	3	0	3	6
<a href="#">PHYS 304</a>	QUANTUM MECHANICS II	3	0	3	6
XXX xxx	NON-TECHNICAL ELECTIVE II	3	0	3	5
XXX xxx	NON-TECHNICAL ELECTIVE III	3	0	3	5
		<b>15</b>	<b>2</b>	<b>16</b>	<b>30</b>

Seventh Semester		Theo.	Prac	Credits	ECTS
<a href="#">PHYS 451</a>	PHYSICS LABORATORY VII	0	2	1	2
<a href="#">PHYS 421</a>	SOLID STATE PHYSICS I	3	0	3	8
<a href="#">PHYS 403</a>	ATOMIC PHYSICS	3	0	3	8
XXX xxx	TECHNICAL ELECTIVE I	3	0	3	6
XXX xxx	TECHNICAL ELECTIVE II	3	0	3	6
		<b>12</b>	<b>2</b>	<b>13</b>	<b>30</b>

Eight Semester		Theo.	Prac	Credits	ECTS
<a href="#">PHYS 422</a>	SOLID STATE PHYSICS II	3	0	3	6

PHYS 406	MOLECULAR PHYSICS	3	0	3	7
XXX xxx	NON-TECHNICAL ELECTIVE IV	3	0	3	5
XXX xxx	TECHNICAL ELECTIVE III	3	0	3	6
XXX xxx	TECNICAL ELECTIVE IV	3	0	3	6
		<b>15</b>	<b>0</b>	<b>15</b>	<b>30</b>

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

\*\*Technical electives can be chosen from any 200 and higher-level PHYS, CHEM, MATH, BIOL, CENG, EEE, IE, ENVE, GBE courses with the consent of the advisor or chairman.

**Total Credits Required in Degree Program: 132 / Total ECTS Credits: 244**

**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
PHYS 401	SENIOR PROJECT I	3	0	3	6
PHYS 402	SENIOR PROJECT II	3	0	3	6
PHYS 404	NUCLEAR AND PARTICLE PHYSICS	3	0	3	6
PHYS 423	SEMICONDUCTOR PHYSICS	3	0	3	6
PHYS 424	LASERS	3	0	3	6
PHYS 426	MAGNETIC PROPERTIES OF SOLIDS	3	0	3	6
PHYS 427	OPTICAL PROPERTIES OF SOLIDS	3	0	3	6
CENG 204	PROGRAMMING LANGUAGES	3	0	3	6
CENG 252	COMPUTER ORGANIZATION	3	0	3	7
CENG 304	AUTOMATA THEORY AND FORMAL LANGUAGES	3	0	3	5
CENG 305	ANALYSIS OF ALGORITHMS	3	0	3	8
CENG 310	WEB PROGRAMMING	3	0	3	7
CENG 362	COMPUTER NETWORKS	3	2	4	8
CENG 410	INTRO. TO DESIGN PATTERNS & FRAMEWORKS	3	0	3	5
CENG 464	DISTRIBUTED SYSTEMS	3	0	3	5
CENG 471	SPECIAL TOPICS IN COMPUTER ENGINEERING I	3	0	3	5
CENG 482	NETWORK SECURITY	3	0	3	5
CENG 484	EMBEDDED SYSTEMS	3	0	3	5
CENG 491	INTRO. TO NEURAL NETWORKS	3	0	3	5
CENG 492	INTRODUCTION TO PATTERN RECOGNITION	3	0	3	5
CENG 497	SENIOR DESIGN PROJECT I	0	4	2	3
CENG 498	SENIOR DESIGN PROJECT II	0	6	3	8
BIOL 202	GENERAL MICROBIOLOGY II	3	0	3	4
BIOL 204	CELL BIOLOGY	3	0	3	4
BIOL 206	HUMAN AND ECOLOGY (RELATIONS BETWEEN THE NATURE AND SOCIETIES)	3	0	3	5
BIOL 252	GENERAL MICROBIOLOGY LAB. II	0	2	1	1
BIOL 302	MOLECULAR GENETICS	3	0	3	8
BIOL 303	PHYSIOLOGY I	3	0	3	5
BIOL 304	PHYSIOLOGY II	3	0	3	8
BIOL 306	BIOCHEMISTRY II	3	0	3	8
BIOL 307	MOLECULAR BIOLOGY	3	0	3	5
BIOL 352	MOLECULAR GENETICS LABORATORY	0	2	1	2
BIOL 354	PHYSIOLOGY LABORATORY II	0	2	1	2
BIOL 355	BIOCHEMISTRY LABORATORY I	0	2	1	2
BIOL 356	BIOCHEMISTRY LABORATORY II	0	2	1	2
BIOL 357	MOLECULAR BIOLOGY LABORATORY	0	4	2	4
BIOL 401	TOXICOLOGY	3	0	3	8
BIOL 408	CANCER BIOLOGY	3	0	3	6
BIOL 418	BIOTECHNOLOGY & GENETIC ENGINEERING	3	0	3	6
ENVE 204	ENVIRONMENTAL CHEMISTRY II	2	2	3	5
ENVE 210	MATERIALS SCIENCE IN ENVIRONMENTAL ENGINEERING	3	0	3	5
ENVE 212	ENVIRONMENTAL ECOLOGY	3	0	3	5
ENVE 304	UNIT OPERATIONS AND PROCESSES OF WASTE WATER TREATMENT II	3	0	3	5
ENVE 307	AIR POLLUTION	3	0	3	5
ENVE 312	WATER SUPPLY AND SEWERAGE	3	0	3	5
ENVE 317	FLUID MECHANICS	3	0	3	5
ENVE 344	SOLID WASTE MANAGEMENT	3	0	3	5
ENVE 402	ENVIRONMENTAL BIOTECHNOLOGY	3	0	3	5
ENVE 407	AIR POLLUTION CONTROL	3	0	3	5
ENVE 408	MARINE POLLUTION	3	0	3	5
ENVE 415	SOIL MECHANICS	2	2	3	5
ENVE 417	ENVIRONMENTAL LAW	3	0	3	5
ENVE 427	ENVIRONMENTAL TOXICOLOGY	3	0	3	5
ENVE 432	ENVIRONMENTAL IMPACT ASSESSMENT	3	0	3	5
EEE 237	INTRODUCTION TO MICROPROCESSORS	3	2	4	5
EEE 285	ELECTROMAGNETIC FIELD THEORY	3	0	3	5
EEE 286	ELECTROMAGNETIC WAVE THEORY	3	0	3	6
EEE 292	ELECTRONIC CIRCUITS AND DEVICES	3	2	4	5
EEE 316	COMMUNICATIONS I	3	2	4	6

<u>EEE 322</u>	ELECTRONICS II	3	2	4	7
<u>EEE 338</u>	LINEAR CONTROL SYSTEMS	3	2	4	6
<u>EEE 362</u>	ELECTRICAL MACHINERY II	3	2	4	6
<u>EEE 373</u>	HIGH VOLTAGE TECHNIQUES	3	0	3	5
<u>EEE 415</u>	INTRODUCTION TO MODULATION AND CODING	3	0	3	5
<u>EEE 421</u>	ANALOG INTEGRATED CIRCUIT DESIGN	3	2	4	6
<u>EEE 431</u>	DISCRETE TIME CONTROL SYSTEMS	3	2	4	6
<u>EEE 445</u>	FIBER OPTIC SENSORS	3	0	3	5
<u>EEE 484</u>	INTRODUCTION TO ANTENNAS AND PROPAGATION	3	0	3	5
<u>EEE 496</u>	SPECIAL TOPICS IN ELECTRONICS ENGINEERING II	3	0	3	5
<u>IE 218</u>	OPERATIONS RESEARCH II	3	1	3	7
<u>IE 321</u>	PRODUCTION PLANNING AND CONTROL I	3	0	3	6
<u>IE 322</u>	PRODUCTION PLANNING AND CONTROL II	3	0	3	5
<u>IE 344</u>	QUALITY CONTROL	3	0	3	5
<u>IE 346</u>	SYSTEM ANALYSIS AND SIMULATION	2	2	3	6
<u>IE 430</u>	TOTAL QUALITY MANAGEMENT	3	0	3	5
<u>IE 455</u>	APPLIED OPTIMIZATION	3	0	3	5
<u>IE 470</u>	SUPPLY CHAIN AND LOGISTICS MANAGEMENT	3	0	3	5
<u>IE 473</u>	ENTERPRISE RESOURCE PLANNING	3	0	3	5
<u>IE 476</u>	MODELING AND ANALYSIS OF MANUFACTURING SYSTEMS	3	0	3	5
<u>IE 481</u>	SPECIAL TOPICS IN INDUST. ENG. I	3	0	3	5
<u>GBE 201</u>	BIOMECHANICS	3	0	3	5
<u>GBE 202</u>	BIODYNAMICS	3	0	3	5
<u>GBE 204</u>	MICROBIAL BIOTECHNOLOGY	3	2	4	5
<u>GBE 205</u>	BIOCHEMISTRY	3	2	4	6
<u>GBE 207</u>	BIOMATERIALS	3	0	3	5
<u>GBE 208</u>	HUMAN PHYSIOLOGY	3	0	3	5
<u>GBE 210</u>	BIO THERMODYNAMICS	3	0	3	5
<u>GBE 301</u>	BIO SIGNALS AND SYSTEMS	3	0	3	4
<u>GBE 302</u>	BIOMEDICAL INSTRUMENTATION	3	0	3	5
<u>GBE 303</u>	CELL AND TISSUE ENGINEERING	3	2	4	6
<u>GBE 304</u>	PLANT PHYSIOLOGY AND ENGINEERING	3	0	3	5
<u>GBE 305</u>	BIOCHEMICAL ENGINEERING	3	0	3	5
<u>GBE 306</u>	BIOFLUID MECHANICS	3	0	3	5
<u>GBE 307</u>	HUMAN GENETICS AND DISEASES	3	0	3	5
<u>GBE 308</u>	BIOINFORMATICS	3	2	4	6
<u>GBE 310</u>	TECHNIQUES IN GENETIC ENGINEERING	3	2	4	6
<u>GBE 312</u>	TECHNIQUES IN GENETIC ENGINEERING LAB.	0	2	1	1
<u>GBE 409</u>	BIOSENSORS	3	0	3	6
<u>GBE 420</u>	HUMAN GENOMICS AND PROTEOMICS	3	0	3	6
<u>GBE 422</u>	PROTEIN DESIGN	3	0	3	6
<u>GBE 434</u>	CELL CYCLE	3	0	3	6
<u>GBE 436</u>	SYNTHETIC BIOLOGY AND METABOLIC ENGINEERING	3	0	3	5
<u>GBE 481</u>	DYNAMICS SYSTEMS MODELING	3	0	3	7
<u>CHEM 206</u>	PHYSICAL CHEMISTRY I	4	0	4	6
<u>CHEM 207</u>	INT. TO ORGANIC CHEMISTRY	3	0	3	7
<u>CHEM 208</u>	ORGANIC CHEMISTRY I	4	0	4	6
<u>CHEM 252</u>	ANALYTICAL CHEMISTRY LABORATORY II	0	4	2	3
<u>CHEM 256</u>	PHYSICAL CHEMISTRY LABORATORY I	0	4	2	3
<u>CHEM 258</u>	ORGANIC CHEMISTRY LABORATORY I	0	4	2	3
<u>CHEM 306</u>	BIOCHEMISTRY	3	0	3	6
<u>CHEM 307</u>	INTRODUCTION TO QUANTUM CHEMISTRY	3	0	3	8
<u>CHEM 310</u>	INTRODUCTION TO POLYMER CHEMISTRY	3	0	3	5
<u>CHEM 312</u>	INORGANIC CHEMISTRY II	4	0	4	8
<u>CHEM 352</u>	INORGANIC CHEMISTRY LABORATORY	0	4	2	4
<u>CHEM 356</u>	BIOCHEMISTRY LABORATORY	0	4	2	4
<u>CHEM 402</u>	RESEARCH PROJECT	3	0	3	6
<u>CHEM 404</u>	DYES AND PIGMENTS	3	0	3	6
<u>CHEM 407</u>	MODERN SPECTROSCOPY	3	0	3	5
<u>CHEM 410</u>	SEPARATION TECHNIQUES	3	0	3	6
<u>CHEM 414</u>	POLYMER CHEMISTRY	3	0	3	5
<u>CHEM 419</u>	ORGANOMETALLIC CHEMISTRY	3	0	3	5
<u>CHEM 432</u>	SOLID STATE CHEMISTRY AND INORGANIC MATERIALS	3	0	3	5
<u>MATH 202</u>	ADVANCED CALCULUS II	4	0	4	8
<u>MATH 226</u>	NUMBER THEORY II	3	0	3	8
<u>MATH 230</u>	DIFFERENTIAL EQUATIONS	3	0	3	5
<u>MATH 232</u>	BOUNDARY VALUE PROBLEMS	3	0	3	7
<u>MATH 272</u>	BOUNDARY VALUE PROBLEMS	3	0	3	5
<u>MATH 281</u>	PROBABILITY & STATISTICS	3	0	3	5
<u>MATH 286</u>	MATLAB AND MAPLE	3	0	3	5
<u>MATH 302</u>	COMPLEX ANALYSIS II	3	0	3	7
<u>MATH 332</u>	ABSTRACT ALGEBRA II	3	0	3	8
<u>MATH 346</u>	INTRODUCTION TO STATISTICS	3	0	3	4
<u>MATH 348</u>	INTRODUCTION TO PROBABILITY AND STATISTICS	3	0	3	5
<u>MATH 350</u>	INTRODUCTION TO PARTIAL DIFFERENTIAL	3	0	3	4

	EQUATIONS				
<u>MATH 355</u>	GRAPH THEORY	3	0	3	5
<u>MATH 376</u>	NUMERICAL ANALYSIS II	3	0	3	5
<u>MATH 379</u>	INEQUALITIES	3	0	3	5
<u>MATH 410</u>	FUNCTIONAL ANALYSIS	3	0	3	10
<u>MATH 429</u>	GROUP THEORY	3	0	3	5
<u>MATH 430</u>	INTRODUCTION TO THEORY OF L-FUNCTIONS	3	0	3	5
<u>MATH 440</u>	DIFFERANTIAL GEOMETRY	3	0	3	10
<u>MATH 474</u>	FOURIER SERIES AND INTEGRALS	3	0	3	5
<u>MATH 477</u>	NUMERICAL SOLUTIONS OF ODES	3	0	3	5
<u>MATH 492</u>	SENIOR PROJECT	3	0	3	6
<b>NON-AREA TECHNICAL ELECTIVES (3+0) 3</b>		<b>Theo.</b>	<b>Prac</b>	<b>Credits</b>	<b>ECTS</b>
<u>APHR 305</u>	OSMANLI DÖNEMİNDE ERMENİLER	3	0	3	5
<u>APHR 411</u>	CUMHURİYET DÖNEMİ ÇAĞDAŞLAŞMA HAREKETLERİ	3	0	3	5
<u>EDU 420</u>	APPLIED EDUCATIONAL ENTREPRENEURSHIP	2	2	3	5
<u>ARB 201</u>	ARABIC LANGUAGE I	3	0	3	5
<u>ARB 202</u>	ARABIC LANGUAGE II	3	0	3	5
<u>CHN 201</u>	ÇİN DİLİ I	3	0	3	5
<u>CHN 202</u>	CHINESE LANGUAGE II	3	0	3	5
<u>FRE 201</u>	FRANSIZ DİLİ I	3	0	3	5
<u>FRE 202</u>	FRANSIZ DİLİ II	3	0	3	5
<u>FRE 301</u>	FRANSIZ DİLİ III	3	0	3	5
<u>GER 201</u>	ALMAN DİLİ I	3	0	3	5
<u>GER 202</u>	ALMAN DİLİ II	3	0	3	5
JAP 201	JAPANESE LANGUAGE I	3	0	3	5
JAP 202	JAPANESE LANGUAGE II	3	0	3	5
<u>PRS 201</u>	FARS DİLİ I	3	0	3	5
<u>PRS 202</u>	FARS DİLİII	3	0	3	5
<u>RUS 201</u>	RUS DİLİ I	3	0	3	5
<u>RUS 202</u>	RUS DİLİ II	3	0	3	5
<u>SPN 201</u>	İSPANYOL DİLİ I	3	0	3	5
<u>SPN 202</u>	SPANISH LANGUAGE II	3	0	3	5

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