

Bachelor of Science Program

The 4-year Bachelor of Science program comprises two phases. In the first five semesters, students are provided with a broad foundation in basic sciences and electrical engineering. Courses are to be taken in mathematics, physics, elementary- and intermediate-level electrical engineering, and humanities with a total of 96 units. At the end of the 5th semester, students will select one of the areas of Communications, Electric Power Engineering, Electronics, Control Engineering, Digital Systems, and Bio-Electric Engineering, for specialization. The remaining three semesters will be devoted to compulsory and elective courses from the chosen specialization (24-26 units), elective courses from other areas of electrical engineering, management, and economic sciences (10-12 units), and humanities (6 units, including Engineering Ethics). The EE students are expected to do an internship of approximately 12 weeks in the industry and to work towards a BSc thesis under supervision of a member of the academic staff in the fourth year.

Program Summary Chart (Semesters 1-5)

First Semester

Course Number/ Name	Lab.	Units	Prerequisites	
22015 Mathematics I		4		
24011 Physics I	*	4		
25711 EE Principles (+Lab)	*	4		
31123 General English Language		3		
35316 Electrical Engineering Graphics		2		
Elective humanities course [‡]		2		
30003 Physical Education I		1		

Second Semester

Course Number/Name	Lab.	Units	Prerequisites	
22016 Mathematics II		4	22015	
24012 Physics II	*	4	24011	
25721 Analog Circuits (+Lab)	*	4	25711,22034 [†]	
22034 Differential Equations		3	22016	
40153 Computer Programming & Algorithms		3		
33018 General Workshop		1		
30004 Physical Education II		1		

Third Semester

Course Number/Name	Lab.	Units	Prerequisites	
25743 Logic Circuits & Digital Systems (+Lab)	*	4	25721,40153	
25731 Electric Circuits Theory		3	25721,22034	
25733 Electromagnetism		3	22016,24012	
25735 Engineering Mathematics		3	22034	
22072 Numerical Analysis		3		
25734 EE Proficiency Language		2	31101	
33014 Electrical Engineering Workshop		1		

Fourth Semester

Course Number/Name	Lab.	Units	Prerequisites	
25742 Signals & Systems		3	25731,25735	
25741 Electric Energy Conversion I (+Lab)	*	4	25733	
25754 Computer Structure & μP 's (+Lab)	*	4	25743	
25732 Engineering Probability & Statistics		3	22016,25733 [†]	
Elective humanities course [‡]		2		

Fifth Semester

Course Number/Name	Lab.	Units	Prerequisites	
25744 Principles of Electronics (+Lab)	*	4	25721	
25752 Linear Control Systems (+Lab)	*	4	25742	
25751 Communication Systems		3	25732,25742	
25753 Power System Analysis I		3	25733,25741 [†]	
Engineering Economics		3		
Elective humanities course [‡]		2		

[‡] See Table on page

[†] Co-requisite

Program Summary Chart (Semesters 6-8)

Bioelectric Engineering

Compulsory Courses

Course Number/Name	Lab.	Units	Prerequisites	
3 courses to be selected from		9		
25729 AI & Biological Computation		3	25732, 25742	
25728 Neuromuscular Control & Modeling		3	25752, 25725 [†]	
25726 Biosensors		3	25733, 25724 [†]	
25736 Biomedical Electric Circuit Applications		3	25724, 25744	
25725 Physiology		3		
25724 Biomedical Engineering Foundations		3	25742 [†]	
25727 Biomedical Engineering Laboratory	*	1	25724 [†] , 25725 [†]	
25771 Microprocessor System Design		3	25754	
25765 Digital Signal Processing		3	25742	
25770 Engineering Ethics & Environment		1	25700	
BSC Project I & II		3		
Internship		0		

Elective Courses

Course Number/Name	Lab.	Units	Prerequisites	
1 Electrical Engineering course		3		
1 course from management & economy cluster		3		
1 EE or management & economy course		3		
1 EE course or 2 EE laboratory courses		2		

* See Table on page

[†] Co-requisite

Communications

Compulsory Courses

Course Number/Name	Lab.	Units	Prerequisites
25761 Analog Electronics		3	25744
25762 Electromagnetic Fields & Waves		3	25733
25764 RF Communication Circuits		3	25751,25761
25765 Digital Signal Processing		3	25742
25763 Digital Communications		3	25751
25766 Microwaves & Antennas		3	25762
2 Laboratory courses to be selected from:		2	
25701 Digital Communications Laboratory	*		25763
25702 Microwaves & Antennas Laboratory	*		25766
25703 Digital Signal Processing Laboratory	*		25754,25765
25705 RF Communication Circuits Laboratory	*		25764
25770 Engineering Ethics & Environment		1	
BSC Project I & II		3	
Internship		0	

Elective Courses

Course Number/Name	Lab.	Units	Prerequisites
2 courses to be selected from:		6	
25134 Introduction to Wireless Communications			25751
25176 Wave Prop. in Wireless Communications			25141
Other EE courses			
2 courses from Management & Economy cluster*		6	

* See Table on page

Control & Dynamical Systems

Compulsory Courses

Course Number/Name	Lab.	Units	Prerequisites
25793 Digital Control		3	25752
25791 Industrial Control		3	25752
25792 Modern Control		3	25752,25871
Linear Algebra		3	25735
5 units (min.) to be selected from: Thermodynamics		5	
25771 Microprocessor System Design			25754
25794 Nonlinear Systems			25752
25795 Instrumentation			25744,25752
25213 Industrial Electronics			25061,25032
25765 Digital Signal Processing			25742
25796 Robotics & Machine Vision			25752
2 Laboratory courses to be selected from: 25709 Nonlinear Systems Laboratory 25205 Industrial Electronics Laboratory Other Specialized Laboratories	* * *	2	25794 25213
25770 Engineering Ethics & Environment		1	
BSC Project I & II		3	
Internship		0	

Elective Courses

Course Number/Name	Lab.	Units	Prerequisites
2 Electrical Engineering courses		6	
2 courses from Management & Economy cluster*		6	

* See Table on page

Digital Systems

Compulsory Courses

Course Number/Name	Lab.	Units	Prerequisites	
25771 Microprocessor System Design		3	25754	
25774 Pulse Technique & Digital Circuits		3	25744	
25777 Advanced Programming		3	25754	
25776 ASIC/FPGA System Design		3	25754	
25778 Embedded Systems		3	25771,25777	
25779 Data Communication Networks		3	25751	
25703 Digital Signal Processing Laboratory	*	1	25754,25765	
25770 Engineering Ethics & Environment		1		
BSC Project I & II		3		
Internship		0		

Elective Courses

Course Number/Name	Lab.	Units	Prerequisites	
1 course to be selected from: 25797 Computer Interface Circuits 25263 Digital Television Other EE courses		3	25771 25751	
1 Laboratory course to be selected from: 25205 Industrial Electronics Laboratory 25102 Communication Circuits Laboratory Other Specialized Laboratories	*	1	25213 25148 [†]	
1 course from management & economy cluster [*]		3		
1 course in EE or Management & Economy [*]		3		

^{*} See Table on page

[†] Co-requisite

Electronics

Compulsory Courses

Course Number/Name	Lab.	Units	Prerequisites
25761 Analog Electronics		3	25744
25774 Pulse Technique & Digital Circuits	*	4	25744
25773 Filters & Network Synthesis		3	25744
25771 Microprocessor System Design		3	25754
25772 Principles of Solid State Devices		3	25721,24012
25764 RF Communication Circuits		3	25751,25761
1 course to be selected from:		3	
25213 Industrial Electronics			25032,25061
25798 Solid State Devices			25772
25253 CMOS Circuit Design I			25761
25776 ASIC/FPGA System Design			25254
25770 Engineering Ethics & Environment		1	
BSC Project I & II		3	
Internship		0	

Elective Courses

Course Number/Name	Lab.	Units	Prerequisites
1 Electrical Engineering course		3	
1 Laboratory course to be selected from:	*	1	
25205 Industrial Electronics Laboratory			25213
25102 Communication Circuits Laboratory			25148†
1 course from management & economy cluster*		3	
1 course in EE, or management & economy*		3	

* See Table on page

† Co-requisite

Electric Energy Systems

Compulsory Courses

Course Number/Name	Lab.	Units	Prerequisites
25781 Electric Energy Conversion II		3	25741
25213 Industrial Electronics		3	25032,25061
25782 Power System Analysis II		3	25753
25771 Microprocessor System Design		3	25754
25772 Principles of Solid State Devices		3	25721,24012
25764 RF Communication Circuits		3	25751,25761
3 courses to be selected from:		9	
25783 Dielectrics & High Voltage Systems			25733,25753
25784 Electric Installations			25753
25785 Electric Energy Generating Systems			25741
25786 Power System Protection			25782
25787 Nuclear Energy Generating Systems			25741/25062
25789 Automotive Electric and Electronic systems			25741,25744
25799 Novel Energy Sources & Distributed Generation			25785
2 Laboratory courses to be selected from:	*	2	
25713 Dielectrics & High Voltage Laboratory			25783†
25205 Industrial Electronics Laboratory			25213
25722 Power System Protection Laboratory			25786†
25716 Electric Energy System Laboratory			25782
25770 Engineering Ethics & Environment		1	
BSC Project I & II		3	
Internship		0	

Elective Courses

Course No.	Course Name	Lab.	Units	Prerequisites
2	Electrical Engineering courses		6	
2	courses from management & economy cluster*		6	

* See Table on page

† Co-requisite

Humanities, Economy, and Management courses

Management & Economy courses

Course Number/Name	Lab.	Units	Prerequisites	
44262 <i>Dynamic Analysis of Economic Systems</i>		3		
44713 <i>Iranian Economy</i>		3		
44101 <i>Principles of Management</i>		3		
44121 <i>Decision Making Techniques for Managers</i>		3		
44104 <i>Principles of Technology Management</i>		3		
21534 <i>Project Management</i>		3		