

Electrical and Computer Engineering

Electrical Engineering

Department Web site: www.ece.iit.edu

Electrical engineering is concerned with the generation, transmission and utilization of electrical energy and with the transmitting and processing of information. Electrical engineers are involved in the analysis, design and production of electric power, radio, radar, television, computing, telecommunication, control and information systems. These engineers find solutions to the challenging technical problems that arise in our rapidly changing society. They impact virtually every aspect of daily life, as evidenced by examples such as wireless communications, audio and video equipment, power distribution, computerized traffic control, noise pollution monitoring and abatement, and medical instrumentation.

The electrical engineering curriculum puts emphasis on both theory and practical applications by providing a solid background in engineering science and mathematics, fol-

lowed by a sequence of core courses in electrical engineering. Design skills are fostered in the professional elective courses in the senior year, along with the project experience instilled by Interprofessional Projects (IPROs).

The objectives of the ECE undergraduate electrical engineering program are to produce electrical engineering graduates who are prepared to:

- Enter their profession and make intellectual contributions to it
- Embark on a lifelong career of personal and professional growth
- Take advanced courses at the graduate level

Bachelor of Science in Electrical Engineering

Required Courses	Credit Hours	Required Courses	Credit Hours
Electrical Engineering Requirements ECE 100, 211, 212, 213, 214, 218 242, 307, 308, 311, 312, 319	36	Computer Science Requirements CS 115, 116	4
Professional Electives	14	Humanities and Social Sciences Requirements See general education requirements on page 25	21
Mathematics Requirements MATH 151, 152, 251, 252, 333, and MATH 474	24	Engineering Course Requirement MMAE 200 or MMAE 320	3
Physics Requirements PHYS 123, 221, 224	11	Science Electives BIOL 107, BIOL 115, MS 201, or CHEM 126	3
Chemistry Requirement CHEM 122	3	Technical Electives	6
		Interprofessional Projects	6
		Total Credit Hours	131

Electrical Engineering Curriculum

Semester 1					Semester 2				
		Lect.	Lab. Hrs.	Cr. Hrs.			Lect.	Lab. Hrs.	Cr. Hrs.
MATH 151	Calculus I	4	1	5	MATH 152	Calculus II	4	1	5
CHEM 122	Principles of Chemistry I	3	0	3	PHYS 123	Mechanics	3	3	4
CS 115	Object-Oriented Programming I	2	1	2	Science Elective*		3	0	3
ECE 100	Introduction to the Profession I	2	3	3	CS 116	Object-Oriented Programming II	2	1	2
Social Science Elective		3	0	3	Humanities 100-level Course		3	0	3
Totals		14	5	16	Totals		15	5	17

Semester 3				
MATH 252	Introduction to Differential Equations	4	0	4
PHYS 221	Electromagnetism and Optics	3	3	4
ECE 211	Circuit Analysis I	3	0	3
ECE 212	Analog and Digital Laboratory I	0	3	1
ECE 218	Digital Systems	3	0	3
Social Science Elective		3	0	3
Totals		16	6	18

Semester 4				
MATH 251	Multivariate and Vector Calculus	4	0	4
PHYS 224	Thermal and Modern Physics	3	0	3
ECE 213	Circuit Analysis II	3	0	3
ECE 214	Analog and Digital Laboratory II	0	3	1
ECE 242	Digital Computers and Computing	3	0	3
Totals		13	3	14

Semester 5				
MATH 333	Matrix Algebra and Complex Variables	3	0	3
IPRO I ***	Interprofessional Project I	1	6	3
ECE 307	Electrodynamics	4	0	4
ECE 311	Engineering Electronics	3	3	4
Humanities Elective		3	0	3
Totals		14	9	17

Semester 6				
ECE 308	Signals and Systems	3	0	3
Engineering Science Elective**		3	0	3
ECE 312	Electronic Circuits	3	3	4
ECE 319	Fundamentals of Power Engineering	3	3	4
Social Science Elective		3	0	3
Totals		15	6	17

Semester 7				
Professional ECE elective †		3	0	3
Professional ECE elective †		3	3	4
MATH 474	Probability and Statistics†††	3	0	3
IPRO II***	Interprofessional Project II	1	6	3
Humanities Elective		3	0	3
Totals		13	9	16

Semester 8				
Professional ECE elective †		3	0	3
Professional ECE elective †		3	3	4
Technical electives ††		6	0	6
Humanities or Social Science Elective		3	0	3
Totals		15	3	16

Total Credit Hours

131

This program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

* Science elective must be BIOL 107, BIOL 115, CHEM 126, or MS 201.

** Engineering science elective: Choose either MMAE 200 or MMAE 320.

*** Interprofessional projects may be taken at any time during the sophomore, junior or senior years. (Course scheduling must be adjusted accordingly with adviser approval.)

IPROs are subject to the approval of a student's academic adviser. At least one IPRO should have significant (at least 75 percent) technical content and be viewed as a technical IPRO with the same definition as a technical elective.

† Professional ECE electives may be chosen from any of the 400-level ECE courses identified with (P) in the course descriptions. Courses at the 500-level may be taken with the written consent of the instructor, faculty adviser and the ECE department chair. At least two of the electives must contain laboratories. A maximum of three credits of Undergraduate Research (ECE 491) or Special Problems (ECE 497) may be used as professional ECE electives with adviser approval.

†† Adviser-approved course from engineering, science, mathematics, or computer science that is more advanced than the academic level of the student.

††† ECE 475 may be substituted with adviser approval.