

Electrical Engineering

University Requirements (23-24)

Writing – American Thought and Language (ATL)	4
Integrative Studies in Humanities (IAH)	8
Integrative Studies in Social Sciences (ISS)	8
Bioscience (one of the following):	
BS 110, BS 111, ENT 205, MMG 205,	
MMG 301, PLB 105, PSL 250, ZOL 141	3-4

College Requirements (30)

CEM 141	General Chemistry	4
CSE 231	Introduction to Programming I	4
MTH 132	Calculus I	3
MTH 133	Calculus II	4
MTH 234	Multivariable Calculus	4
MTH 235	Differential Equations	3
¹ PHY 183	Physics for Scientists & Engineers I	4
¹ PHY 184	Physics for Scientists & Engineers II	4

Major Requirements (40)

CEM 161	Chemistry Laboratory I	
OR		
PHY 191	Physics Laboratory for Scientists I	1
ECE 201	Circuits and Systems I	3
ECE 202	Circuits and Systems II	3
ECE 230	Digital Logic Fundamentals	3
ECE 302	Electronic Circuits	3
ECE 303	Electronics Laboratory	1
ECE 305	Electromagnetic Fields & Waves I	4
ECE 313	Control Systems	3
ECE 320	Energy Conversion and Power Electronics	3
ECE 331	Microprocessors and Digital Systems	4
ECE 366	Introduction to Signal Processing	3
ECE 480	Senior Design	5
ME 201	Thermodynamics	
OR		
ME 221	Statics	3
STT 351	Probability and Statistics for Engineering	3

Major Electives (18-24)

A minimum of six courses totaling 18 to 24 credits, selected from at least four different areas. A laboratory must be included.

Electromagnetics

ECE 405	Electromagnetic Fields and Waves II	4
ECE 407	Electromagnetic Compatibility	4

Power

ECE 421	Power System Analysis (L)	4
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Integrated Circuits/VLSI

ECE 410	VLSI Design (L)	4
ECE 411	Electronic Design Automation (L)	4
ECE 418	Algorithms of Circuit Design	3
ECE 484	Applications of Analog Integrated Circuits (L)	4

Solid-State Electronics/Electro-optics

ECE 474	Principles of Electronic Devices	3
ECE 476	Electro-Optics (L)	4
ECE 477	Microelectronic Fabrication (L)	3

Communications/Signal Processing

ECE 457	Communication Systems	3
ECE 458	Communication Systems Laboratory	1
ECE 466	Digital Signal Processing & Filter Design	3

Control/Robotics

ECE 415	Computer Aided Manufacturing	3
ECE 485	Digital Control & Robotics (L)	4

Other Electives (Variable)

Total Credits Required for Degree 128

The requirements listed above apply to students admitted to the major of Electrical Engineering in the Department of Electrical and Computer Engineering beginning Fall, 2003. The Department of Electrical and Computer Engineering (ECE) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Electrical Engineering should contact the Electrical and Computer Engineering Department Advising Office, 2212 Engineering Building, phone (517)355-5242.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

¹ If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.

Electrical Engineering Sample Program

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
ATL 1XX or ISS 2XX	4	ATL 1XX or ISS 2XX	4	ECE 201	3	ECE 202	3
Bioscience (AT)	3/4	CSE 231	4	ISS 3XX	4	ECE 230	3
CEM 141	4	MTH 133	4	MTH 234	4	IAH 20X	4
MTH 132	3	PHY 183	4	PHY 184	4	ME 201/221	3
				PHY 191 or CEM 161	1	MTH 235	3
Total	14/15	Total	16	Total	16	Total	16

Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
ECE 302	3	ECE 320	3	Elective	4	ECE 480	5
ECE 303	1	ECE 331	4	Major Elective	4	Elective	3
ECE 305	4	ECE 366	3	Major Elective	4	Major Elective	4
ECE 313	3	Elective	3	Major Elective	4	Major Elective	4
STT 351	3	Major Elective	4				
Elective	3						
Total	17	Total	17	Total	16	Total	16

Program Objectives

The electrical engineering program provides its graduates with a solid foundation on which they can build successful and sustainable careers. Within the first several years following graduation, graduates of the electrical engineering program will:

1. **have accrued an understanding of the discipline**, built on an exposure to a broad range of electrical engineering topics including the latest and emerging techniques and technologies.
2. **have established expertise within the discipline** originating with in-depth study in selected curricular areas emphasizing the solution to engineering problems using proper tools, practical approaches, and creative problem solving.
3. **be engaged in lifelong learning** in electrical engineering, based on a strong foundation in the core sciences and mathematics.
4. **have an appreciation for the global and societal impact of the discipline** through an exposure to contemporary issues, and a knowledge and respect for ethical standards and professional responsibilities.
5. **have successfully utilized essential professional skills** such as teamwork and communications, both oral and written, within the context of engineering problem solving and design.