Electrical Engineering 440000BS with Co-Op

The following information has official approval of the **College of Engineering**, but is intended only as a supplemental guide. Official degree requirements are established at the time of admission to the degree-granting college. The transfer process is completed through an appointment with your academic adviser.

Italicized courses fulfill General Education requirements. Unless a course is specified, refer to the General Education guide at http://www.uakron.edu/advising/docs/General_Education_Guide.pdf

1st Year	**Fall Semester**	Credit Hours	Prerequisites
3150:151	*Principles of Chemistry I (Lecture and Recitation) (Natural Science Requirement)*	3	Placement into 3450:149 (Precalculus) or higher
3150:152	*Principles of Chemistry I Lab (Natural Science Requirement)*	1	3150:151 corequisite
3450:221	*Analytic Geometry-Calculus I (Mathematics Requirement)*	4	Placement Test or 3450:149 (Precalculus)
4400:101	Tools for Electrical Engineering (Lect and Lab)	3	3450:149 (Precalculus) or higher, corequisite
	Physical Education Requirement	1	
	English Composition I Requirement	3	Appropriate placement by advisor
Total		**15**	

1st Year	**Spring Semester**		
3650:291	*Elementary Classical Physics I (Lecture and Lab) (Natural Science Requirement)*	4	3450:221
4450:220	Digital Logic Design (Lecture and Lab)	4	4400:101 or 4450:101
3450:222	Analytic Geometry-Calculus II	4	3450:221 with C- or better
	Social Science Requirement	3-4	
	English Composition II Requirement	3	3300:111 or equivalent
Total		**18-19**	

1st Year	**Summer Semester**		
	Optional Internship		

2nd Year	**Fall Semester**		
3450:223	Analytic Geometry-Calculus III	4	3450:222 with C- or better
3650:292	Elementary Classical Physics II (Lab)	4	3650:291
4400:230	Circuits I Lab	1	4400:231 corequisite
4400:231	Circuits I	3	4400:230, 3450:223, 3650:292 corequisites
	Speech/Oral Communication Requirement	3	
3400:210 **or** 3400:221	*Humanities in the Western Tradition* ***-OR-*** *Humanities in the World since 1300*	4	32 credit hours and 3300:112 equivalent 32 credit hours and 3300:112 equivalent
Total		**19**	

2nd Year	**Spring Semester**		
4300:201	Statics	3	3450:222 and 3650:291 corequisites
4450:208	Programming for Engineers	3	4450:101
3450:335	Introduction to Ordinary Differential Equations	3	3450:223 with C- or better
4400:330	Circuits II Lab	1	4400:332 corequisite
4400:332	Circuits II	3	4400:231 prerequisite 4400:330, 3450:335 corequisites
	Social Science Requirement	3-4	
Total		**16-17**	

2nd Year	**Summer Semester**		
	Optional Co-op		

3rd Year	Fall Semester		
4400:340	Signals & Systems	4	4400:332, 4450:208, 3460:209, 3450:335
4400:353	Electromagnetics I	4	4400:231 prerequisite; 3450:335 corequisite
4400:360	Physical Electronics	3	4450:220, 4400:332
4400:381	Energy Conversion (Lecture and Lab)	4	4400:332 prerequisite; 4400:353 corequisite
4300:202 **or** 4600:203	Mechanics of Solids ***-OR-*** Dynamics	3	4300:201 3450:222, 2650:291 and 4300:201 prerequisites; 3450:223 corequisite
Total		**18**	

3rd Year	Spring Semester		
	Co-Op Assignment I		

3rd Year	Summer Semester		
3470:401	Probability and Statistics for Engineers	2	3450:222
4600:305 **or** 4200:305	Thermal Science ***-OR-*** Materials Science	2	3450:223 prerequisite; 3650:292 corequisite 3150:153 and 3650:292
	Area Studies/Cultural Diversity Requirement	2-3	
Total		**6-7**	

4th Year	Fall Semester		
	Co-Op Assignment II		

	Spring Semester		
4400:309	Design Project Seminar	1	64 credits and permission
4400:341	Intro Communication Systems	3	4400:340
4400:354	Electromagnetics II	3	4400:353
4400:361	Electronic Design (Lecture and Lab)	4	4400:340 and 4400:360
4400:371	Controls I (Lecture and Lab)	4	4400:340
Total		**15**	

4th Year	Summer Semester		
	Co-Op Assignment III		

5th Year	Fall Semester		
4400:401	Senior Design Project I	2	Senior standing; 4400:309; Completion of 4400:341, 4400:354, 4400:361, and 4400:371 with a combined average grade of 2.0 or higher
	Electrical Engineering Electives (Note a)	3	
	Electrical Engineering Electives (Note a)	3	
	Electrical Engineering Electives (Note a)	3	
	Humanities Elective Requirement	3	
Total		**14**	

5th Year	Spring Semester		
4400:402	Senior Design Project II	3	4400:401
	Electrical Engineering Electives (Note a)	3	
	Electrical Engineering Electives (Note a)	3	
	Electrical Engineering Electives (Note a)	3	
	Humanities Elective Requirement	3	
Total		**15**	

	Minimum Total Credits for Degree	**137**	

ALERT: 1) By the end of your first 48 credit hours attempted, you should have completed your General Education English, Math, and Oral Communication (Speech) requirements; 2) By the end of your first 48 credit hours attempted,

you should have declared a major and transferred to (been accepted by) a degree granting college at The University of Akron.

NOTES:

a. The BS in Electrical Engineering requires 18 credits of technical elective. The elective courses must be chosen so as to meet:
   1. Breadth requirement: The electives must include at least three credits each from three of the following four electrical engineering areas of specialization.
   2. Depth requirement: The electives must include at least six credits from a single area of specialization.

Electrical Engineering Areas of Specialization

Controls and Communication (CC)
Fa 4400:441 Digital Communication
Fa 4400:472 Control Systems II
Sp 4400:434 Active Circuits
Sp 4400:445 Wireless Communication
Sp 4450:415 System Simulation
Sp 4450:440 Digital Signal Processing

Embedded Systems & Electronics (ESE)
Su 4400:469 Intro to Sensors and Actuators
Fa 4450:467 VLSI Circuits & Systems
Fa 4450:410 Embedded Scientific Comp.
Fa 4450:422 Embedded Systems Interfacing
Fa 4450:462 Analog IC Design
Sp 4450:367 VLSI Design

Electromagnetics (EM)
Fa 4400:453 Antenna Theory
Sp 4400:451 Electromagnetic Compatibility
Sp 4400:461 Optical Elect & Photonic Dev.

Power (PW)
Fa 4400:481 Modern Power Systems
Fa 4400:483 Power Electronics I
Fa 4400:489 Electric and Hybrid Vehicles
Sp 4400:485 Electric Motor Drives
Remaining electives may be any courses listed above, or included in the following list:

Remaining electives may be any courses listed in the areas of specialization or included in the following list:

Electrical Engineering Open Electives
Fa 4450:325 Operating Systems Concepts
Fa 4450:465 Programmable Logic
Sp 4400:448 Optical Comm Networks
Sp 4450:320 Computer Systems
Sp 4450:420 Computer Systems Design
Sp 4450:427 Computer Networks
4400:301 Undergraduate Research I EE
4400:302 Undergraduate Research II EE
4400:303 Undergraduate Research III EE
4400:498 Special Topics in EE
4450:498 Special Topics in CpE

All course prerequisites must be met.

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IN GENERAL: The many branches of Electrical Engineering include production and distribution of electrical energy; research, development, manufacture, and operation of electrical and electronic products and systems for instrumentation, automation, tracking, and telemetry, among others.

There is hardly a segment of the American economy which has not been influenced by electronics. The high speed digital computer has found its way into virtually all aspects of modern life.

3300:112 English Composition II is preferred, however 2020:222 Technical Report Writing will be accepted.

SALARY LEVEL: Starting salary offers for new graduates range from $46,000 to $67,000 per year. The average is $60,000.

JOB DESCRIPTION: The wide-ranging uses of electrical means for measurement, control, and computation has resulted in the need for electrical engineers in all types of industries. A student seeking employment upon graduation will find many varied opportunities.

COOPERATIVE EDUCATION: Students can choose between a five-year program, which includes up to four semesters of co-op experience, or a four-year program without co-op experience. The Co-op Program provides an opportunity to gain real-world, relevant experience while working toward a bachelor's degree. Students who participate in the Co-op Program earn money to help fund their education, graduate with 12 or more months of career-related experience, and often receive a higher starting salary after graduation. More information about the Co-op Program can be found at engineering.uakron.edu/coop.

TRANSFER TO COLLEGE OF ENGINEERING: To be admitted to the college, the student must:

- Complete at least 30 semester hours of coursework post high school
- Complete Calculus 2 with a C- or higher
- Have a 2.3 grade point average in at least three of the following categories:
    - in all coursework
    - in all engineering coursework
    - in all required mathematics coursework
    - in all required science coursework (chemistry, physics, computer science, biology)

Admission of students who do not meet the above requirements will be considered by the dean or representative only if the request originates by an Engineering department head or representative.

Students can arrange inter-college transfers through an appointment with their academic advisor; advisor contact information is listed in "My Akron."

WOMEN AND MINORITY ENGINEERS: Eligible students are invited to register into the applicable engineering course elective. There are two options; 4100:110, Women in Engineering Seminar & Peer Group (Contact: Heidi Cressman, 330-972-7701, or hec9@uakron.edu). This course provides beginning women students an overview of the career opportunities for women in engineering. The course introduces relevant topics in engineering, an overview of career opportunities, student led discussion groups and an opportunity to meet with professionals in various engineering disciplines. The other option is 4100:120, Minority Engineering Seminar and Peer Groups (Contact: Julie Zhao, 330-972-2823, or zhao1@uakron.edu). This course provides an overview of disciplines and opportunities in engineering. It also reinforces educational/ career choices and provides role models of successful minority engineers.

PLACEMENT: The Engineering Co-op and Placement Office, ASEC 203, Akron, Ohio 44325 assists all graduates with full-time placement.

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