

## (2009-) 2019 Electrical Engineering Minor

Electrical Engineering & Computer Science Department  
 Undergraduate Advising Office  
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As the lines between engineering and scientific disciplines become increasingly blurred, many students are forced to make tough decisions about which major to choose. Traditionally there has been no formal mechanism within the College of Engineering to expose students to substantial academic preparation in more than one department, other than a double-major option, which generally entails a substantial investment of time. A Minor in Electrical Engineering (EE), offered through the EECS Department, is designed to fill this void by providing an avenue for a diverse education for students outside of the EECS department. Due to the extensive breadth of EE discipline areas, students seeking a minor in EE have a spectrum of choices for the program paths they choose. Path options include Applied Electromagnetics, Circuits, Communications, Control Systems, Optics, Power and Energy, Signal Processing, and Solid State.

### **Electrical Engineering (EE) Declaration Requirements:**

To declare a minor in EE, you must:

- (1) Have completed at least one full term at UM Ann Arbor
- (2) Have an overall UM GPA of 2.0 or better in courses taken at the UM Ann Arbor campus and be in good standing
- (3) Have completed or earned credit by exam or transfer for at least one course in each of these categories
  - a. Calculus (e.g. MATH 115, 116, 156)
  - b. Calculus based physics lectures (e.g. PHYSICS 140, 160) or chemistry lectures (e.g. CHEM 130)
  - c. Required engineering courses (ENGR 100, 101, 151)

### **Minimum Program Requirements**

A minimum of 15 credits must be completed with a grade of a C or better. At least one elective course must be at the 400-level.

**Required course:** EECS 215: Introduction to Circuits (*Note: BIOMEDE 211 or EECS 314 may be used in place of EECS 215 if one additional EECS course is taken from the following approved course lists*)

### **One of the following program core courses:**

EECS 216: Signals and Systems	EECS 230: Electromagnetics I
EECS 270: Introduction to Logic Design	EECS 320: Introduction to Semiconductor Devices

### **Two of the following courses (at least one course at the 400-level, no duplicates):**

EECS 216: Signals and Systems	EECS 421: Properties of Transistors
EECS 230: Electromagnetics I	EECS 423: Solid-State Device Laboratory
EECS 270: Introduction to Logic Design	EECS 425: Integrated Microsystems Lab
EECS 320: Introduction to Semiconductor Devices	EECS 427: VLSI Design I
EECS 311: Electronic Circuits	EECS 428: Introduction to Quantum Nanotechnology
EECS 312: Digital Integrated Circuits	EECS 429: Semiconductor Optoelectronic Devices
EECS 330: Electromagnetics II	EECS 430: Wireless Link Design
EECS 334: Principles of Optics	EECS 434: Principles of Photonics
EECS 351: Introduction to Digital Signal Processing	EECS 452: Digital Signal Processing Lab
EECS 370: Introduction to Computer Organization	EECS 455: Wireless Communication Systems
EECS 373: Design of Microprocessor Based Systems	EECS 460: Control Systems Analysis & Design
EECS 411: Microwave Circuits I	EECS 461: Embedded Control Systems
EECS 413: Monolithic Amplifier Circuits	EECS 463: Power Systems Design and Operation
EECS 414: Introduction to MEMS	EECS 470: Computer Architecture
EECS 418: Power Electronics	EECS 473: Advanced Embedded Systems
EECS 419: Electric Machinery and Drives	EECS 530: Electromagnetic Theory I
EECS 420: Phys. Prin. Underlying Smart Devices	

Sample path options:

<b>Path Option</b>	<b>Required Core</b>	<b>Path Prep Core</b>	<b>Elective 1</b>	<b>Elective 2</b>
Circuits and Solid State	215	216	311, 312 or 320	411, 413, 414, 420, 421, 423, 425, 427 or 429
Electromagnetics and Optics	215	230	330 or 334	411, 430, 434 or 530
Power and Energy	215	216	320, 418, 419, or 463	418, 419 or 463
Systems	215	216	351, 455 or 460	351, 452, 455, 460 or 461 (no duplicates)

For more information or to make an advising appointment: <http://www.eecs.umich.edu/eecs/undergraduate>  
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