

Electronic Materials, Minor

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³ No more than two courses in the minor may be used to satisfy another degree requirement

Minor in Electronic Materials

Overview

Electronic materials are ubiquitous and essential in 21st century society. They underpin technologies that we rely on everyday - everything from communication, transportation, and lighting to commerce and entertainment. Advances in the synthesis, processing, and design of electronic materials are continuing to push boundaries towards more energy-efficient technologies, such as neuromorphic and quantum computing, long-range electric vehicles, AI, renewable energy sources, and other yet-to-be-discovered applications.

The Electronic Materials (EM) Minor is designed for students who have a keen interest in electronic materials, such as semiconductors, dielectrics and magnetics, and who are considering graduate school studies or careers pertaining to electronic materials industries. Students in the EM Minor will choose from a list of course electives from which they will learn about the physics, chemistry, synthesis, processing, design, characterization, and applications of a wide variety of electronic materials and devices.

Course Requirements

Minimum units required for minor

54 units

54 Units from the Following Courses ^{1,2,3} :

	Units
27-100 Engineering the Materials of the Future (MSE majors may not count toward minor)	12
or 27-201 Structure of Materials	
or 27-211 Structure of Materials (Minor Option)	
18-100 Introduction to Electrical and Computer Engineering (ECE majors may not count toward minor)	12
27-202 Defects in Materials (MSE majors may not count toward minor)	9
or 27-212 Defects in Materials (Minor Option)	
27-432 Electronic Properties of Materials	9
27-545 Magnetism in Materials	9
27-433 Optical, Dielectric, and Magnetic Properties of Materials	9
27-445 Structure, Properties and Performance Relationships in Magnetic Materials	9
27-542 Thin Film Technologies	9
27-533 Processing of semiconductors and thin films	9
18-220 Electronic Devices and Analog Circuits (ECE majors may not count toward minor)	12
18-410/610 Hacker Fab	12
18-614 Microelectromechanical Systems	12
18-617 Memory Devices and Technology	12
18-619 Introduction to Quantum Computing	12
18-817 Fundamentals of Semiconductors and Nanostructures	12
18-300 Fundamentals of Electromagnetics	12
18-310 Fundamentals of Semiconductor Devices	12
33-225 Quantum Physics and Structure of Matter	9
xx-xxx An approved special topics or graduate level class pertaining to electronic materials	6-12
xx-xxx An approved research project on electronic materials	6-12

¹ ECE majors must take a minimum of 9 units in MSE, MSE majors must take a minimum of 9 units in ECE.

² Some courses (as noted) may not be counted by students in some majors