

The Ohio State University  
College of Engineering

**Semiconductor Devices Minor (SEMID-MN)**

Department of Electrical and Computer Engineering

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<https://ece.osu.edu/new-ece-courses>

**Overview**

The minor in Semiconductor Devices consists of a minimum of 13 credit hours of required and elective course work as listed below. Upon completion of the minor in Semiconductor Devices, learners will be better prepared to:

1. Understand advanced semiconductor physics.
2. Understand electronic and optical properties of semiconductors.
3. Understand the principles of new electronics devices as new technologies develop.

*Required courses in this minor have pre-requisites that include:*

1. *Physics 1251, 1261, or both 1240 and 1241*
2. *Chem 1210, 1220, or 1250*
3. *Math 2415 or 2174 (pre-req or concurrent with ECE 3030)*

*Please consult the course bulletin for course-specific pre-requisites before enrolling.*

**Required courses (6 credit hours)**

1. ECE 3030: Semiconductor Device Physics (3)  
or MATSCEN 3271: Electronic Properties (3)

**AND**

2. ECE 5530: Fundamentals of Semiconductors for Microelectronics and Photonics (3)

**Laboratory courses (1-4 credit hours)**

Select at least one of the following:

- ECE 5037: Solid State Electronics and Photonics Laboratory (4)  
ECE 5537: Semiconductor Device Characterization and Modeling Lab (4)  
MATSCEN 5532: Electronic and Optical Materials Lab (1)

**Additional courses (3-6 credit hours)**

Select one or more courses from:

- ECE 5031: Semiconductor Process Technology (3)  
ECE 5033: Surfaces and interfaces of Electronic Materials (3)  
ECE 5037: Solid State Electronics and photonics Laboratory [ONLY if not used above as Lab Course] (3)  
ECE 5131: Lasers (3)  
ECE 5132: Photonics (3)  
ECE 5244: Si and Wide Band Gap Power Devices (3)  
ECE 5537: Semiconductor Device Characterization and Modeling Lab [ONLY if not used above as Lab Course] (3)  
ECE 5832: Photovoltaics and Energy Conversion (3)  
ECE 5833: Organic and Printed Flexible Electronics (3)  
MATSCEN 5571: Electroceramics II (1.5)  
MATSCEN 5572 Failure Analysis of Materials (3)  
STAT 3470: Intro to Probability and Statistics for Engineers (3)  
PHYS 3700 Experiment Physics Instrumentation and Data Analysis Lab (3)  
MECHENG 3500 Engineering Thermal Sciences (3)  
MECHENG 4510 Heat Transfer (3)  
ISE 4120 Quality and Reliability Engineering (3)  
ISE 5110 Design of Engineering Experiments (3)

*Note: Students with majors in Electrical and Computer Engineering who wish to complete the Semiconductor Devices minor should consult with their Academic Advisor to choose classes for the minor that will not interfere with their major program.*

**Semiconductor Devices Minor Program Guidelines:**

Credit Hours Required

A minimum of 13 credit hours. 1000-level courses shall not be counted in the minor. At least 6 credit hours need to be upper-level courses as defined by the College of Engineering (3000 level or above).

Transfer and EM Credit Hours Allowed

A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination toward the minor.

Overlap with the Major and Additional Minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minors.

Grades Required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work.
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of course work graded Satisfactory/Unsatisfactory may count towards the minor.

X193 Credits No more than 3 credit hours

Declaring the minor:

Students must have a minimum 1.7 GPA to apply to the minor. To apply to/declare the minor, students should contact an ECE advisor.

Variation from Program

Any variation from the program described above needs the approval of the Department of Electrical and Computer Engineering. Students should petition through an ECE advisor.

College of Arts and Sciences  
Curriculum and Assessment Services  
306 Dulles Hall, 230 Annie & John Glenn Ave.  
<http://artsandsciences.osu.edu>

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