The purpose of this degree program is to prepare students for leading edge positions in industry in the areas of VLSI and microelectronics. The professional Master of VLSI and Microelectronics is a course-only degree program that prepares students for professional practice.

The admission requirements for this degree follow the existing admission requirements for other professional master’s degrees in the ECE department. Students whose accredited B.S. degree is not in electrical engineering may pursue the professional master’s degree, provided that they have an adequate background and can demonstrate proficiency in the material contained in undergraduate courses equivalent to Illinois Institute of Technology’s:

- ECE 211 & ECE 213: Circuit Analysis I and Circuit Analysis II (7)
- ECE 218: Digital Systems (4)
- ECE 307: Electrodynamics (4)
- ECE 308: Signals and Systems (3)
- ECE 311: Engineering Electronics (4)
- MATH 251: Multivariate and Vector Calculus (4)
- MATH 252: Introduction to Differential Equations (4)

A student may demonstrate proficiency by successfully completing the courses or by demonstrating satisfactory performance in one or more special examinations administered by the ECE department.

### Curriculum

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Degree Credits</td>
<td>30</td>
</tr>
<tr>
<td>Maximum 400-Level Credit</td>
<td>12</td>
</tr>
<tr>
<td>Minimum 500-Level Credit</td>
<td>18</td>
</tr>
<tr>
<td>Maximum Short Courses ECE 700-Level Credit</td>
<td>4</td>
</tr>
<tr>
<td>Maximum Transfer Credit</td>
<td>9</td>
</tr>
</tbody>
</table>

#### Core Courses (16)

- ECE 425: Analysis and Design of Integrated Circuits (3)
- ECE 429: Introduction to VLSI Design (4)
- ECE 523: Fundamentals of Semiconductor Devices (3)
- ECE 525: RF Integrated Circuit Design (3)
- ECE 529: Advanced VLSI Systems Design (3)

#### Computer Engineering (3)

Select a minimum of one course from the following:

- ECE 443: Introduction to Computer Cyber Security (3)
- ECE 485: Computer Organization and Design (3)
- ECE 530: High Performance VLSI IC Systems (3)
- ECE 542: Design and Optimization of Computer Networks (3)
- ECE 545: Modern Internet Technologies (3)
- ECE 583: High Speed Computer Arithmetic (3)
- ECE 584: VLSI Architecture for Signal Processing and Communication Systems (3)
- ECE 586: Hardware Security and Advanced Computer Architectures (3)
- ECE 587: Hardware/Software Codesign (3)
- ECE 588: Hardware Acceleration for Machine Learning (3)
- ECE 589: Computer-Aided Design of Analog IC (3)

#### Electronics (3)

Select a minimum of one course from the following:
### ECE 401 Communication Electronics 3
### ECE 425 Analysis and Design of Integrated Circuits 3
### ECE 521 Quantum Electronics 3
### ECE 524 Advanced Electronic Circuit Design 3
### ECE 525 RF Integrated Circuit Design 3
### ECE 526 Active Filter Design 3
### ECE 527 Performance Analysis of RF Integrated Circuits 3
### ECE 551 Advanced Power Electronics 3
### ECE 570 Fiber-Optic Communication Systems 3
### ECE 571 Nanodevices and Technology 3
### ECE 575 Electron Devices 3
### ECE 578 Microwave Theory 3

**General Electives** (8)

Select eight credit hours of electives from ECE 400-799

8

**Total Credit Hours** 30

---

1 With adviser approval, the student may take up to two ECE courses in other areas of electrical and computer engineering, such as signal processing, communications, power and control.