

**CERTIFICATE IN****Semiconductor Power Device Technology**

Continual improvement in the performance of power semiconductor devices has made it possible to achieve much higher levels of precision and efficiency in the conversion of electrical energy from one form to another, leading to many new applications in electric power, industrial automation data processing, and other fields. Producing these high-performance devices requires an understanding of solid-state physics, device processing, materials, and heat transfer, as well as the use of sophisticated CAD tools and models.

In this certificate program, technology development and process engineers will learn how to apply these multidisciplinary concepts in semiconductor device physics, design and fabrication to the manufacture of semiconductors that will offer even greater levels of performance demanded by future applications.

**ADMISSION REQUIREMENTS**

- Bachelor of Science degree in electrical engineering or a related field from an accredited undergraduate institution
- Undergraduate GPA of 3.0 or higher
- Undergraduate course in microelectronics technology required
- Second undergraduate course in microelectronics technology or solid-state physics strongly recommended
- Prerequisite requirements for all certificate courses
- Completed application form
- TOEFL required for all international students
- Official transcripts from bachelor's degree or highest degree earned

**CREDENTIALS EARNED**

- 12 Rensselaer graduate credits
- Certificate in Semiconductor Power Device Technology

**CERTIFICATE COMPLETION REQUIREMENTS**

- Status as a matriculated or non-matriculated Rensselaer student
- Completion of all four courses with a grade of "B" or better

**PLAN OF STUDY**

1. ECSE-6230 Semiconductor Devices and Models I
2. ECSE-4250 Integrated Circuit Processes and Design,  
OR  
MTLE-4160 Semiconductor Materials
3. ECSE-6260 Semiconductor Power Devices
4. Select one of the following:
  - EPOW-4080 Semiconductor Power Electronics
  - ECSE-4250 Integrated Circuit Processes and Design
  - ECSE-4720 Solid State Physics
  - ECSE-6270 Optoelectronics
  - ECSE-6290 Semiconductor Power Devices and Models II
  - ECSE-XXXX Semiconductor Device Characterization\*
  - ECSE-696X Modern Power Devices
  - MTLE-4160 Semiconducting Materials

\*Requires specific laboratory facilities and personnel; availability TBD