ECE 615 – Semiconductor Devices I

- Currently identified as ECE 515

Catalog Description: Advanced treatment of two-terminal semiconductor electronic devices. Offered alternate years. PREREQS: ECE 614 recommended.

Credits: 3 Terms Offered: Winter, alternate years

Structure: Three 50-minute lectures or two 80-minute lectures per week.

Prerequisites:
By course: OTHER PREREQS: ECE 614 recommended. Graduate standing or instructor approval required.
By topic: Other Prerequisites: calculus, basic semiconductor physics and devices

Courses that require this as a prerequisite: ECE 616
Primary Instructor: J.F. Conley Secondary Instructor: J. F. Wager

Topics
- pn-junctions
- Schottky barriers
- Metal-oxide-semiconductor (MOS) capacitors
- Heterojunctions

Measurable Student Learning Outcomes:
Students are expected to demonstrate the ability to:
1. Use energy bands as a tool for understanding the basic operation of 2-terminal devices.
2. Describe the current-voltage and capacitance-voltage behavior of ideal and non-ideal 2-terminal devices.
3. Explain how SPICE models of 2-terminal devices arise from device physics assessment.

Evaluation of Student Performance:
- final, midterm, homework sets

Learning Resources:
- Avanti (circuit/device simulation commercial software package)
- Silvaco (device simulation commercial software package)
Students with Disabilities:
Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct, i.e., cheating policies http://oregonstate.edu/admin/stucon/achon.htm