

EEE 531: Semiconductor Device Theory Fall 1999

- Course Objective:** The objective of this course is an advanced understanding of semiconductor physics and the physics and operation of basic semiconductor devices, such as: PN junctions, metal-semiconductor devices, metal-oxide-semiconductor (MOS) capacitors, MOS transistors, and bipolar junction transistors (BJTs). Whenever possible, the emphasis will be on the conceptual understanding of device operation.
- Prerequisites:** EEE 436, or instructor approval.
- Instructor:** Dr. Dragica Vasileska (ERC565; phone: 965-6651, e-mail: vasilesk@imap2.asu.edu)
- Office Hours:** MW 3:00-5:00 pm
- Class Meeting:** MWF 9:40-10:30 in SCOB105.
- Text:** S. M. Sze, *Physics of semiconductor Devices*, Wiley-Interscience, New York, 1981.
- Computer Work:** Use of any software to solve homework problems is allowed. It is recommended that you use MathCad, Matlab, Spreadseet and TK Solver.
- Topics Covered:**
- Energy bands
 - Carrier statistics
 - Generation-recombination mechanisms
 - Carrier transport (drift and diffusion)
 - PN junctions
 - Schottky barrier devices
 - MOS capacitors
 - Field-effect transistors
 - Bipolar junction transistors
- Grading:**
- | | |
|------------------------------------|-----|
| 2 Semester exams | 40% |
| Homework (including computer work) | 20% |
| Final exam | 40% |

Note: You can download all the course information if you open the following Web page: www2.dlt.asu.edu, create an account in the Courseinfo System and then search for EEE531. The information how to create a Courseinfo Account is posted separately.