

EEE 3396C – Solid State Electronic Devices

Catalog Description: (4cr) Introduces the principles of semiconductor electron device operation.

Prerequisites: EEL 3008 or equivalent

Textbook:

Solid State Electronic Devices (7th edition) by Ben Streetman and Sanjay Banerjee

Course Objective: To present the theoretical and practical background of device physics so that students understand and are able to design and optimize the charge transport properties of semiconductor materials and devices.

Professional Component: 4 credits of Engineering Science

Instructor: Prof. Ant Ural

NEB 555

392-9753

antural@ece.ufl.edu

Teaching Assistant: TBA

Class Schedule:

3 classes per week of 50 minutes each.

Lab sections.

Meeting Times: Tu 7/ Th 7-8

Meeting Location: Larsen 330

Lab sections:

Lab section 1: M 9-10 (NEB 289)

Lab section 2: R 11-E1 (NEB 289)

Lab section 3: W E2-E3 (NEB 289)

Grading: Homework, Labs, Midterm exam, Final exam

Course outline:

- *Chapter 1: INTRODUCTION TO SEMICONDUCTOR MATERIALS*
- *Chapter 2: ATOMIC STRUCTURE AND THE PERIODIC TABLE*
- *Chapter 3: ENERGY BANDS AND CHARGE CARRIERS IN SEMICONDUCTORS*
- *Chapter 4: EXCESS CARRIERS IN SEMICONDUCTORS (THE CONTINUITY EQUATION)*
- *Chapter 5: p-n JUNCTIONS*
- *Chapter 6: METAL-OXIDE-SEMICONDUCTOR FIELD EFFECT TRANSISTOR (MOSFET)*
- *Chapter 7: BIPOLAR JUNCTION TRANSISTOR (BJT)*