ELECTRONICS I

EECS170A, Fall 2011 Code 18220

**Catalog Data:** EECS170A Electronics I (Credit Unit: 4) The properties of semiconductors, electronic conduction in solids, the physics and operation principles of semiconductor devices such as diodes and transistors, transistor equivalent circuits, and transistor amplifiers. (4 Units)

**Prerequisites**: EECS70A, and Physics 7D.

**Co-requisite:** Physics 7E.

**Textbook:** R. F. Pierret, *Semiconductor Device Fundamentals*, Addison-Wesley, 1996 **References:** D.A. Neamen, Semiconductor physics and Devices, 3rd Ed., McGraw Hill,

Anderson and Anderson, *Fundamentals of Semiconductor Devices*, McGraw-Hill, 2005

B. Streetman and S. K. Banerjee, *Solid State Electronic Devices*, Prentice Hall, 2006

**Instructor:** Peter Burke, *Engineering Gatweway 2232*, and *Engineering Hall 2203*

***Office Hour****: M 2:30PM-4:00 PM EG2232 F 2:30PM-4:00 PM EH 2203*

**TA:** Ziggy Fan,  [fanz@uci.edu](mailto:yunz@uci.edu)*Office Hours: Thursday 3:30-5:30pm at EH1121*

**Reader:** T.B.D.

**Class Schedule:** *Lecture***:** M,W,F, 4:00-4:50 PM at DBH1600.

*Discussion***:** Th, 8-8:50 AM, 9-9:50 AM, 10-10:50 AM at ICF 102.

**Course Objectives:** Students will understand:

• Basic properties of semiconductors and electronic conduction in solids

• Physics and operation principles of diodes and transistors and

• Diode and transistor circuit analysis

• Analyze and design single stage transistor amplifiers

**Course Outcomes:** Students will learn:

• Basic properties of semiconductors

• Carrier transport in semiconductors

• Semiconductor-semiconductor and metal-semiconductor junctions

• Bipolar junction transistors (BJT)

• Single stage amplifier design and transistor circuit analysis

• CMOS fundamentals

**Grading Components:**

* Homework 10%
* Weekly quizzes 15%
* Midterm Exam # 1 (date to be announced) 25%
* Midterm Exam # 2 (date to be announced) 25%
* Final Exam (Tuesday Jun 8-10 A.M.) 25%