

## WEI EET 121 Semiconductor Devices & Circuits Syllabus

**Date:** May 2011

**Credits:** 5.0

**Prepared By:** Jim Swartos

**Course Description:** Fundamentals of Semiconductor Devices, materials, PN Junction, Hole Flow, Various Types of Diodes, Power Supplies, Regulation, Protection Methods and Devices, Bipolar Transistors, Bias, Circuits, FET's, Use of Test Equipment and Troubleshooting.

**Co/Prerequisites:** EET 115

**Text:** Electricity and Electronics, 4<sup>th</sup> Ed, Gibilisco, ISBN 0071459332

**Lab Manual:** Electronics, 2<sup>nd</sup> Ed, Cook & Lancaster, ISBN 0131135902

**Course Goals:** Upon successful completion of the course, students will be able build and test diode and transistor circuits, calculate gain and explain bias. Build and test basic power supplies and demonstrate regulation and filtering. Sketch and explain FET devices. Demonstrate the proper methods to test diodes and transistors.

**Course Objectives:** Upon successful completion of the course, students will be able to:

1. Explain the basic materials used in diodes and transistors
2. Sketch diodes and transistors and label each part
3. Sketch current flow through diodes and transistors
4. Build & test rectified power supplies
5. Build & test regulated power supplies
6. Build & test transistor circuits
7. Sketch FET circuits

### **Course Outline:**

- A. Introduction to Semiconductors
- B. The PN Junction
- C. Uses For Various Diodes
- D. Power Supplies
- E. Power Transformers
- F. Voltage Regulation
- G. Circuit Protection
- H. Bipolar Transistors
  - I. Bias
- J. Transistor Circuits
- K. FET's