

Course Title: Semiconductor Devices and Technology
Course Code: EEA 194
Course Background / Summary:

The course will provide students with a glimpse into the semiconductor industry that has brought about the technological revolution. Because of the interdisciplinary nature of the subject, its content includes concepts from electrical engineering, chemical engineering, and material science. The course outline can be divided into historical development and basic concepts, manufacturing methods and equipment, measurement methods, models and simulation, limits, and future trends in technologies and models. At the end of the course, students will be introduced to the fundamentals of conventional semiconductor devices.

Course Objectives:

- Good understanding of the various processing techniques used to fabricate integrated circuits and microstructures
- Understand theory of the individual semiconductor processes and how they are characterized
- Design and implement basic diode circuits
- Characterize a single device MOSFET

Target Audience:

- Industrial workers from technicians to engineers, etc.
- Teaching staff (vocational & technical teachers), lecturers, etc.

Course Duration: 4 Days
Course Contents
1.0 History of Semiconductor Technology
5.0 Solid State Principles
2.0 Crystal Growth, Wafer Fabrication and Basic Properties of Silicon Wafers
6.0 Semiconductor Diode and Diode Application
3.0 Semiconductor Manufacturing - Clean Rooms, Wafer Cleaning and Gettering
7.0 Bipolar Junction Transistor (BJT)
4.0 Semiconductor Process and Fabrication Technology
8.0 Metal Oxide Semiconductor Field Effect Transistor (MOSFET)