EEE 565 Solar Cells
Fall 2013

Course Objective: To introduce the basic concepts of the operation of photovoltaic devices, the major technologies, and the impact of materials and device structure on the conversion efficiency. Students will gain a knowledge of the physics of operation of the major commercial solar cell technologies, and how they are integrated into solar cell systems.

Topics:
1) Photovoltaic Energy Conversion, Solar Spectrum, Light Absorption (1 week)
2) Background on Semiconductor Material/Optical Properties (2 weeks)
3) pn Junctions and Device Physics (1 week)
4) Homojunction Solar Cells (2 weeks)
5) Heterojunction Solar Cells (1 week)
6) Multi-junction Solar Cells (1 week)
7) Light Management (1 week)
8) Organic PV/Advanced Concept Devices (2 weeks)
9) Photochemical/Dye Sensitized Solar Cells (1 week)
10) Commercial Solar Cell Technologies (2 weeks)
11) Module and Grid Integration Issues (2 weeks)

Instructor: Dr. Stephen M. Goodnick (ERC-552; 480-965-9572), Stephen.goodnick@asu.edu

Class Schedule: T-Th 12:00-1:15 pm PSF 123

Office Hours: TBD

Prerequisites by Topic:
Basic background in electronic properties of materials

Textbook:

Grading:
Homework assignments (50%); Midterm (20%), Final/Final Project (30%)