

EEE 498/EEE591: Solar Energy

Fall 2011

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Course Description and Objectives:

This special topics course will examine the direct generation of electricity from solar energy through photovoltaics (PV), starting with the nature and variability of terrestrial solar radiation and ending with methods for engineering economic analysis of PV systems. Topics to be included are details of the solar cell device, cell manufacturing methods, solar modules, batteries, systems, and applications. The focus will be on silicon based devices since they dominate the industry, but thin film, multi-junction, and non-silicon technologies will be surveyed.

The objective is for the student to acquire understanding of the fundamentals of PV systems and to be able to analyze the technical and economic aspects of a system design for a specific application.

Course Texts:

There is no prescribed textbook, but much of the course will follow the material contained at the PVCDROM website (<http://www.pveducation.org/pvcdrom>), designed and maintained by Stuart Bowden and Christiana Honsberg of the ASU Solar Power Lab for “educating the next generation of photovoltaic professionals.” Other technical journal articles available through the ASU library system will be referenced as needed.

Prerequisites:

The course is intended for upper-class undergraduate and graduate students in Engineering.