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| **Department** | Electrical and Computer Engineering |
| **Course Number** | **EE 408** |
| **Course Title** | Photovoltaic Systems |
| **Course Designation** | Elective |
| **University Catalog Description** | Semesters offered: F;   Prerequisites: PHYS 212<br><br>The Photovoltaic Systems course provides a basic understanding of the design, fabrication and operating principles of solar cells and how they are integrated into photovoltaic systems. Laboratories will perform the steps required to produce and characterize silicon solar cells. |
| **Faculty Coordinator** | Dr. Todd Kaiser |
| **Prerequisite by Topic** | Methods of differentiation and integration, basic physics and chemistry. |
| **Textbook** | Wenham: Applied Photovoltaics, Earthscan, 2007 |
| **Course Objectives** | To produce graduates who understand the operation and design of solar cells and photovoltaic systems. |
| **Course Learning Outcomes** | At the conclusion of EE 408, students are expected to :<br>1)   Understand the nature of sunlight<br>2)   Understand the operation of PN junctions<br>3)   Understand the photovoltaic effect<br>4)   Be able to design a solar cells<br>5)   Be able to design a photovoltaic system<br>6)   Understand the fabrication sequence to produce simple solar cells<br>7)   Be able to characterize solar cells and modules |
| **Topics Covered** | 1)   Properties of light<br>2)   PN Junctions<br>3)   Solar Cell Operation<br>4)   Design of Solar Cells<br>5)   Single Crystal Silicon Cell Fabrication<br>6)   Modules and Arrays<br>7)   Cell and Module Characterization<br>8)   System Integration |
| **Class/Laboratory Schedule** | EE 408 meets two times /week for 50 minutes plus a two-hour laboratory Session |
| **Professional Component (Criterion 5)** | This course supports the understanding of the photovoltaic effect and solar cells to create methods of alternative energy production. |
| **ECE Program Outcomes** | EE 408 supports following Program Outcomes:<br>a.   an ability to apply knowledge of mathematics, science and engineering<br>b.   an ability to design and conduct experiments, as well as to analyze and interpret data<br>c.   an ability to design a system, component or process to meet desired needs<br>e.   an ability to identify, formulate and solve engineering problems<br>g.   an ability to communicate effectively<br>k.   an ability to use the techniques, skills and modern engineering tools necessary for engineering practice |
| **Total Credit Hours** | 3 |
| **Prepared by** | Todd Kaiser 1/2010 |