

ELEC 7830 Photovoltaics

Course Syllabus

Prerequisites: (1) graduate school enrolment; and (2) possess an elementary understanding of microelectronics, solid state physics and electronic circuits.

Course Objectives: (1) to develop an understanding of photovoltaic devices and systems; (2) to develop an understanding of the primary photovoltaic device technologies; and (3) to understand the optical considerations for a photovoltaic system; (4) to understand the power electronic portions of a photovoltaic system; and (5) exposure to the various applications of photovoltaics.

Instructor: Dr. Robert Dean (office: 222 Broun Hall, 844-1838, deanron@auburn.edu)

Schedule: Class: TH (11:00 am – 12:15 pm) Ramsay Hall 201, Office Hours: TBD.

Textbook (recommended): V. Fthenakis and P.A. Lynn, Electricity from Sunlight: Photovoltaics-Systems Integration and Sustainability, Wiley Publications, 2018.

Class Website: <https://www.eng.auburn.edu/~deanron/Photovoltaics.htm> Note: I plan to post .pdf versions of my teaching notes on the class website before each class.

Grading Policy

Grades will be assigned on a 10% scale (90-100:A, 80-89:B, etc...) based on the point scale presented below

Homework: 50%

Class Presentation: 50%

Homework

Homework will be given, occasionally, throughout the semester. The due dates for homework assignments will be given on the days that the assignments are given. Late homework will not be accepted, unless due to an excused absence (illness, job interview, conference travel, etc...). Homework assignments must be submitted in a format that is organized, professional and legible (labeled axes, correct units, etc...). Homework assignments must be neatly and professionally written on the front side of engineering paper, or printed from a computer on one side of the paper only. Multipage homework **must be** submitted with the pages stapled together: unstapled homework will **NOT** be accepted. Homework can be submitted to the professor by email: deanron@auburn.edu.

Class Presentation

The last part of the semester will consist of each student giving a ~20 min PowerPoint presentation on a topic relevant to this course and approved by the instructor. Instructions and guidelines for the class presentation will be given during the semester. NOTE: unexcused absences from class periods during the class presentations will adversely affect (i.e. lower) your class grade! Distance students can give their presentations in person, over Zoom/Teams, through an emailed recorded file, or uploaded to YouTube for the class to watch.

Computer Resources

Some Homework assignments may require the use of engineering software tools, such as PSPICE, MATLAB, and/or EXCEL. These tools are available on the College of Engineering Workstations (e.g., BR 123).

Class Attendance

Class attendance will not affect grading except as previously stated under Homework and Class Presentation. If a student knows that he or she will be absent for an excused absence, such as a job interview or to attend a conference, please let the instructor know ahead of time if possible.

Class Etiquette

The instructor is here to teach and the students are here to learn. Therefore, it is important to maintain a classroom atmosphere that fosters learning. Therefore:

- (1) do not use cell phones during class
- (2) arrive on time
- (3) do not leave early unless you notify the instructor before class of a need to leave early that day
- (4) minimize disruptive behavior (such as non-class related conversations)
- (5) come prepared to learn
- (6) laptop/notebook computers and/or audio recording devices can be used to take notes

Special Accommodations

Students who need special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes - or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with the Program for Students with Disabilities, 1228 Haley Center, 334-844-2096.

Academic Honesty

Students are expected to do their own work. Students may work together on homework assignments; however, each student must submit their own work for a homework assignment. Representation of someone else's work as their own will result in a zero on the assignment and possible further disciplinary action by Auburn University. Other people's work must be referenced where appropriate.

Acceptable Use of Generative AI

Generative AI may be used in this course in the preparation of homework assignments and in the development of the student presentations.

Force Majeure

This syllabus could be changed due to the occurrence of extraordinary or unforeseen events (severe weather, pandemics, etc.). Any changes will be in accordance with Auburn University policies and procedures.