Course syllabus

Course: EE 492, Introduction to Power Electronics, 3 cr
University: South Dakota State University
Term: Fall 2009
Course meeting time and place: 1300-1350 MWF, CEH 351
Revision date of this version: 21 September 2009

Instructor's Contact Information

Name: Michael Ropp
Office location: EECS 223
Office hours: MW 1400-1600
Office phone number: 688-4664
E-mail address: michael.ropp@sdstate.edu

Course Description

This course introduces students to power electronic circuit hardware and control (software). Converter circuits, power semiconductors, and specialized control design techniques are covered.

Course Goals

By the end of this course, the student will be able to: a) design a power converter to meet given specifications; b) evaluate alternative power converter options; c) understand the behavior of power semiconductors at a physical level; and d) design controllers to cause power converters to have desired behavior.

Course Prerequisites

EE 320 (Electronics I) and EE 315 (Linear Controls) are prerequisites for this course. It is further assumed that all students have access to MATLAB and PSpice.

Student evaluation procedures

Evaluation of students in this course will be based on three (3) in-class hour exams; one term paper; and a final design project that includes demonstration and reporting requirements and that will be our final exam. The design project will be broken into several subparts, each individually graded.

Each hour exam and the term paper will be worth 100 points. Point values for the various parts of the design project are given on the design project assignment sheet. A perfect score for the course would be 1000 points. Letter grades are assigned on a standard ten-point scale.

Technical Support: Helpdesk 605-688-6776 or SDSU.supportdesk@sdstate.edu.
http://www3.sdstate.edu/TechnologySupport/InformationTechnologyServices/

Course Requirements

- Required textbook: Erickson and Maksimovic, Fundamentals of Power Electronics, 2nd ed., ISBN: 0792372700.
- Class attendance policy: attendance will not be formally monitored. If you skip class, it will show up on the assessments.
- Cheating and plagiarism policy: academic dishonesty in any form will not be tolerated. If detected, a grade of zero will be assigned for all affected students on that assignment. (http://studentaffairs.sdstate.edu/JudicialAffairs/StudentCode/SDSU_Student_Code.pdf)

- Make-up policy: makeups are allowed only if the student has made arrangements in advance. Exceptions may be made in documented exceptional circumstances.
- Late work policy: late work unfortunately cannot be accepted and will be assigned a grade of zero.

ADA Statement

This course acknowledges the importance of ADA requirements. Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Coordinator of Disability Services privately to discuss your specific needs. Please contact the Office of Disability Services at 605/688-4504 (Voice) or 605/688-4394 (TTD), or at the office in Wintrode, Room 123 to coordinate reasonable accommodations for students with documented disabilities. For more information please see SDSU's Office of Disability Services.

Tentative Course Outline/Schedule

- Exam I will cover basic converter circuits and their design equations.
- Exam II will cover semiconductor switching devices.
- Exam III will cover control of power electronic converters.
- The term paper will be submitted electronically and will be due at 5 pm on Friday, November 20. (See the Term Paper Assignment for details.)
- The due dates for the components of the design project are listed on the design project assignment sheet.

Freedom in learning

Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Student who believes that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should first contact the instructor of the course to initiate a review of the evaluation. If the student remains unsatisfied, the student may contact the department head and/ or dean of the college which offers the class to initiate a review of the evaluation.