ECE445/545
Power Electronic System Design I

Instructor: R. Tymerski,  FAB160-18,
Office hours: see http://www.ece.pdx.edu/Faculty/Office_Hours.php


Notes: A set of notes and other materials used by the instructor is available on the web at:
http://web.cecs.pdx.edu/~tymerski/

Grading:
Quizzes (2): 60%
Project (In-class presentation): 20%
Project (In-Lab demonstration): 20%

Quizzes: Each quiz will be on Wednesday of the following weeks of the term:
Quiz #1 (30%): week 4
Quiz #2 (30%): week 10

Be aware of the dates of the quizzes. No make-up for quizzes will be given.

In this introductory course the focus will be on dc-to-dc power converters whose topologies form a basis for topologies in the other areas of power processing. The class involves theory, simulation and hardware construction of basic converters.

The first term (ECE445/545) will be primarily devoted to the steady state analysis of converters. This is covered in Part I (chapters 1-6) of Erickson’s book. The second term (ECE446/546) will examine issues related to incorporating feedback control in the power converter systems. This is covered in Part II (chapters 7-9) of Erickson’s book.

Course outline of ECE445/545:

- Basic dc-to-dc converter topologies.
- State space description of converters.
- Accurate and approximate steady state analysis
- State ripple determination
- Effect of component parasitics
- Operating modes