ELEG 4323 - SWITCH MODE POWER CONVERSION

Fall Semester, 1995

Catalog Data: 1995-96
ELEG 4323. Switch Mode Power Conversion. Credit 3. Basic switching converter topologies: buck, buck, boost, buck-boost, Cuk, flyback, resonant; pulse-width modulation; integrated circuit controllers; switching converter design case studies; SPICE analysis of switching converters, state-space averaging and linearization; switching converter transfer functions. Prerequisites: ELEG 3223 and ELEG 3123.

Textbook: Power-Switching Converters, S. S. Ang, Marcel Dekker, 1995.

Coordinator: Simon S. Ang, Professor of Electrical Engineering.

Goals: This course is designed to introduce students to the basic principles of switching converters so that they will be able to analyze and design state-of-art switching converters.

Corequisite by Topic:

1. Electronic circuit analysis.

Topics:

1. Introduction to Switching Converters. (2 classes*)
2. Fundamental Topologies of Switching Converters. (8 classes)
3. Control Schemes of Switching Converters. (6 classes)
4. PSpice Simulations of Switching Converters. (2 classes)
5. Resonant Converters. (8 classes)
6. Dynamic Analysis of Switching Converters. (4 classes)

Computer Usage:

Type of Computer Usage: PSpice
Minimum Usage: 2 HW assignments and a design project requiring PSpice simulations.
Computers: PCS.
Languages: None
Operating Systems: MS DOS and Window

Laboratory Experiments:

Students are required to investigate 2 switching converter topologies in the laboratory.

Design Project:

A group design project for a switching converter is required.

ABET category content as estimated by faculty member who prepared this course description:

Engineering Science: 1.5 credits or 50%.
Engineering Design: 1.5 credits or 50%.

* Two 80-minute classes per week.

Prepared By: _____ Date: _____