ECE 616 **Power Electronics**

3 Credits, 3 Contact Hours

Course Instructor: *Ratna Raj*

Text Book :

Fundamentals of Power Electronics, *Second Edition* by
Robert W Ericson and Dragon Maksimovic
ISBN No: 0-7923-7270-0

Course Description:

This Course gives deep insight into DC-to-DC converter . It covers Steady State Analysis, Equivalent Circuit Modeling, Losses , Basic AC Modeling, and Calculation of Transfer Function of basic Converter circuits.

Pre-Requisite : Undergraduate in Electrical Engg

Grading Policy

Midterm : 30%
HomeWork: 20%
Finals 30%
Project 20%
(Submission & Presentation)

Course Outline and Tentative Schedule:

WEEK/Date	Chapter/Sections	Homework
1,	Ch1 and Ch2	HmWk1
2	Ch2 continuation	Hmwk2
3	Ch3	Hmwk3
4	Ch4: 4.1 and 4.2	Hmwk4
5,6	Ch5	Hmwk5
7	MIDTERM	
8,9	Ch6	
10	Ch7:7.1 and 7.2 Submission of Projects	
11	Ch8	

12,13	Project Presentation	
14	Overrun	
	Finals	

Honor Code:

The NJIT Honor Code will be upheld, and any violations will be brought to the immediate attention of the Dean of Students.

Course Learning Outcome (CLO)

1	Understand the working principle and circuit of Buck ,Boost and Buck Boost Converters
2	Identify the losses in these circuits and model these circuits for losses
3	Calculate efficiency of these Circuits
4	Design the parameters and elements of these circuits
5	Understand how semiconductor devices are used as switches
6	Draw an ac Equivalent circuit Model of these converter Circuits
7	Draw Bode plots and analyze transfer functions of these circuits

Student Learning outcomes

1,2	Able to write equations for the Converter Circuits
4	Calculate the ripple in the circuit and calculate the values of different elements in the circuit
1,2,3,4	Extend the knowledge to other configurations of converters
5	Identify the right devices as switches for a particular circuit
6,,7	Predict how values Q,ζ ,ω_0 help in designing the circuit