Power Management Systems and IC’s (EE290c)

Instructor: Seth Sanders
Lectures: Tues&Thurs 11-12:30, 293 Cory, cc# 26046

Useful References:

Kassakian, Schlecht, Verghese, *Principles of Power Electronics*
Erickson, Maksimovic, *Fundamentals of Power Electronics* (2nd ed.)

Approximate Lecture Schedule:

Introduction
Steady State Analysis, Commutation
Power Factor, Distortion, 3-phase circuits
Intro to Magnetic elements – quasistatic analysis
Transformer model
Design methodology
Force/Torque production
Dc-dc converters: canonical cell
Dc-dc: ripple analysis
Dc-dc: discontinuous conduction mode
Dc-dc: isolated ckt
Dc-dc: switched cap ckt
Control methodology: PWM, averaging analysis
Application in VR for microprocessor: Loadline control, feedforward
Portable and ultra-low-power applications – enabling low power modes
Digital Control Techniques and/versus Representative Commercial IC’s

Efficiency: switching loss, snubbers
Board layout: distributed parasitic elements
High Frequency magnetic analysis

Assignments: occasional homework exercises, project