ECE 8020  Electric Motor Control
Syllabus Spring 2018
Tuesday and Thursday, 3:30 – 4:45 pm
Watt 310 and Zucker 102

Description: Dynamic modeling and analysis of electrical machines for design of AC and DC drive systems; implementation of such models on a digital computer; voltage-fed inverters; pulse width modulation and analysis techniques for inverters; harmonic generation and reduction. Students are expected to have completed a course comparable to ECE 4340 before enrolling in this course.

Instructor: Dr. Tom Salem
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Office: Energy Innovation Center, Charleston
Phone: (843) 730-5061
Office Hours: By appointment


Academic Integrity:
Discussion and collaboration with classmates on course assignments is acceptable. However, plagiarism is not permitted and will result in a grade of zero for the assignment.

“As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning.' Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity.”

Please review the graduate academic integrity policy contained in the Graduate School Policy Handbook available at:
https://www.clemson.edu/graduate/students/policies-procedures/index.html

Disability Access:
“It is university policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individual needs for accommodation.”

Attendance:
Consistent classroom attendance is expected. If an absence from class is anticipated, please email the instructor with the reason for absence and arrange to obtain a copy of class notes from another student. Class will begin promptly at the scheduled time. If the instructor is not present at the start, students should remain in the classroom for 15 minutes, and are after which free to depart.
Topical Outline: (Subject to change)

Chapt 1 Introduction to High Performance Drives
Chapt 2 Mathematical and Simulation Models of AC Machines
Chapt 3 Pulse Width Modulation of Power Electronic DC-AC Converter
Chapt 4 Field Oriented Control of AC Machines
Chapt 5 Direct Control of AC Machines
Chapt 6 Non-Linear Control of Electrical Machines using Non-Linear Feedback
Chapt 8 Sensorless Speed Control of AC Machines
Chapt 9 Selected Problems of Induction Motor Drives with Voltage Inverter and Inverter Output Filters

Grading:

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