Outline
ME580-07 Fall 2024

Course: ME580-07 Modeling and High-Performance Control of Electric Machines

Instructor:
Dr. John Chiasson
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2048 FENS

Catalog Description:
This course covers the modeling and high-performance control of electric machines including direct current, induction, synchronous, and brushless DC motors. Field-oriented control of the AC machines is covered in detail.

Course Time and Place:
Tuesday 11:40 p.m. - 14:30 p.m. FASS 1096

Office Hours: To be determined

Textbook:
Modeling and High-Performance Control of Electric Machines
John Chiasson
John Wiley & Sons, 2005

Course Topics:

Chapter 1: Modeling of DC machines using Faraday's Law and the Magnetic Force Law
Chapter 2: Statespace Control of DC machines
Chapter 3: Modeling of Magnetic Materials
Chapter 4: Rotating Magnetic Fields
Chapter 5: The Physics of AC Machines
Chapter 6: Nonlinear Statespace Models of AC Machines
Chapter 7: Symmetric Balanced AC Machines
Chapter 8: Induction Motor Control
Chapter 9: PM Synchronous Motor Control
Chapter 10: Modeling and Control of Trapezoidal Back -EMF Brushless DC (BLDC) Motors
Chapter 11: Modeling and Control of Interior PM Synchronous Reluctance (IPMSynRel) Machines

Grading: Homeworks

Exams: **????**