

Electric Drives Principles:

From Basics to Advanced Vector Control and Encoder-less Operation

April 24-25, 2004

Day 1 Basics: Principles and Steady State Operation (8:00AM – 5:00PM)

1. Applications
2. Mechanical System Requirements
3. Basic Electric and Magnetic Circuit Concepts
4. Power Electronics
5. Electro-Mechanical Energy Conversion Principles
6. DC-Motor Drives
7. Control of Drives
8. Space Vector Theory
9. PMAC Drives
10. Induction Motor Drives
11. V/f Speed Control of Induction Motors

Day 2 Advanced: Dynamic Operation and Control of AC Drives (8:00AM – 5:00PM)

12. Representation in Phase Quantities
13. Dynamic Analysis by d-q Representation
14. Vector Control
15. Voltage Space-Vector PWM
16. Encoder-less Direct Torque Control
17. Vector Control of PMAC Drives
18. Switched-Reluctance Motor Drives
19. Synchronous-Reluctance Motor Drives

Reference Books:

1. Textbook *Electric Drives: An Integrative Approach* by Ned Mohan, year 2003, published by MNPERE. (See www.MNPERE.com for details.)
2. Textbook *Advanced Electric Drives: Analysis, Control and Modeling using Simulink®* by Ned Mohan, year 2001, published by MNPERE. (See www.MNPERE.com for details.)

Zero Registration Fee: As part of an NSF-sponsored national dissemination grant, this short course is being offered free of registration fee.

Technical Questions: Ned Mohan, mohan@ece.umn.edu

Location and Hotel Information:

The location of this short course is in the lecture room 3-125 in the Electrical Engineering / Computer Science building at 200 Union Street SE, Minneapolis, MN 55455.

Nearby hotels that offer university rates include Radisson Hotel Metrodome, 612-379-8888, Days Inn, 612-623-3999 and the Econo Lodge 612-331-6000.