MathWorks | Training Services

Motor Control Modeling and Simulation using MATLAB and Simulink

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TRAINING PROPOSAL

COURSE INFORMATION

Course Objective

Day 1 MATLAB for Automation and Analysis
Day 2-3 Simulink as a Platform for System and Plant Modeling
Day 4 Modeling and Simulation Electrical Systems using Simscape
Day 5 System Analysis and Controller Design
Day 6 Control System Design with MATLAB & Simulink
Day 7 Control Algorithm Development for Three Phase Motors

Prerequisites

Knowledge of Engineering Mathematics

Schedule

Instruction 9:00am - 5:00 pm with scheduled breaks and lunch.

Session handled by Mathworks Team

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COURSE OUTLINE

Day 1 MATLAB for Automation and Analysis

- Analyzing vectors and matrices
- Automating commands with Scripts
- Writing Functions

Day 2-3 Simulink as a Platform for System and Plant Modeling

- Creating and modifying Simulink models and simulating system dynamics
- Modeling continuous-time, discrete-time, and hybrid systems
- Modifying solver settings for simulation accuracy and speed
- Creating reusable model components using subsystems, libraries, and model references

Day 4 Modeling and Simulation Electrical Systems using Simscape

- Introduction to Physical Modeling approach using Simscape
- Working with Simscape Components
- Electrical System Modeling using Simscape Power Systems

Day 5 System Analysis and Controller Design

- Overview of Control System Design process
- Modeling various formats of system modeling
- Linearizing a Simulink model and validating the linearization results.
- Design control techniques, such as PID and lead/lag controllers

Day 6 Control System Design with MATLAB & Simulink

- Tuning controllers
- Multiloop control design
- Automation of analysis tasks
- Automatic tuning
- Response optimization

Day 7 Control Algorithm Development for Three Phase Motors

- Creating three-phase systems with passive elements
- Modeling three phase motors and power converter
- Speeding up simulation of electrical models
- Designing and tuning Field-Oriented Control Algorithm

ADDITIONAL INFORMATION

About our Services

MathWorks training is the fastest way to master MATLAB, Simulink, and other MathWorks products for technical computing and Model-Based Design. All courses are taught by highly experienced MathWorks engineers who guide you through workflows, techniques, and the latest product features. Instructors customize the curriculum based on attendees' learning styles and abilities. Course content is created to meet your team's specific goals and includes company-specific or industry-specific examples. By investing in training, you can enhance your skills, accelerate your projects, and advance your career.

MathWorks Deliverables

1. 7-day training course
2. Course Materials to include:
   - Training Course Notes
   - Examples and exercises files
   - MathWorks' software for the duration of the training

Public Training Deliverables

1. Computer training facility with one computer per student
2. Student roster per course