

Lecture Module - Automatic Control

ME3050 - Dynamics Modeling and Controls

Mechanical Engineering

Tennessee Technological University

Automatic Control

Lecture Module - Automatic Control

- Topic 1 - Introduction to Control Systems
- Topic 2 - Control of First Order Plants
- Topic 3 - Control of Second Order Plants
- Topic 4 - Application and Implementation

Topic 1 - Introduction to Control Systems

- Open-Loop and Closed-Loop Control
- Control System Terminology
- Modeling and Analysis
- The PID Control Algorithm

Open-Loop and Closed-Loop Control

Open-Loop and Closed-Loop Control

Open-Loop and Closed-Loop Control

Control System Terminology

Control System Terminology

Modeling and Analysis

Modeling and Analysis

The PID Control Algorithm

The PID Control Algorithm

Amplitude Ratio

References

- System Dynamics, Palm III, Third Edition - Chapter 10 - Introduction to Feedback Control Systems

Topic 2 - Control of First Order Plants

- Block Diagram of Controlled System
- DC Motor Example
- Simulation with Simulink
- Simulation with Simulink + Simscape

Harmonic Input Function

Block Diagram of Controlled System

Block Diagram of Controlled System

DC Motor Example

DC Motor Example

Simulation with Simulink

DC Motor Example

Simulation with Simulink

Simulation with Simulink

Simulation with Simulink

Simulation with Simulink + Simscape

Simulation with Simulink + Simscape

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Topic 3 - Application and Implementation

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