ME304 and Supplementary Material Syllabus

ME462 Say My Name 2020 Spring

Week 1: Introduction and Basic Concepts

Class: Basic definitions
Extra: Jupyter introduction and examples

Week 2: Transfer Functions and Block Diagrams

Class: Laplace transform, inverse Laplace transform
Extra: Time-Laplace domain converter

Week 3: Transfer Functions and Block Diagrams

Class: Poles and zeros, block diagram definitions, block diagram algebra and simplification
Extra: Block diagram representations

Week 4: Modeling Physical Systems

Class: Classification of system variables, system analogues, examples, op-amps
Extra: Physical domain analogue introduction

Week 5: Modeling Physical Systems

Class: Electro-mechanical systems, transforming and transducing devices, linearization
Extra: Linearization example with mechanism

Week 6: Basic Features of Control Systems

Class: Open loop/closed loop control, common controllers, servo characteristics, regulator characteristics
Extra: Open and closed loop examples, controlling physical simulations with controller

Week 7: Stability (Midterm 1)

Class: Impulse response and stability, Hurwitz criterion, Routh criterion
Extra:

Week 8: Time Response

Class: Time response of LTI systems
Extra:

Week 9: Steady State Response and Error

Class: Steady state error analysis, type number
Extra:

Week 10: Transient Response

Class: First and second order systems, approximation for higher order systems
Extra:

Week 11: Transient Response (Midterm 2)

Class: Transient response specifications
Extra:

Week 12: Frequency Response

Class: Steady state outputs of systems to sinusoidal inputs, bode diagrams
Extra:

Week 13: Frequency Response (Final)

Class: Bode diagrams
Extra: