

System Modeling, Dynamics and Control

- Course Outline

- Modeling of thermal, mechanical, electrical, electromechanical and liquid-level systems
- Transfer functions
- Block diagram reduction
- Transient and Harmonic Response of First- and Second-Order Systems
- Routh's Stability Test
- Steady-State Performance
- Root Locus Analysis
- Frequency Response Analysis
 - * Bode diagrams
 - * Polar plots
 - * Nyquist stability criterion
 - * Gain and phase margins
- Controller Design
 - * Lead, lag, and lead-lag compensation
 - * PID control
- Introduction to state-space models

- Text: K. Ogata, *Modern Control Engineering*.

- References: J. J. D'Azzo and C. H. Houpis, *Feedback Control System Analysis and Synthesis*.

- Evaluation

Quizzes	30 %
Midsem	30 %
Endsem	40 %

- Some exams/tests/quizzes may be open notes. For such exams, only notes written in one's own handwriting will be allowed. Photocopies will not be allowed.