THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Feedback Control Systems

ECE 3551

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture

Course Description:
Provides fundamental concepts in feedback control systems design and analysis.

Prerequisites and Co-requisites:
Prereq: 3050 (352).

Course Goals / Objectives:

- Achieve competence in applying fundamental concepts in feedback control systems, design, and analysis techniques
- Become familiar with the application of knowledge gained in mathematics, physical sciences and engineering courses to derive mathematical models of typical engineering systems to be controlled
- Be exposed to applying control systems concepts in preparation for work in multi-disciplinary teams, and learn how to identify, formulate, and solve control problems

Course Topics:

- Modeling of mechanical and electro-mechanical systems. Block diagrams
- Principles of feedback
- Open loop response and time domain specifications
- Stability and Routh criterion
- Root locus construction
- Lead/lag compensator design using root locus
- Bode plots and stability (gain and phase) margins. Nyquist criterion
- Stability of systems with time delays
- Lead/lag and PID compensator design using Bode plots
- Robust control. Internal model control
- Digital and sampled-data control systems

Designation:

Elective