SYSE 580A1 CONTROL ENGINEERING FOR SYSTEMS ENGINEERS

Offered in Spring

Prereqs: MATH 229; CBE 430 or ECE 411 or MECH 417 or instructor permission

DESCRIPTION

Challenge-driven overview of the diversity of control paradigms for modern, dynamic engineering systems for realizing desired system behaviors.

BENEFITS

Modern systems are becoming increasingly complex and dynamic, and direct treatment of the dynamics through advanced control systems are needed to realize desired performance and meet requirements from the operational level down to the device level.

Control engineering is a large subfield of systems engineering and applies to many domains, including mechanical, electrical, aerospace, chemical, financial, biological, manufacturing, robotic, etc.

COURSE OBJECTIVES

Topics include linear, nonlinear, optimal, robust, decentralized, and hierarchical control methods. Examples from aero-actuation, space, energy, thermal, chemical, and financial systems will be presented.

Successful students will learn to:

- Classify the control frameworks presented in this course
- Select an effective control paradigm for a particular engineering challenge
- Integrate a control system technique into an engineering system model
- Create MATLAB-based code implementations for the primary control methods presented in this course

SYSTEMS ENGINEERING
COLORADO STATE UNIVERSITY