Course: EW306 Advanced Control Engineer

Credits: 3 credits – 2 recitation hours – 2 laboratory hours

Course Description: This course builds upon the foundation established in EW305 and covers the analysis and design of state-space control systems. Specifically, state feedback design control and state estimation methods are presented and supported by a series of laboratory projects on the design and implementation of state-space control systems for physical systems.

Pre-requisites: EW301, EW305

Course Coordinator: Prof. O'Brien

Textbook: Nise, Norman S. <u>Control Systems Engineering</u> 8th Edition, John Wiley, 2019

Course Objectives
- Generate a state-space model from a schematic
- Analyze/predict the response of a state equation with initial condition to a step input
- Check controllability and design a state feedback controller to meet performance specifications
- Check observability and design a state estimator (observer) to meet performance specifications

Topics
- State-space modeling
- Linearization
- Solutions of state equations
- State-variable feedback design
- State-estimator design

Last Updated: 14-January-2021