# ECE 3353: Feedback Control Systems

**Credit / Contact hours**: 3 / 3

**Course coordinator**: Vittal Rao

**Textbook(s) and/or other required material**: Modern Control Systems by Richard C. Dorf and Robert H. Bishop, 12th edition, Pearson Prentice Hall, 2010.

**Catalog description**: An introduction to the analysis and design of automatic control systems. Control system concepts and controller design.

**Pre-requisite**: ECE 3303

**Designation**: Required for Electrical Engineering majors, elective for Computer Engineering majors

**Course learning outcomes**: Upon completion of this course, students should be able to do the following:
1. Analyze and design continuous linear analog control systems using frequency domain techniques.
2. Analyze and design continuous linear analog control systems using time domain techniques. 3. Analyze and design continuous linear analog control systems using state space techniques.

**Student outcomes addressed**: a, e, and k.

**Topics covered:**
Dynamic Models: Transfer function, Signal Flow, State Space: 9 hours
Steady State and Transient Analysis: 9 hours
Root Locus Design, Lead, lag, PID design, Frequency domain approaches: 9 hours
Stability in frequency domain, Nyquist methods: 3 hours
State Variable Design: 5 hours
Tests and Reviews: 5 hours