

EEL 4652L Control Systems Lab

Credits: 1 credit

Text book: *Lab guides provided in class*

- a. **Supplemental materials:** National Instruments tutorials, Labview User's guide

Specific course information

- a. **Catalog description:** Introduction to LABVIEW and its application, practical use of analog Control techniques including Open loop, On-Off Control, Proportional Control and PID Control. Design tuning using trial and error and Ziegler Nichols and an introduction to PLCs.
- b. **Corequisites:** Control Systems EEL4652
- c. **Required, elective, or selected elective:** elective

Specific goals for the course

Specific outcomes of instruction: By the end of the course students will be able to: (i) Design Control Systems Applications using Labview; (ii) Apply the knowledge acquired in the theory class in real applications such as motor speed and position control and temperature control; (iii) Know how to use tools such as oscilloscopes, multi meters and function generators in order to test control systems applications; (iv) Have an understanding of what a PLC is and its important in today's industry.

Brief list of topics to be covered:

- Introduction to Labview functions.
- Simulation and testing of Labview designs
- Data communication with Labview using the Data Acquisition cards
- Servo Motor Speed and Position Control
- Servo Motor Speed and Position Control using PID
- Temperature Control using On-Off, proportional and PID controls
- Tuning of a PID control
- Introduction to PLCs and ladder logic.