ME 599: Automatic Control (Autumn 2019)

Instructor: Yogesh Chukewad (yogeshc@uw.edu)
Office Hours: TBD

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Office Hours: TBD

Class meets: T TH 11:30-12:50 in GUG 218
Exams: There will be one mid-term and one final exam.
Prerequisite: Graduate standing
Textbook: Control Systems Engineering
Seventh Edition, by Norman S. Nise
Digital version OK

Homework: Will be assigned on Friday
and are due by 11:59 PM on the next Friday
Grades: Homework 40%
mid-term exam 25%
final exam 35%
Course Website: TBD

Course objective: This course is a foundation class for graduate students who wish to specialize in robotics and controls. It will be useful if you wish to register for ME 547 (Linear Systems Theory) in Winter 2020.

Subjects:

- Introduction to control systems: Modeling, State Models, Transfer Functions and Laplace Transforms, MATLAB
- Time-domain response: First and Second order systems, Higher Order approximations.
- Stability: Block Diagrams, Stability definitions, Routh-Hurwitz criterion, Application to controller design
- Steady-state errors: Steady State errors in system’s response to different inputs
- Root locus and compensator design: Open-loop Transfer Function, Rules of Root locus construction, Application to Controller design (PI, Lead and Lag Compensator)
- Frequency response and compensator design: Bode plots, Nyquist Stability criterion, Relative Stability (gain and phase margins), Controller Design (lead and lag compensator)