Course Description:
This undergraduate course focuses on analysis and synthesis of feedback control systems that have specified stability and performance criteria. Topics that will be covered include:

- Introduction: Scope of course, motivation, and applications
- Review: Laplace transform
- Dynamic Models: Modeling of physical systems via differential equations and transfer functions; block diagrams and block diagram manipulation
- Transient and Steady-State Response: Response in terms of the location of the closed-loop poles, and the overshoot, rise, peak and settling times; stability; steady-state error analysis; system type; PID control
- Root-Locus Design
- Frequency Response: Bode plots and Nyquist stability criterion
- Design of basic controllers using MATLAB

Prerequisites:
Basic understanding of differential equations and familiarity with MATLAB.

Textbook:

Supplementary References:

Office Hours:
- Michael M. Zavlanos, 188 Hudson Hall, Open door policy or by appointment
- Teaching Assistants: Reza Khodayi-mehr, Charles Freundlich

Grading Policy:
Midterm Exam: 20%
Final Exam: 30%
Homeworks: 25%
Laboratory: 25%
Class Policy:
1. Students are responsible for any material posted on the Duke Sakai web site (login at: https://sakai.duke.edu/).
2. Prior to every class, you are expected to visit the Sakai site and to print any relevant information, such as class slides, handouts, and homework assignments, in order to properly follow the lecture. The posted material will not be handed out in class during the semester.
3. Laboratory attendance is required.
4. You are expected to solve homework assignments individually. Group projects will be specified as such in class.
5. Late homework are not accepted under any circumstances. Typically, the lowest homework-set grade will be dropped by the instructor at the end of the semester.
6. Exams and experiments cannot be made up, unless agreed upon by the instructor prior to the allotted time.
7. Communications: You are encouraged to see the instructor during office hours or by appointment. You are encouraged to use e-mail in order to set up appointments or ask brief questions. Similarly, you are encouraged to check your Duke's e-mail frequently, for reminders as well as urgent class information will be distributed by e-mail, as well as posted on the Sakai site.