

**ME 455 – AUTOMATIC CONTROL SYSTEMS – SPRING 06**

**COURSE:** ME 455, Section 1: Automatic Control Systems  
Lecture: 9:45 – 11:00 TTh, 371 Willard  
[www.mne.psu.edu/rahn/me455](http://www.mne.psu.edu/rahn/me455)

**CREDITS:** 3

**INSTRUCTOR:** Professor C. D. Rahn  
150A Hammond, 865-6237, [cdrahn@psu.edu](mailto:cdrahn@psu.edu)  
Office Hours: 3:30 – 5:00 MW or by appointment

**TEXT:** Automatic Control Systems, 8<sup>th</sup> Edition, B. Kuo and F. Golnaraghi, John Wiley & Sons, 2003.

**PREREQUISITES:** ME 33 and ME 440.

**DESCRIPTION:** Dynamic analysis of systems involving automatic control of position, speed, power, flow, pressure, temperature, and other physical quantities.

**GRADING:** Subject to later revision, homework, midterm, project, and final exam contribute to the final grade in the following percentages:

<b>Homework</b>	<b>20%</b>
<b>Midterm</b>	<b>25%</b>
<b>Project</b>	<b>20%</b>
<b>Final Exam</b>	<b>35%</b>

Homework and projects are due at the beginning of class on the date specified in the attached schedule. Late homework and projects will be accepted only under extenuating circumstances (e.g. illness or death in the family). Please see me **within one week** if you feel you have been graded unfairly. There will be no makeup midterm. If you are unable to attend the midterm due to extenuating circumstances and notify me in advance, I will release you from having to take the midterm and change the final exam weight to 60%.

**ACADEMIC HONESTY:** Students are expected to conform to the highest standards of honesty and integrity. Cheating of any kind will not be tolerated and any infraction will be rigorously prosecuted through the appropriate university channels. Students may work together in the preliminary stages of individual homework assignments but the final work must reflect individual efforts. The lab reports and project require group effort and are assigned a group grade. The College of Engineering academic integrity policy includes a statement of behaviors that are in violation of academic integrity and the review process for violations. ([http://www.engr.psu.edu/www/ug/acad\\_int/students/default.htm](http://www.engr.psu.edu/www/ug/acad_int/students/default.htm)).

**CLASS ATTENDANCE:** Class attendance is expected but not required. You are responsible, however, for all material discussed and presented in class. A significant portion of the lecture material will not directly follow the text. My notes are not available for copying.

**COMPUTER USAGE:** Some of the homework and the project require the use of the software package MATLAB and/or SIMULINK.

**LABORATORY PROJECT:** The class will be divided in groups of three students each. Each lab group will be required to propose and complete a hardware project. The project will design, implement, and test a control system for one of the Controls Laboratory experiments (243 Reber).

**LAB POLICIES:**

- NO smoking, eating, or drinking in the lab.
- Only students registered for authorized courses are permitted to use the lab equipment.
- No removal of manuals, hardware, or software from the lab without explicit permission of the TA.
- Use floppy disks to backup all your work. We assume no responsibility for hard disk failures or viruses.

**PROJECT DELIVERABLES:**

1. Proposal (10%): 1 paragraph email describing system, objectives, and approach.
2. Report (65%): Detailed, self-explanatory, high quality, technical report.
3. Presentation (25%): Ten-minute oral presentation during last week of class.

**Upon completion of the course, students should be able to:**

1. Design feedback control systems and to evaluate their performance. This objective is met by first emphasizing a thorough understanding of various analytical techniques. The students are then required to solve open-ended realistic design problems, where iterative techniques are used to obtain the design parameters.
2. Demonstrate professionalism in interactions with colleagues, faculty, and staff.