# ECH 4323, 3 credits; ECH 4323L, 1 credit Chemical Process Control Spring 2006

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#### Text:

- Lecture: No textbook is necessary. The instructor will provide all the lecture material on the course website. A course pack may purchased from Target Copy.
- Software: MATLAB, CHEMCAD

Prerequisites: ECH 4504 (Kinetics and Reactor Design), ECH 4604 (Design I)

Students not meeting these prerequisites must **DROP** the course. The department will drop students who do not do so voluntarily, and the department assumes no responsibility for any drop fees assessed by the universities.

#### Lab Assignments, Quizzes and Design Project:

- Students will work in teams of 3 for the lab assignments and the experimental prototype development.
- Students will be asked to pick their team partners by the second day of class. Students are not allowed to change teams or split up after the second day of class.
- All lab assignments are due IN CLASS on the date and time specified. Only one copy of the lab assignment per team needs to be submitted.
- There will be quizzes in class based on problems assigned every week.
- NO CREDIT for LATE ASSIGNMENTS.
- Assignments must not be copied from anyone else's solution or all parties will be given zeros.
- Use one side of page only and staple all pages together before class. Do not use ripped-out sheets from a spiral notebook. All graphs must be computer generated.
- The SAME grade will be given for the lecture and lab course.

Honor Code: Please review the honor code in the student handbook of your university.

## Grading Policy:

Quizzes and Lab Assignments	13~%
Midterm I	30~%
Simulation Project:	20~%
Midterm II:	30~%
Experimental Prototype:	5 %
Final:	2 %

## Make-up Exam policy

- Students facing hospitalization, death in family, or other extraordinary situations must promptly inform the instructor and provide written documentation in order to be considered for a make-up midterm exam or quiz.
- A job interview is not a legitimate excuse for missing an exam or quiz.

#### Grading Scale

85-100	А
70-84	В
50-69	$\mathbf{C}$
40-49	D
less than $40$	$\mathbf{F}$

## Midterm Exam, Simulation Project, and Experimental Prototype Schedule

February 15	Midterm I
March 20	Midterm II
April 12	Simulation Project
April 19	Prototype Demonstration
April 26	Final (10:00 a.m. to 12:00 noon)

The simulation project will be graded on (a) substantial correctness of results and soundness of conclusions, (b) ingenuity and logic employed, (c) accuracy of computations, and (d) form of presentation. The use of MATLAB and CHEMCAD software is necessary. No other controller design simulation package is permitted. The use of textbooks, handbooks, journal articles, and lecture notes is permitted. However, the students are not allowed to discuss the problem and potential solutions amongst themselves. The simulation project should be treated as an exam, not a homework. Students will be asked to build a working device that demonstrates the principles of dynamics and control as part of the experimental prototype project. The final will involve the development of a CHEMCAD module.

# **Course Material:**

- Dynamic Process Modeling
- Dynamic Response
- Closed Loop Analysis
- Controller Tuning Guidelines
- Advanced Control Structures
- Interaction between Design and Control
- Digital Control
- Control Implementation

# Americans with Disabilities Act:

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

**Syllabus Change Policy:** This syllabus is a guide for the course and is subject to change with advance notice.

This syllabus and other class materials are available in alternative format upon request.