

**UNIVERSITY OF ARIZONA
DEPARTMENT OF CHEMICAL AND ENVIRONMENTAL ENGINEERING
CHEE 401B PROCESS DYNAMICS AND CONTROL LAB
SPRING, 20XX**

Prerequisites:

ChEE 301A and B, and ChEE 401A, concurrent registration in ChEE 413.

Instructor:

Dr. Songtao Xie Email: songtaoxie@email.arizona.edu
Office: Harshbarger 105B Tel: 520-621-3155
Office Hours: Th 1-2 pm

Teaching Assistants:

| | |
|--------------------------------|--------------------------------|
| ----- | ----- |
| Office: Harshbarger RM -- | Office: Harshbarger RM -- |
| Email: -----@email.arizona.edu | Email: -----@email.arizona.edu |

Course Objectives:

The purpose of this laboratory is to learn how to acquire data from instruments and use it in process control. You will build simple apparatus including sensors that output analog signals. Conditioning the signals and converting them into digital form, will allow you to work with and store the data on a computer. You will write programs using Matlab to acquire and analyze the data and output a signal to another instrument to control a process. Successful completion of this course will allow you to:

1. Explain how control hardware such as pump, valves, and actuators work as well as sensors, transmitters, and transducers.
2. Build apparatus and attach sensors.
3. Measure the temperature and pressure and convert the analog signals to digital ones that a computer can read
4. Write Matlab programs to acquire data, perform analysis, and output signals.
5. Perform statistical analysis to extract parameters from linear and nonlinear process models.
6. Control processes using an integrated hardware and software system that you build and test.

Textbook and Readings:

A Guide to Writing as an Engineer, David F. Beer and David McMurrey (Wiley, 2009, 3rd ed.), ISBN: 978-0-47-0417010.

Laboratory guides can be found on D2L.

Course Times:

| | | |
|------------|-------------|----------|
| Lecture | Date / Time | Location |
| Laboratory | Date / Time | Location |

Course Policies:

Attendance

Prompt attendance is mandatory for the laboratory sessions. If you, or anyone in your lab group, cannot attend any part of your scheduled lab session, you must reschedule the lab. Failure to give advance notification by phone and by email to both the instructor and the lab supervisor of your absence will result in a failing grade for the lab assignment.

Make-ups

Rescheduling of a lab session will be done only for excused absences and will be done at the convenience of the lab supervisor and preceptors.

Behavior

Students are expected to follow professional standards both in the classroom and laboratory, as well as outside of the formal learning environment. Please dress appropriately for the lab (long pants or closed-toed shoes and wear safety glasses at all times) and conduct yourself in a way that is consistent with safe practices. No cell phone use including texting is allowed while in the lab. Be considerate of the opinions and approaches of classmates, contribute to a collaborative work environment by being reliable, and behave ethically.

Deadlines

Laboratory reports are due after the second lab session in the case of the laboratories. No late lab reports will be accepted unless permission is obtained from the instructor.

Course Grade:

| | |
|-----------------------|------|
| Laboratory Attendance | 40% |
| Weekly Group Report | 30% |
| Final Group Report | 20% |
| Final Exam | 10% |
| Total | 100% |

Grades will be based on a percentage of the total possible points:

A = 90-100; B = 80-89; C = 70-79; D = 60-69; E = 0-59

Important Dates:

All dates and deadlines regarding registration, dropping, etc. can be found at <http://www.registrar.arizona.edu/courses/dates-dealines>.

Academic Integrity:

See <http://deanofstudents.arizona.edu> for the UA policies on academic integrity. This course encourages and requires collaboration. However, copying someone else's work or allowing someone else to copy your work is unacceptable and a clear violation of academic integrity. Doing so only defeats the rationale of the homework assignments. Exams must be individual effort of each student. You must not discuss the exams with anyone but the instructor. Any violation of the Academic Integrity code will not be tolerated and dealt with in as a severe manner as possible.

Accessibility and Accommodations:

It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations.

Absence policies:

All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Deans designee) will be honored.

Policy on Threatening Behavior:

The University seeks to promote a safe environment where students and employees may participate in the educational process without compromising their health, safety or welfare. UA policies can be found at <http://policy.web.arizona.edu/threatening-behavior-students>.