

The University of Toledo  
Department of Chemical & Environmental Engineering

CHEE 3400-001-091      Process Dynamics & Control

Instructor:	Brad Yaniga	Graduate Assistant:	Ehsan Akbari Fakhrabadi
Class Room:	PL3020	Room:	TBD
Lecture:	MWF 8:00-8:50 PM	Office Hours:	TBD
Email:	<a href="mailto:Bradley.Yaniga@Gmail.com">Bradley.Yaniga@Gmail.com</a>	Email:	TBD

Textbook: Coughanowr, Donald R. and LeBlanc, Steven E. Process Systems Analysis and Control, Third Edition. McGraw-Hill, Inc. 2009. (ISBN: 978-0-07-339789-4)

Reference Textbook: Seborg, Dale E.; Edgar, Thomas F.; and Mellichamp, Duncan A. Process Dynamics and Control, Second Edition. Wiley, 2003. (ISBN-10: 0471000779)

Syllabus:

Week	Textbook Section	Topic
1	Ch. 1, 2	Introduction to control, and modeling for process dynamics
2	Ch. 3	Laplace transforms and Inversion by partial fractions
3	Ch. 4	Linear, open loop, first order systems
4	Ch. 5, 6	Physical examples of first order systems, first order systems in series
5	Ch. 5, 6	Physical examples of first order systems, first order systems in series
6	Ch. 7	Higher order, open loop systems
7	Ch. 8	Distributed control systems and block diagrams / digital control
8	Ch. 8	Distributed control systems and block diagrams / PLC
9	Ch. 11	Closed loop transfer functions
10	Ch. 12	Transient responses of simple control systems
11	Ch. 13	Stability
12	Ch. 17	Advanced control strategies
13	Ch. 18	Multivariable control
14	Ch. 23	Multivariable control
15	--	Final design project

Note: The proposed schedule above only reflects a tentative plan.

Grading:	Homework	50%
	Two Exams	20%
	Final Design Project	15%
	Final Exam	15%
	Total	100%

### **Student Learning Outcomes:**

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. An ability to identify, formulate, and solve engineering problems
5. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

### **Homework Points:**

- Homework can be submitted individually or in a group
- Homework should be legible and answers should be indicated with a box around it
- Do not submit via Blackboard; homework will be collected on Fridays
- Late homework will not be accepted

### **Academic Policies:**

Students are responsible for following all academic policies of the University. The student handbook is available at:  
<http://www.utoledo.edu/studentaffairs/index.html>

Academic Policies can be read in their entirety on the Academic Policy Webpage at:  
<http://www.utoledo.edu/policies/academic/undergraduate/index.html>

**Academic Dishonesty:** Academic dishonesty will not be tolerated. Among the aims of education are the acquisition of knowledge and development of the skills necessary for success in any profession. Activities inconsistent with these aims will not be permitted. Students are responsible for knowing what constitutes academic dishonesty. If students are uncertain about what constitutes plagiarism or cheating they should seek the instructor's advice. For examples of Academic dishonesty please visit the policy webpage.

**Adding a Course:** A student may add a course within the first five calendar days of fall or spring term with no signature required as long as a seat is available. Student wishing to add a class between the sixth calendar day and the 15th calendar day inclusively of a new term may be able to do so with approval and signature of the course instructor. A late registration fee is assessed for initial registrations on or after the first day of the semester. The form to add a class is available on the registrar's web site. For more information visit the policy webpage.

**Dropping a Course:** An undergraduate student has the right to make changes to their schedule of classes prior to the end of business on the fifteenth calendar day of the term. Summer sessions within the summer term are prorated.

**Missed Class Policy:** Students are expected to attend every class meeting of courses in which they are registered. Only in specific, unavoidable situations does the university excuse absences from class (see policy for specific on excused absences).

**Cheating/Plagiarism:** All students are expected to adhere to the academic integrity policy found in the UT Student Handbook. Students found cheating or plagiarizing will be referred for appropriate disciplinary action.

**Academic Accommodations:** Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss. Students with documented disabilities need to contact the Office of Accessibility at 419.530.4981 in RH 1820 to coordinate reasonable academic accommodations in accordance with ADA and Section 504 of the Rehabilitation Act of 1973.