

Course Information

Course title	Process Control
Semester	109-2
Department	DEPARTMENT OF CHEMICAL ENGINEERING
Instructor	Jeffrey Daniel Ward
Administrative Curriculum Number	ChemE4007
Teaching Curriculum Number	504 43100
Class	02
Credits	3
Full/Half Yr.	Half
Required/Elective	Required
Time	Tuesday12Friday1
Remarks	description of the course conducted in English
Ceiba Web Server	http://ceiba.ntu.edu.tw/1092Control_Ward
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Course Syllabus

Course Description	<p>This course will present an introduction to process dynamics and control. Students will learn how to construct dynamic models of process systems, how to analyze process dynamics using Laplace transforms and transfer functions, the characteristic responses of dynamic processes, and the design and implementation of feedback control. Students will also learn to use computer software to model process dynamics and control.</p>
Course Objective	<p>By the end of the semester, students should be able to:</p> <ol style="list-style-type: none"> 1. Construct dynamic models of chemical processes 2. Solve differential equations using Laplace transforms. 3. Build and analyze transfer function and state-space models 4. Understand the dynamic response of representative processes 5. Develop empirical dynamic process models 6. Implement and tune PID controllers 7. Use frequency response methods to analyze processes and design controllers. 8. Understand and implement feed-forward, ratio, cascade and

	multi-variable control.
Course Requirement	<p>Required textbook: Process Dynamics and Control, Third Edition by Dale E. Seborg, Thomas F. Edgar Duncan A. Mellichamp, and Frank Doyle.</p> <p>Other references: Principles and Practice of Automatic Process Control by Carlos A. Smith and Armando B. Corripio. Process Dynamics, Modeling and Control by Babatunde A. Ogunnaike and W. Harmon Ray. Process Control by Thomas E. Marlin.</p>
Office Hours	
References	
Designated reading	