

Course Title	Introduction to the Process System
Registration Code	L100140001
Number of Credits	2
Years of Eligible Graduate Students	1-2
Semester	1st
Period	Mon. 2nd
Room	B5-1B34 (Nakamozu Campus, OPU), B115 (CPU: distant lecture)
Instructors	Satoru Watano, Tomohiro Iwasaki
Office hours	Tuesday 12:10-13:00 PM, Bldg.B5, 4th Floor, Room 4B-44(Nakamozu Campus, OPU)
Contact	Email: watano@chemeng.osakafu-u.ac.jp Ext. 5770
Goals of the course	This lecture will focus on the input/output relationship, dynamic characteristics and modeling of several chemical processes. Control systems including feed back, feed forward and advanced controls will be introduced. The principle and application of on-line/off-line sensors and fundamental sensor engineering will also be introduced.
Textbooks	Not specified. Printed reference materials will be distributed.
Books of reference	Fundamental and Practice of Process Control (Eds., E. Nakanishi and Y. Hanakuma) Asakura, 1992
Allied subject	Process Control Process Systems engineering
Homework (Preparing for the classwork)	
Course outline	This lecture will consist of the following 15 topics: 1) Brief introduction; 2) Concept of process systems engineering; 3) Numerical description of system by using transfer function; 4) Numerical description of system by state equations; 5) analogy between transfer function and state equations; 6) synthesis and analysis of the process; 7-8) Feed back, feed forward and advanced controls; 9) Fundamentals of sensor engineering, 10-14) Principle and applications of online/offline sensors, 15) Discussions, 16) Final test
Class schedule	1st Brief introduction about process systems engineering
	2nd Concept of process systems engineering
	3rd Numerical description of system by using transfer function
	4th Numerical description of system by state equations
	5th Analogy between transfer function and state equations
	6th Synthesis and analysis of the process
	7th Feed back, Feed forward and advanced controls (1/2)
	8th Feed back, Feed forward and advanced controls (2/2)
	9th Fundamentals of sensor engineering
	10th Principle and applications of online/offline sensors (1/4)
	11th Principle and applications of online/offline sensors (2/4)
	12th Principle and applications of online/offline sensors (3/4)
	13th Principle and applications of online/offline sensors (4/4)
	14th Discussion on the recent topics and subject on the process systems engineering (1/2)
	15th Discussion on the recent topics and subject on the process systems engineering (2/2)
	16th Final test
Evaluation	Evaluation will be conducted by final test, report, etc. Details will be announced later.
Remarks	