

CBE495 Process Control Application, Spring, 2011
Department of Chemical and Biological Engineering
Korea University

1. Instructor: Prof. Dae Ryook Yang

- Contact Information: Engineering Building 710 (OFFICE)

Tel: 02-3290-3298, email: dryang@korea.ac.kr

- Class Website: <http://www.cheric.org/edu/lecture/process/CBE495>

- Lecture Hours: 10:30-11:45am (Tu, 공250), 14:00-15:15pm(Th, 공250)

- Office Hours: Please make an appointment.

2. Course Objective:

Based on the basic process control concepts, advanced control techniques such as feedforward control, ratio control, cascade control, multiloop control, model predictive control, statistical control and etc. will be taught and practiced.

3. Preliminary Course Outline:

| 주 | 기간 | 시험 | 학습내용 | 교과서 | 참고서 |
|----|------------|---------|-----------------------------------------------------|-----|-----|
| 1 | 3.2~ 3.8 | | Feedforward Control and Ratio Control | | |
| 2 | 3.9~ 3.15 | | Cascade Control | | |
| 3 | 3.16~ 3.22 | | Matlab Tutorial I | | |
| 4 | 3.23~ 3.29 | | Matlab Tutorial II | | |
| 5 | 3.30~ 4.4 | | Time-Delay Compensation | | |
| 6 | 4.5~ 4.11 | | Selective and Override Control | | |
| 7 | 4.12~ 4.18 | | Other Conventional Advance Control Strategies | | |
| 8 | 4.19~ 4.25 | | Multiple-Input, Multiple-Output Processes | | |
| 9 | 4.26~ 5.3 | MidTerm | | | |
| 10 | 5.4~ 5.10 | | Interaction Analysis | | |
| 11 | 5.11~ 5.17 | | Control of MIMO Processes | | |
| 12 | 5.18~ 5.24 | | Model Predictive Control I | | |
| 13 | 5.25~ 5.31 | | Model Predictive Control II | | |
| 14 | 6.1~ 6.7 | | Model Predictive Control III | | |
| 15 | 6.8~ 6.14 | | Supervisory Control and Statistical Quality Control | | |
| 16 | 6.15~ 6.21 | Final | | | |

4. Textbooks:

- Seborg D.E., T.F. Edgar, and D.A. Mellichamp, *Process Dynamics and Control*, 2nd Ed., John Wiley & Sons Inc., New York, NY (2004)
- Lecture Notes

5. References:

- Ogunnaike & Ray, *Process Dynamics, Modeling, and Control*, Oxford University Press, 1994
- Stephanopoulos, G., *Chemical Process Control*, Prentice-Hall Inc., Englewood Cliff, New Jersey, 1984.

6. Evaluation:

- Attendance (10%)
- Participation (10%)
- Project (30%)
- Final exam (30%)
- Homework (20%)

7. Lecture Aids:

- Java Applets
- Matlab