

INSTRUCTOR	YEAR	SEMESTER	COURSE NUMBER	교과목명 (COURSE NAME)	SECTION
LEE, JANG-MYUNG	2016	Fall	EE21691	CONTROL SYSTEM DESIGN	057
Instructor's Infomation		/			
Office Hours		Wednesday 2:00 ~ 5:00 p.m.			

### 1. Course Objectives & Description

#### 1) Course Objectives

In this course, the students learn how to design the control systems practically. Especially students will be ready for using the digital control systems with microprocessors. The design techniques in the analogue domain will be transformed into the digital domain to get a practical system using the digital circuits. This course is also aiming at the practical engineering capability for each student by giving the presentation chance during the class.

#### 2) Course Description

Basic theories on the control system design will be taught, such as, root locus, frequency response techniques, lag-lead compensators, state space design, and digital control system. After the lectures on the basic theories, the students have chance to design their own systems with the desired goals. Their own system design will be presented in the class and discussed to find out some improvement if it is necessary.

\* 장애학생의 경우 장애학습지원센터와 강의 및 과제에 대한 사전 협의가 가능합니다.

### 2. Required TextBook

Norman S. Nise, Control Systems Engineering, Fifth edition, John Wiley & Sons, INC., 2011

### 3. Requirements & Grading

Midterm 30 %, Final Examination 30 %, Term Project 20 %, Attendance 10 %, Report 10 %

\* 장애학생의 경우 시험시간의 연장이 가능하며, 대필이나 컴퓨터를 활용하여 시험에 응할 수 있습니다.

### 4. Schedule

Week No	Topics and Activities	Assignments & Other Instructions
Week 1	[Orientation and Education on Academic Misbehavior(e.g. Cheating, Plagiarism) and Safety Education on Experiment and Practice] Review of Performance Analysis & Design	
Week 2	Design Via Root Locus	Homework #1: Chapter 9 problems
Week 3	Frequency response technique	
Week 4	Stability via the Nyquist diagram, Bode diagram	
Week 5	Design via frequency response	Homework #2: Chapter 10 problems
Week 6	Lag/Lead compensation	Homework #3: Chapter 11 problems
Week 7	Design via state space	Homework #4: Chapter 12 problems
Week 8	Mid-term	Term project assignment
Week 9	Controller and observer design Steady-state error design via integral control	Homework #5: Chapter 13 problems
Week10	Digital control systems	Homework #6: Chapter 14 problems
Week11	Transient response and design on the z-plane	Homework #7: Chapter 15 problems
Week12	Steady-state error design	Homework #8: Chapter 16 problems
Week13	Project presentation	
Week14	Project presentation	

Week15	Final Examination	
Week16		

#### 5. 참고문헌 (References)

Digital Control and Estimation, Richard H. Middleton & Goodwin