Syllabus:
System Control

Fall 2014

Course No.: M2794.002

Lecturer: Kyongsu Yi

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Prerequisite: System Analysis

Class room: 301-301

Lecture: Tuesday/Thursday 11:00-12:15

Office Hour: Tuesday 13:15-14:15

Text and References:

Modern Control Engineering, Fifth Edition, K. Ogata, Pearson 2010.

Feedback Control of Dynamic Systems, Sixth Edition, Franklin, Powell, and Emami-Naeini, Pearson 2010.

Classes: Lecture (80%), Matlab Simulink Design Lab (20%)

Evaluation: Midterm Exam (30%), Final(45%), Homeworks(15%), Class attendance (10%)

Topics: Key concepts on   input-output system and control systems, control system analysis, analysis anf control design of continuous control systems, classical methods and modern control, root locus method, frequency response methods, state space method, PID control, stability, pole placement, observer

Lecture Plan		
Week	Topics	Comments
1	Introduction, examples of control systems	
2	Components of a control system, modeling, Laplace transform	
3	Transfer functions, Block diagram, State equation, signal flow graph	
4	System response, Stability, pole and zero, Routh's criterion	
5	PID Control, MATLAB Analysis	
6	System types, Control design examples	
7	Root locus, lead and lag compensation	
8	Review and Midterm	Midterm Exam
9	Control system analysis by frequency response method, bode plots, polar plots	
10	Nyquist criterion, applications, gain and phase margins	
11	State space model, solution of state equation, controllability and observability	
12	Pole placement, reference tracking	
13	Integral control, observer, separation property	
14	Control system design examples	
15	Control term project presentation	
16	Review and Final	Final Exam