ME446.632 Control Systems I
Mechanical Engineering@SNU Spring 2015

Instructor: Prof. Dongjun Lee (office) 301-1517 (e-mail) djlee@snu.ac.kr (p) 02-880-1724

Class Schedule: M/W 17:00-18:15pm @ 301-103

Office Hours: M/W 1:00-2:00pm or by appointment

TA: Nguyen Hai-Nguyen (office) 301-211 (e-mail) hainguyen@snu.ac.kr (p) 02-880-1690

Textbooks:

Multivariable Feedback Control, S. Skogestad & I. Postlethwaite, John Willey & Sons

References:

Modern Control Systems, R. C. Dorf & R. H. Bishop, Prentice Hall, 2008
Linear System Theory and Design, C-T. Chen, Oxford University Press, 1998
Linear System Theory, W. J. Rugh & T. Kailath, Prentice -Hall
Feedback Control Theory, J. Doyle, B. Francis & A. Tannenbaum, Dover
Applied Nonlinear Control, Slotine and Li, Prentice-Hall, 1991
Principles of Robot Motion, H. Choset et al, MIT Press, 2004

Course Description: This is the first graduate course on dynamic systems and control. This course will mainly deal with analysis and design techniques for linear control systems. Main topics of the course in this semester are:

Loop shaping: performance vs robustness
Linear dynamical system: stability and solution
Controllability, observability, and separation principle
State-space control design techniques
Linear quadratic control (LQR)
Kalman estimation
Model predictive control (if time permits)

Prerequisites: Undergraduate-level classical control courses or equivalent; or by the consent of instructor

Grading: homework (20%) mid-term (40%) 4/20 7-9:30pm final exam (40%) 6/15 7-10pm

Homework: Homework should be turned in at the beginning of the lecture on the due date. If turned in late on the same day, 50% will be deduced. Otherwise, it will get zero point. Each problem of homework will be graded in the scale of 0/0.5/1 from 0-1 scale.

Students conduct: students are expected to behave professionally in this class: going-in/out during the class, newspaper reading, phone call, texting, or any other unprofessional behaviors are not allowed.

Academic integrity: any academic dishonesty is strictly prohibited in this class, and, if caught, can result in F-grade and academic disciplinary actions.