University of Turkish Aeronautical Association (UTAA)

CONTROL SYSTEMS (AST 303) Course Syllabus

Fall 2021

Instructor: Yusuf ACAR	
E-mail: yacar@thk.edu.tr , yusuf.acar@tubitak.gov.tr	**Phone**: +90 312 210 1310 (ext. 1152)
Please feel free to email and arrange online meetings.	**Course Time and Place**: Sec. 1: Wed 15:40-18:30; Sec. 2: Fri 13:40-16:30

Textbooks:

1. "*Modern Control Engineering*", 5th Edition, by Katsuhiko Ogata, Pearson, 2010.
2. *"Feedback Systems: An Introduction for Scientists and Engineers"*, 2nd edition , by Karl J. Åström and Richard M. Murray, 2020
   a. Chapter by chapter : http://www.cds.caltech.edu/~murray/amwiki/index.php?title=Second_Edition
   b. Complete book : http://www.cds.caltech.edu/~murray/books/AM08/pdf/fbs-public_24Jul2020.pdf
3. "*Feedback Control of Dynamic Systems*", 6th edition , by Franklin, Gene F.; Powell, J. David; Emami-Naeini, Abbas, 2010
   a. Matlab files : https://www.mathworks.com/matlabcentral/fileexchange/26412-feedback-control-of-dynamic-systems-6th-edition-prentice-hall-2010
4. *"Control System Design"*, Goodwin, Graebe, Salgado, Prentice Hall, 2001
5. *"Modern Control Systems"*, 11th Edition, by Dorf Richard C., Bishop Robert H., 2007

Course Topics: We are going to cover the first 5 Chapters of the book almost entirely. We are going to select some sections from the remaining two chapters based on the time constraints.

Chp 1. Introduction to Control Systems
Chp 2. Mathematical Modeling of Control Systems
Chp 3. Mathematical Modeling of Mechanical Systems and Electrical Systems
Chp 4. Mathematical Modeling of Fluid Systems and Thermal Systems
Chp 5. Transient and Steady-State Response Analyses
Chp 6. Control Systems Analysis and Design by the Root-Locus Method
Chp 7. Control Systems Analysis and Design by the Frequency-Response Method

Grading: There will be a Midterm and a Final exam. In addition, there will be homework assignments and quizzes.
Weights: Midterm 30%, Final 40%, Homework Assignments + Quizzes 20%, Notetaking Sheets 10%

Software: MATLAB+Simulink. We will have computer-based homework assignments.

Rules to Follow:

1. The examinations have classical, essay or multiple-choice type problems. In the exams, if needed, the relevant formulas will be provided. Calculator is allowed during the exams.
2. Please regularly check the course Team, your **sis.thk.edu.tr** account and your email address defined on this system. Because I frequently use these channels to communicate with you and to do announcements.
3. Exam papers will be shown to students in an announced time interval. Late objections will not be accepted.
4. **Make-up** exams will be given to those who have excuses such as sickness, injury and/or serious emergency. Evidence is required to take the make-up exam, such as a signed memorandum from the doctor's office in case of sickness. Please notify me immediately upon such incidents.
5. Students of this course are expected to behave in an **ethical** way; therefore, they should do all the course work by their own, and never attempt cheating in the exams and in doing the homework assignments.