AERO 3343: Systems Modelling and Control

Class Reference Number: 26834
Class Meeting: 1:30 pm - 2:50 pm TR / Liberal Arts Building 222
Prerequisite Courses: MATH 2326, MECH 2342, and MECH 2340
Instructor: Angel Flores-Abad, PhD
Department of Aerospace and Mechanical Engineering
Office: A109
Email: afloresabad@utep.edu
Office hours: 3:00 PM – 4:00 PM MWs

COURSE DESCRIPTION
The course will provide the basis for system modeling in the time and frequency domain, emphasizing aerospace applications. The course will deliver concepts and the best practices for design and implementation of model-based feedback control of SISO systems.

COURSE OBJECTIVES
• Students will use mathematical tools and physical laws to represent aerospace systems dynamics.
• Students will use computer tools to validate and analyze dynamic systems.

TOPICS COVERED
• Laplace Transform
• Transfer function
• Dynamic Response
• System analysis in frequency and time domain
• Block diagram representation
• Feedback Controllers Design Time Domain
• Feedback Controllers Design in Frequency Domain

GRADING
• Homework, quizzes, online activities, in-class assignments, etc. 40%
• Midterms 1 (Feb 22) 15%
• Midterms 2 (April 18) 15%
• Final Exam (Thursday, May 9th – 1:00-3:45 PM) 20%
• Final Project (May 2nd) 10%

Students with a minimum average of 90/100 in the two considered Midterm exams will be exempt from taking the final exam and will get full credit on it i.e., the 20%.
Optional: students with a minimum average of 85/100 but less than 89/100 will obtain his average midterm exams grade on the final exam.

Scale A ≥ 90, B ≥ 80 but <90, C ≥ 70 but <80, D ≥ 60 but <70 and F <60
Policies
- Make-up exams are available only due to UTEP accepted reasons. See UTEP’s catalog
- Correction period: students will have one week after the assignments, quizzes, exams, etc., are returned with grades to ask for any revision on the grade; after that week, no changes can be done to the grades.

TEXTBOOKS

SOFTWARE
Matlab toolboxes: Symbolic, Control Systems, Simscape, Multibody.

Refer to ETC for specific question. Engineering building E351D (915) 747-5131.

MATERIAL FOR CLASS
Mandatory: Laptop

ATTENDANCE AND TARDINESS
Attendance is mandatory. Absences can be checked by the instructor through quizzes, exams, roll calling, randomly picked names for problem-solving in class, or other mechanisms. You could receive an F grade if you miss more than three classes without the instructor’s consent. The instructor appreciates all efforts to attend the class. Exams and quizzes are given at the beginning of the classes. No additional time will be allowed for late attendees.

DISCLAIMER
The above schedule, policies, and assignments in this course are subject to change in the event of contingency or by mutual agreement between the instructor and the students.