

AA 447 COURSE DETAILS

TITLE:	Control in Aerospace Systems
CREDITS:	4
FORMAT & SCHEDULE:	Lecture, 4 hours / week
FACULTY CONTACT:	Behcet Acikmese

COURSE DESCRIPTION (Catalog Short Form, 50 words Max):

Overview of feedback control. Dynamic models for control systems design including ODE, transfer function, and state-space. Linearization of nonlinear models. Analysis of stability, controllability, observability, time/frequency domain techniques. Frequency of response design techniques. Design of control systems via case studies.

COURSE OVERVIEW & LEARNING OBJECTIVES:

Introduces students to the fundamental elements of systems theory and control and teaches the necessary concepts and tools required to perform analysis and design of feedback control systems. Both classical control (frequency domain) and modern state-space based control (time domain) theories and techniques are introduced. The theory will be demonstrated by means of several applications of modern aerospace systems.

Course Objectives:

1. Students will understand the fundamentals of linear control systems.
2. Students will be able to conduct practical control system design using computer aided control systems design tools.

COURSE REQUIREMENTS

PREREQUISITES: 1) Minimum grade of 1.7 in A A 312
2) M E 230
3) MATH 308

REQUIRED TEXTBOOK: *None*

COURSE SCHEDULE

Topics

Overview of feedback control

Dynamic modeling feedback control systems

State space and frequency domain models

Brief review of behavior of BIBO stable systems

Root locus analysis for stability

Feedback control system specifications

Nyquist stability analysis

Loop shaping for feedback control design