

EEL4611 - Control Systems II

Three Credits, Four and a half hours, Engineering Topic

Instructor: Dr. Amaury A. Caballero

Textbook: Control Systems Engineering by Norman S. Nise, Seventh Edition, John Wiley & sons, Inc.

Specific Course Information: The goal of this course is to design controllers for different applications using classical and modern techniques.

Specific Goals for the Course

a. Specific outcomes of instruction

Upon successful completion of this course, the student will:

- 1.To apply their basic knowledge in control theory for designing control systems using the time and frequency domain.
- 2.To design using root locus techniques
- 3.To design using the frequency response techniques
- 4.To design using state space concepts
- 5.To use MATLAB in the design of control systems. MATLAB software is available from the Engineering Information Center, after registering.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

In this course the student will have to show

- (a) an ability to apply knowledge of mathematics, science, and engineering (X)
- (b) an ability to design and conduct experiments (simulations), as well as to analyze, interpret data (X)
- (c) an ability to design a system, component, or process to meet desired needs (X)
- (d) an ability to function in multi-disciplinary teams (N/A)
- (e) an ability to identify, formulate, and solve engineering problems (homework) (X)
- (f) an understanding of professional and ethical responsibility (N/A)
- (g) an ability to communicate effectively (through project reports) (N/A)
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context (N/A)
- (i) a recognition of the need, and an ability to engage in life-long learning (N/A)
- (j) a knowledge of contemporary issues (X)
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (X)
- (l) a knowledge of probability and statistics (X)

Brief list of the topics to be covered

- 1.Learn how to apply their basic knowledge in control theory for designing control systems using the time and frequency domain.
- 2.Learn how to design using root locus techniques
- 3.Learn how to design using the frequency response techniques
- 4.Learn how to design using state space concepts

5. Learn how to use MATLAB in the design of control systems. MATLAB software is available from the Engineering Information Center, after registering.

GRADING:

Course Requirements	Weight
Assignments	20%
Test # 1	25%
Test # 2	25%
Final Project	30%
Overall Grade	100%

Conversion of Numerical Grade to Letter Grade

$95 \leq A \leq 100$	$83 \leq B < 85$	$70 \leq C < 75$
$90 \leq A- < 94$	$80 \leq B- < 82$	$60 \leq D < 69$
$86 \leq B+ < 89$	$76 \leq C+ < 79$	F: Below 60