

**Department of Computer & Electrical Engineering
and Computer Science
Florida Atlantic University
Course Syllabus**

1. Course title/number, number of credit hours	
Control Systems 1 EEL 4652	# of credit hours: 3
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisite: EEL3111 – Circuits 1 with minimum grade of “C”	
3. Course logistics	
<p><i>Term:</i> Fall 2018 This is a classroom lecture course Class time: TUE 4:20-7:00 pm Classroom: CM128 This course has limited design content.</p>	
4. Instructor contact information	
<i>Instructor's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	Instructor: Dr. Daniel Raviv, Engineering East 420 561 297 2773 (from campus 7-2773) ravivd@fau.edu Office hours: Tue Thu 2-3:20pm (or by appointment)
5. TA contact information	
<i>TA's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	N/A
6. Course description	
This course introduces students to basic concepts in feedback control systems, analysis and design. Participants learn the meaning of feedback control, modeling, transient and steady state, analysis method such as root locus and Nyquist, stability and margins, frequency response, and design.	
7. Course objectives/student learning outcomes/program outcomes	
<i>Course objectives</i>	<ul style="list-style-type: none"> - Learn Feedback, Model using SFG - Understand Transient and Steady State concepts - Analyze using Signal flow graph and Root Locus methods - Understand multi-approaches to stability and margins - Learn and use Frequency response - Design - Introduced to State Variables (if time permits) - Introduced to Digital Control + Intro to advanced topics (if time permits)
<i>Student learning outcomes</i>	Outcome 6:

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& relationship to ABET objectives / outcomes	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. (Experimentation and/or simulation)	
8. Course evaluation method		
Four tests Matlab assignments (Extra credit may be assigned)	4x20% 20%	Note: The minimum grade required to pass this course is C. Note: Extra credit assignments count ONLY after passing the class with a minimum of C grade.
9. Course grading scale		
Grading Scale: 93 and above: "A", 90-92: "A-", 87-89: "B+", 83-86: "B", 80-82: "B-", 77-79: "C+", 73-76: "C", 70-72: "C-", 67-69: "D+", 63-66: "D", 60-62: "D-", 59 and below: "F."		
10. Policy on makeup tests, late work, and incompletes		
No makeup tests will be given, except with documentation from a Doctor. Late assignments will only be accepted and graded, if excused by me. Blackboard will allow you to submit an assignment after the due date and time. However, Blackboard will mark a late assignment late. Incomplete grades will only be given if the student is passing the class and has proper documentation for the reason of the incomplete.		
11. Special course requirements		
None		
12. Classroom etiquette policy		
University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.		
13. Attendance policy statement		
Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.		
14. Disability policy statement		
In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/		
15. Code of Academic Integrity Policy Statement		
Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the		

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university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

16. Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

17. Required texts/reading

Textbook: Modern Control Systems, Dorf and Bishop, **10th e edition**, Prentice Hall, ISBN/ **9780131457331**

18. Supplementary/recommended readings

Automatic Control Systems, Kuo, latest edition
MATLAB Manuals/tutorials. also see appendix in book
Web resources for textbook: www.prenhall.com/Dorf

19. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Topics

Introduction + why feedback

Modeling

Signal flow graph

Transient Response

Stability

Steady state

Root Locus

Frequency response

Stability in the frequency domain

(+gain and phase margins)

Specifications and Design

Introduction to State Variables (if time permits)

Introduction to Digital Control + Advanced topics (if time permits)

Note: course material may be adjusted/modified depends on time

Exam schedule (tentative)

Exam 1: TUE Jan 29 20%

Exam 2: TUE Feb 19 20%

Exam 3: TUE March 19 20%

Exam 4: During or prior to "Finals" week 20%

Matlab assignments 20%

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Note: Matlab assignments/projects may be changed / modified.

Due: no later than class time on due date. Printed copy

The following MATLAB assignments are **TENTATIVE** and may change later.

Matlab Warmup: Get started Control Matlab: MP2.1 Due TUE Jan 22 1% extra credit

- **Matlab Project 1 Due Feb 5 5%**

Modeling: MP2.3, MP2.5, MP2.9

- **Matlab Project 2 Due March 12 5%**

Performance and Steady State:

MP4.2, MP4.6, MP4.7, MP5.3 MP5.4

- **Matlab Project 3 Due March 26 5%**

Stability and Root Locus:

MP6.5, MP6.8, MP7.2

- **Matlab Project 4 Due April 16 5%**

Frequency Response (+stability in frequency domain) and design

MP8.3b, MP8.3c, MP8.5, MP8.6

For ALL Extra Credit and MATLAB

DUE: HARD COPY @ no later than the start of class time on due date

The extra credit will be counted only after passing the class ("C" or better).

Each numerical value in the questions/programs for extra credit AND MATLAB assignment must be changed to: the existing (given) value + the last digit of your Z number.

For example, if the last digit of your Z number is 5, and a value of a resistor is 4 kilo-ohm then change the value to 4+5= 9 kilo-ohm. (Same idea for all other values/parameters; obviously if the last digit of your Z number is zero there are no changes in values.)