

Course Number and Title:	EEL 4612C- Control System Design
Credit Hours:	3 credits: Lectures 2 Hours, Lab: 1
Current Academic Term:	Fall 2018
Office:	Room # IST-2097
Office Hours:	Hours: Tuesday and Thursday: 10:00-11:00 am, 3:00-5:00pm; Wednesday: 2:00-3:00 pm, or just stop by if not busy, or unavailable, contact the instructor for a mutually convenient time.
Office Phone:	Tel: (863)-874-8647
Email:	asargolzaei@floridapoly.edu
Class Meeting Day, Time & Location:	Tuesday and Thursday: 1:00– 2:15 pm. (Video lectures are provided through canvas) Room # IST-2097
Course Website:	Canvas
Official Catalog Course Description:	The course covers linear time-invariant systems, bode diagrams, root locus, pole placement, observer techniques, linear-quadratic optimal controllers, and Lyapunov theory. The course covers the feedback control systems design using root locus, state space, and frequency response.
Prerequisite(s):	EEL 4652- Control Theory
Pre-Requisite Policy	<ul style="list-style-type: none"> The pre-requisite(s) and co-requisite(s) of a course as indicated in the course catalog will be strictly enforced, without exception. A student who completes a course without first completing its prerequisites will be required to retake the class regardless of the grade received for the course.
Gordon Rule:	NO
Required Texts:	<ul style="list-style-type: none"> Control Systems Engineering, 7th edition, by Norman S. Nise, Wiley, ISBN 978-1118170519, 2015. <p>Suggested textbooks:</p> <ul style="list-style-type: none"> Modern Control Engineering, by Katsuhiko Ogata, 5th Edition Feedback Systems: An Introduction for Scientists and Engineers by Karl Johan Åström & Richard M. Murray
Instructional Materials”	PowerPoint slides and in class lectures
Equipment and Materials:	You will need to use the MATLAB software with its control toolbox
Course Objectives:	Apply a variety of control analysis techniques to predict the behavior of a control system; determine how to use linear and nonlinear control technics for a control system design

Course Learning Outcomes (CLOs):	#	After successfully completing the course with a grade of C (2.0/4.0) or better, the student should be able to do the following:							Learning Level	ABET Criteria		
	1.	Design various types of feedback control systems to meet specific requirements using time and frequency domain analysis.							5	a, e, c		
	2.	Describe various nonlinear systems and how to design optimal controller for linear systems.							2	c		
	3.	Apply MATLAB software tool to verify the design assignments to evaluate the performance of control systems.							3	k		
	4.	Identify a contemporary issue on applications of control systems and prepare a technical research paper describing its scope and impact along with applying control design techniques to address it.							1	i, j, k		
Attendance		Attendance - see also University Policy at https://floridapolytechnic.org/wp-content/uploads/FPU-5.0010AP-Student-Attendance.pdf <i>Course specific attendance requirement:</i> Students are expected to attend class. Students whose absences exceed 8 classes may be Administratively Withdrawn at the discretion of the instructor unless prior arrangement is made to accommodate special circumstances.										
Grading Scale:		See also University Policy https://floridapolytechnic.org/wp-content/uploads/FPU-5.0071AP-Grading-Policy-10.20.15.pdf										
	0	55	58	63	67	70	73	77	80	83	87	90
	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A
Assignment/Evaluation Methods:		Grade items: Quizzes, assignments, and Final Exam throughout the semester after the completion of a specific topic area – see the schedule for more details.										Points
		Lab assignments and homework										35
		Final Exam										30
		Term paper										35
		Total										100
Make-Up:		No makeup tests or quizzes, except in case of emergency, e.g. illness and accident. For makeup tests, medical certificate is required, and the instructor must be notified in advance of the test.										
Final Grade Calculations		The CANVAS calculates and displays the final letter grade based on the weighting factors as listed under Assignment/Evaluation Methods										
Academic Support Resources		Library: Students can access the Florida Polytechnic University Library through the student portal Pulse and Canvas , on and off campus. Students may direct questions to the Success Desk in the Commons or by email, library@floridapoly.edu . ASC: The Academic Success Center, located in the Commons and at ASC East, provides a range of services. Students may direct questions to success@floridapoly.edu .										

<p>University Policies</p>	<p>Academic Integrity: All students must commit to the highest ethical standards in completion of all academic pursuits and endeavors: Academic Integrity</p> <p>Reasonable Accommodations: Students who qualify for course or classroom adjustments under the Americans with Disabilities Act (ADA) must register with the Office of Disability Services: Request for Disability Services.</p> <p>Accommodations for Religious Observances, Practices and Beliefs</p> <p>Title IX: Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sexual misconduct, including discrimination based on sex or gender, harassment, stalking, sexual assault, sexual exploitation, or intimate partner violence.</p> <p>If you or someone you know needs assistance, you may speak to any university employee; however, they have an obligation to report the incident to the Title IX Coordinator, who will keep that information private to the greatest extent possible. If you want to speak to someone permitted to keep your disclosure confidential, seek assistance from the Florida Polytechnic University Ombudsman, BayCare’s Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-412-2700 (24-hour hotline) or 863-412-2708 to schedule an appointment.</p> <p>If you or someone you know feels unsafe or may be in imminent danger, please call the Florida Polytechnic University Police Department 863-874-8472 or the local Police Department 911 immediately. For more information about policy, reporting options and resources at Florida Polytechnic University and the community, please visit the Title IX Website.</p>
<p>Topics to be covered</p>	<ul style="list-style-type: none"> • Introduction to feedback control systems • Root locus techniques • Design using root locus • Frequency response technics such as bode plot and Nyquist • Design of control systems using frequency response • Pole placement techniques • Design of control systems using state space • Observer design • Stability analysis of linear control systems using Lyapunov theory • Linear optimal control problem
<p>Expectations From Students</p>	<ul style="list-style-type: none"> • Read the complete syllabus and the deadlines. • Submit assignments in the CANVAS by the due dates (normally one week after posting date) to avoid any grade penalty.
<p>Tentative Dates and Schedule</p>	<ul style="list-style-type: none"> • Final Exam is scheduled on the final exam week and is announced by the university. • Other importance dates will be posted in the CANVAS. Students need to check the CANVAS at least twice a week.
<p>Exam policy</p>	<ul style="list-style-type: none"> • Make sure to complete the assigned homework in order to do well in the exam. • No discussion is permitted during the exams.

	<ul style="list-style-type: none"> • Instructor is not compelled to give credit for something he cannot read or follow logically. • Cheating is considered as a serious offense. Students who are caught will receive the appropriate consequences. 	
Class policy	<ul style="list-style-type: none"> • Attendance: Attendance in the course is mandatory and student is not allowed to miss any class during the semester. • Academic Misconduct: For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course. • Excused Absences: Only emergency medical situations or extenuating circumstances are excused with proper documentation. After reviewing documentation, you are required to email a description of the excuse and absence dates as a written record to asargolzaei@floridapoly.edu. • Students are encouraged to ask questions and to discuss course topics with the instructor and with each other. • Any work submitted should display ID number and should be signed, as the students' own work, and that no unauthorized help was obtained. • Cell phones, communicators, MP3 players, head sets are not allowed to be used in the class. • DO NOT send assignments by email. • Instructor reserves right to change course materials, date, and schedules as necessary. These changed will be announced in the classroom and/or CANVAS. 	
Expectations From The Faculty	<ul style="list-style-type: none"> • Assignment or Homework is always graded within 1 week of being turned in. • Exams are always graded and returned with 1 week of the examination date. • Response to any questions by e-mail or phone within 48 hours (expect Weekends, breaks, and holidays). 	
Special Notes and instructions:	<ul style="list-style-type: none"> • All assignments must be turned-in on time. Late home works will NOT be accepted. • All reports must the submitted in PDF files at the CANVAS site unless otherwise stated. No-high resolution images of assignments. • DO NOT send assignments by e-mails. The CANVAS drop box is the only place to submit your assignments • Students are expected to spend at least two hours completing “out of class student work” for each hour in class. All out of class work will be graded and will comprise the percentage of the final course grade. • Last not the least, when you e-mail to the instructor, you must mention the course number in your note. 	
Created by:	Dr. Arman Sargolzaei	08/17//2017
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Reviewed by:	Click here to enter text.	