Dynamics and Control System Design Laboratory
EML 4314C All Sections

Class Periods: Asynchronous Remote
Lab Periods: Vary according to section.
Lecture Location: Asynchronous Remote
Laboratory Location: NEB 114
Academic Term: Spring 2026

Instructors:

Shannon Ridgeway
scer@ufl.edu
Office Hours: Tu/W/Th during open lab times, NEB 114

Teaching Assistant/Supervised Teaching Student:

- Will be listed on Canvas
- The lab space will be staffed with teaching assistants for aid with hardware, software, and theory. Times are generally the posted lab sections.

Course Description
Experiments on dynamic systems in mechanical and aerospace engineering and design of relevant control systems.
Credits: 3

Course Pre-Requisites / Co-Requisites
EML 3301C, EML 4312

Course Objectives
This course provides a control system design experience. Students will learn how to apply control system theory and engineering laboratory fundamentals to model and characterize dynamic systems and synthesize single-input/single-output and multiple-input/multiple-output control systems using classical and state-space control methods. During the course, students will design and implement control systems for several mechanical systems. Upon completion of this course, students are expected to understand basic control system design theory, coupled with a strong foundation and appreciation for utilization of experimental techniques in characterizing and controlling mechanical systems. In addition, they will also develop/improve their communication skills to relay their ideas verbally (through group and TA interactions) and in written form (on lab reports).

Materials and Supply Fees
See course catalog/UF registrar

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
3. An ability to communicate effectively with a range of audiences	Medium
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Medium
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

- No texts are required for the course – reference material will be provided on the course web site on Canvas
- We will use Matlab and LabVIEW extensively. You can access Matlab through UF Apps, and we will provide a LabVIEW license key to you that is paid for through the course lab fee.

Recommended Materials

- There are many good control system books. For example, the books by Dorf and Bishop, by Ogata, or by Nise (any editions) are great references. Indeed, the book published by MAE Professor Prabir Barooah was created in support of our EML4313/EML4314c course sequence.

Required Computer:

This is discussed on both the department and college websites:

- *HWCOE Computer Requirements: https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/*
- *Additionally, the student's computer must support 32 bit labVIEW and a 32 bit dll associated with an FTDI USB-serial converter (D2XX). Windows on an X86 architecture generally meet these requirements. The most recent Apple (ARM architecture) can support via emulation on a virtual install of Windows but does not always support. Windows on Arm may meet the requirements, but class level support is not available.*

If you chose to attempt a computer that is not fully Windows and X86 compatible, TA's will generally help, but success is not guaranteed. Arm based windows computers are not supported, the student is responsible for driver install and function.

Course Schedule

The course schedule will be linked on the main page of the course web site on Canvas. Any changes to the dates/times/locations of course-related events will be posted on the main Canvas page for the course.

Attendance Policy, Class Expectations, and Make-Up Policy

- Lectures will be delivered asynchronously. It is the student's responsibility to keep up with lectures. There may be tracking Canvas quizzes that will cover lecture material, and these will count towards the HW/Quiz component of the course grade.
- Lab sections will be implemented in person / as TA office hours, as posted on Canvas. Attendance is not restricted (or required, except to pick up hardware during noticed times) but preference/priority will be given to students registered in that lab section.

Late Report Policy

- If you do not submit your lab report assignment when it is due, you can still submit it via Canvas for two more days. Unless you have prior written (email is fine) permission to submit a late assignment, the penalties for late submission will be as follows:
    - Late submissions within one hour of the deadline: 3% of your earned grade.
    - Late submissions past one hour but within 24 hours of the deadline: 15% of your earned grade.
    - Late submissions past 24 hours but within 48 hours of the deadline: 50% of your earned grade.
    - Past 48 hours, your assignment will not be graded.

- It is the student's responsibility to honor and respect the given deadlines and meeting times. If you have a scheduled professional activity (e.g., a conference) which conflicts with an important course date, please communicate with the instructor as early in the semester as possible to schedule some accommodation. Note that most assignments have very long lead times, and it is expected that the student will take planned commitments into account to allow them to meet deadlines.

Excused absences

• Excused absences must be consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies#absencestext) and require appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homeworks, quizzes and lab milestones	Varies by assignment	30%
Lab Reports (3)	100 each	50% (16 2/3 % x3)
Final Project Report	100	20%
		100%

Grading Policy

(Minimum percentage required with no rounding up. E.g., 89.79999 = B+)

Percent	Grade	Grade Points
89.8 - 100	A	4.00
87 - 89.8	B+	3.33
79.8 - 87	B	3.00
77 - 79.8	C+	2.33
69.8 - 77	C	2.00
67 - 69.8	D+	1.33
59.8 - 67	D	1.00
0 - 59.8	E	0.00

Academic Policies & Resources

See https://go.ufl.edu/syllabuspolicies for university wide academic resources and campus resources. Some specifics follow.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Conduct Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Plagiarism in lab reports: It is required that students generate the reports they submit. If significant content is found to be generated by other than the student, it will not be considered in the assessment process.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted, please contact your instructor or any of the following:

- Your academic advisor or Undergraduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu