

Dynamics and Control System Design Laboratory
EML 4314C All Sections

Lecture Class Periods: Synchronous Monday/Wednesday, 2nd period, 8:30-9:20am

Lab Demonstrations: Some Asynchronous, Scheduled on Canvas

Laboratory Class Periods: Tu/W/Th according to your assigned section

Lab Location: ZOOM

Academic Term: Fall 2020

It may become necessary to modify this syllabus during the semester.

In this event, students will be notified, and the revised syllabus will be posted on the course web site.

Students are also responsible for all announcements made in class, Canvas, or sent to their @ufl.edu email.

Instructors:

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Teaching Assistants:

Please contact through the Canvas website

Office Hours: TBD

Course Description

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

Course Pre-Requisites (Strictly Enforced)

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.

Professional Component (ABET):

This course prepares graduates to have a knowledge of control system design, system identification, and to have design competence that integrates mechanical, electronic, and computer systems.

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 significantly addressed by this course.

Required Textbooks and Software

- The required textbook for this course is “An Introduction to Feedback Control”, by Prabir Barooah. An electronic form of the textbook will be provided to you free of cost. The textbook and other reference material will be provided on the course web site on Canvas. Note that you will be expected to be able to utilize all the knowledge you are expected to have gained in the prerequisite courses.
- 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.

Additional 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. One of these books, or appropriate internet resources, may facilitate better performance in this course.

Course Schedule

- We will proceed through the course in a systematic manner at a pace adaptive to the needs of the class.

Remote Lectures

- The synchronous class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live.
 - Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image.
 - Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using

the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared.

- As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Attendance Policy, Class Expectations, and Make-Up Policy

- Lectures will be delivered synchronously. It is the student's responsibility to keep up with lectures and deadlines will not be extended due to a failure to do so.
- Some lab demonstration will be synchronously presented with recording.
- Lab sections will be implemented as TA office hours, scheduled at the beginning of each scheduled lab section. Attendance is not restricted but preference will be given to students registered in that lab section.

Canvas

- The course web site, accessible through Canvas (elearning.ufl.edu) via your Gatorlink login, will be the primary point of contact and support for the students. Course announcements, class discussions, laboratory assignments, and grades will be posted on the course website or sent by email to your @ufl.edu address. You are expected to routinely monitor both.
- Laboratory assignments will be posted on the Canvas course website before the laboratory class dealing with that material (new labs will begin on Tuesday, so new lab assignments typically will be posted the preceding Thursday).
- Assignments will be submitted for grading via the course website and will be due according to the date shown on the course website. Assignment format will be covered in class and an example will be provided (*You will be expected to use the IEEE format you learned in EML3301C*).

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.
- There will be NO scheduled make-up laboratories. 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.

Excused absences

- Excused absences must be consistent with university policies in the undergraduate catalog
- (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

In Person Participation

It is possible and desirable to complete the course completely remotely. There are several instances where brief in person interaction could be useful, but it is not required. Two possible situations are notable: lab kit pickup at the beginning of the semester, and in lab debugging of failed hardware. The first situation is available for students who are local to the campus and desire picking up their lab kits as opposed to utilizing package delivery. The second situation is for students with faulty lab kit components and again is available for local issues. The following policy is to be followed for in-person face to face participation:

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has a lab space (NSC 316) with enough capacity to maintain physical distancing (6 feet between individuals) requirements withing the capacity listed on the door (6 persons). Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor’s guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms](#).
 1. Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. [Find more information in the university attendance policies](#).

Evaluation

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework and quizzes	Varies By Assignment	20%
Lab Reports (3)	100 each	36%
Exam (2)	100 each	24%
Final Project Report	100	20%
		100%

Grading Policy

(Minimum percentage required with no rounding up. E.g., 89.99999 = B+)

Percent	Grade	Grade Points
93	A	4.00
90	A-	3.67
87	B+	3.33
83	B	3.00
80	B-	2.67
77	C+	2.33
73	C	2.00
70	C-	1.67
67	D+	1.33
63	D	1.00
60	D-	0.67
<60	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter to present to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

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 Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. A violation of the honor code will result in academic sanctions (typically a failing grade assigned for the course) and further disciplinary action. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use and Copyrighted Material

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use and the use of copyrighted material. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or

<http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

<https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.

Course Schedule:

Canvas will be maintained. It is the student's responsibility to be aware of assignments and due dates.