Dynamics and Control System Design Laboratory
EML 4314C All Sections

Class Periods: Monday/Wednesday, 2nd period, 8:30am-9:20am
Lab Periods: Vary according to section.
Lecture Location: Weil 270
Laboratory Location: NSC 320
Academic Term: Fall 2022

Instructors:
Scott A. Banks
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352-392-6109
Office Hours: Monday/Wednesday, 12:15pm – 1:30pm, Wertheim 481 & Zoom

Shannon Ridgeway
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Office Hours: Tu/W/Th during open lab times, NSC 320

Teaching Assistant/Supervised Teaching Student:
- TBD

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.

Course Schedule
The entire course schedule is posted 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 in person in a HyFlex format, meaning that students have the option of joining the lecture via Zoom without being physically present in the classroom. Each lecture will be recorded and the video will be made available to all students after the lecture (with some delay due to the time Zoom takes to make the cloud recording available, but is rarely more than a day). It is the student's responsibility to keep up with lectures, either by attending synchronously in person or remotely, or by watching the lecture videos asynchronously but without much delay.
- When you are in the lecture room, you are expected to wear approved face covering as recommended by the University of Florida (see https://coronavirus.ufl.edu/university-updates/august-6-campus-brief-.html). See also the "Health and Wellness" section at the end.
- You are required to wear a mask at all times when you are in the lab as part of your personal protective equipment (PPE). Your PPE also includes safety glasses.
- Some lab demonstrations will be synchronously presented with recording.
- Lab sections will be implemented in person / as TA office hours, as posted on Canvas. Attendance is not restricted 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.

- 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.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homeworks, quizzes and pre-labs	Varies by assignment	10%
Lab Reports (3)	100 each	45% (15% x3)
Midterm Exams (2)	100 each	25% (12.5% x2)
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

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 who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, 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/.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in

connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. 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: https://registrar.ufl.edu/ferpa.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: https://counseling.ufl.edu, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

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/.

COVID-19
- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Academic Resources

E-learning technical suppor*t*, 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://career.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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/;https://care.dso.ufl.edu.

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