

**Dynamics and Control System Design Laboratory**  
**EML 4314C All Sections**

*Lecture Class Periods: Tuesday/Thursday, 3th period, 9:35-10:25 am*

*Lecture Location: Weil 270*

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

*Lab Location: NSC 320*

*Academic Term: Spring 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 or sent to their @ufl.edu email.

***Instructors:***

John K. Schueller

schuejk@ufl.edu (do NOT contact through Canvas)

Office Hours: 12:30-1:30 TTh MAE-B 322

Shannon Ridgeway

scer@ufl.edu

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

***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):**

<b>Outcome</b>	<b>Coverage*</b>
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**

- No textbooks are required for the course – 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. Since attendance is mandatory, you will always be informed of what the next tasks are.

**Attendance Policy, Class Expectations, and Make-Up Policy**

Class attendance is required. In-class quizzes will be given routinely and will comprise roughly 10% of the final grade. There will be no makeups for in-class quizzes. If you have a documented illness or planned travel, then the instructor will evaluate potentially waiving the quiz on a case-by-case basis.

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*).

If you do not submit your 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 must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

## ***Evaluation***

### ***Evaluation of Grades***

<b>Assignment</b>	<b>Total Points</b>	<b>Percentage of Final Grade</b>
Homework and in-class quizzes	Varies By Assignment	10%
Lab Reports (4)	100 each	40%
Midterm Exams (2)	100 each	30%
Final Project Report	100	20%
		100%

### ***Grading Policy***

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

<b>Percent</b>	<b>Grade</b>	<b>Grade Points</b>
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](mailto: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](mailto: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](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

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