

Course Structure

Class Schedule

Date			Lecture	Text Chapters
Mon	Aug	31	Introduction, Complex number review	1, App. A
Wed	Sep	2	Sinusoids, Complex Sinusoids	2
Fri	Sep	4	Sums of Sinusoids 1	2
Wed	Sep	9	Sums of Sinusoids 2, Fourier Series 1	3
Fri	Sep	11	Fourier Series 2	3
Mon	Sep	14	Sampling Sinusoids 1	4
Wed	Sep	16	Sampling Sinusoids 2	4
Fri	Sep	18	Interpolation	4
Mon	Sep	21	Discrete-Time Systems	5
Wed	Sep	23	FIR Filters	5
Fri	Sep	25	Convolution	5
Mon	Sep	28	LTI Systems 1	5
Wed	Sep	30	LTI Systems 2	5
Fri	Oct	2	Frequency Response 1	6
Mon	Oct	5	Frequency Response 2	6
Wed	Oct	7	Frequency Response 3	6
Fri	Oct	9	Transient Response	6
Mon	Oct	12	Review	-
Wed	Oct	14	Midterm Part 1	-
Fri	Oct	16	Midterm Part 2	-
Mon	Oct	19	Discrete-Time Fourier Transform 1	7
Wed	Oct	21	Discrete-Time Fourier Transform 2	7
Fri	Oct	23	Z-Transform 1	9
Mon	Oct	26	Z-Transform 2	9
Wed	Oct	28	Poles and Zeros 1	9
Fri	Oct	30	Poles and Zeros 2	9
Mon	Nov	2	IIR Filters 1	10
Wed	Nov	4	IIR Filters 2	10
Fri	Nov	6	IIR Filters 3	10
Mon	Nov	9	Inverse Z-Transform 1	10
Wed	Nov	11	Inverse Z-Transform 2	10
Fri	Nov	13	Analysis in Three Domains	10
Mon	Nov	16	Discrete Fourier Series 1	8
Wed	Nov	18	Discrete Fourier Series 2	8
Fri	Nov	20	Discrete Fourier Transform 1	8
Mon	Nov	23	Discrete Fourier Transform 2	8
Mon	Nov	30	Fast Fourier Transform 1	8
Wed	Dec	2	Fast Fourier Transform 2 & 2.5	8
Fri	Dec	4	Review	--
Mon	Dec	7	Final Exam Part 1	--
Wed	Dec	9	Final Exam Part 2	--

Attendance & Participation:

This class is taught semi-synchronously:

1. Lecture videos, readings, and tutorials will be posted on Canvas before classes. It is MANDATORY that you watch them before the designated class period (see table above). You WILL be quizzed and tested on this material.
2. Synchronous lectures will be given during regular class periods (three 50-min sessions per week: MWF period 7) via Zoom. These in-class lectures will focus on presenting examples to supplement the video lectures in 1.

Students will also have the opportunities to ask questions about class materials in the synchronous lectures. Attendance (online via Zoom) is MANDATORY and may be graded.

3. Synchronous recitation/lab sessions will be held via Zoom (2 hours per week: meeting time depends on the section for which you sign up). In these sessions, you are expected to work on book and MATLAB lab exercises in small groups with guidance of an instructor or a TA. Attendance (online via Zoom) is MANDATORY and may be graded.

Slack Page:

We have a Slack page for the course. This is an *optional* resource for students to discuss the course amongst each other and occasionally with the instructor and TAs. This resource is intended to supplement office hours and student interactions. It also serves as an additional communication medium in class. **No official communications / submissions happen over Slack. No assignment submissions will be accepted over Slack.**

Evaluation Methods and Criteria

The following section discusses the policies for each of the graded assessments in this course. You should look here first for answers to any general, course-related inquiries. **TIP:** Pay attention to the workflow: There will be one weekly big quiz and one weekly little quiz, except the midterm and final weeks. Classwork will be due right after each class period, and lab reports will generally be due every week. **DO NOT FALL BEHIND.**

Classwork (~12 in total)

When: Assigned every recitation session.

What: Analytical problems that can be solved by hand.

Why: Classwork is intended to guide you through material and present you with questions that will require time to think and complete. Classwork exercises are meant to be done with your peers and with the instructor's or TAs' help.

Grading: Classwork is graded on a scale of (0) no completion or (1) full completion.

Late policy: Late assignments will not be eligible for any points.

Submission: The TA/instructor responsible for each recitation session may assign your classwork grade based on your attendance of the session and/or your work during the session.

Little Quizzes (~12 in total)

When: Occur roughly once every week (except for the midterm and final weeks). The quiz will take roughly 5 minutes.

What: The quizzes are low stack questions about lecture videos.

Why: These quizzes are to ensure that you watched the lectures for the current week, and to collect feedback from you.

Grading: Little quizzes are graded based on completion

Submission: Complete directly on Canvas before 11:59pm every Friday.

Big Quizzes (~10 in total)

When: Occur roughly once every Monday (except for the first, midterm and final weeks). The quiz will take roughly 15 minutes.

What: Three or four short analytical problems similar to examples presented in class and in the recitation session the week before.

Why: These quizzes are intended (1) to help you, the TAs, and the instructor assess your current understanding of material and (2) to broaden the course's grading and lower the stakes of each exam.

Grading: Big quizzes are graded on a 25-point scale.

Re-grades: You may submit a regrade request no later than **one week** after the respective quiz grade has been unmuted. No additional regrades will be accepted. **E-mail or speak in class to the TA who graded your quiz to receive a regrade.** You can appeal the regrades decision by going to the instructor, but only after you have spoken to the TA.

Make-up Policy: If you need to make-up a quiz due to university events, family, or anything major, you must provide documentation to a **course instructor one week** before the due date unless it is something unpredictable, such as a death in the family. If approved, the instructor will forward you to a TA for

scheduling. You will have **one week** after the quiz to make it up. Failure to provide proof or not asking for a make-up quiz on time will require the quiz to be taken at the scheduled time.

MATLAB Labs (~10 in total)

When: There are 10 labs over the course of the semester.

What: Each lab consists of MATLAB design exercises in two parts. You are expected to complete parts 1 and 2 of each lab.

Why: In each lab, we apply signals and systems theory to a particular application. This gives you a better understanding about how signals and systems theory is applied in practice using MATLAB.

Reports: After each lab, you are required to submit short reports via Canvas. These reports demonstrate your understanding of the material and should be self-sufficient (i.e., the report should be self-explanatory).

Reports are due 11:59pm every Monday after the week of the lab assignment. In each report, you will be asked to submit your MATLAB code. **Always submit your complete code for each lab assignment, even if it's just one line.** Penalties will be marked off accordingly. **Commenting on code is very important for other classes and in the workforce.** You will receive a penalty for not commenting your code. **Reports will be submitted as PDFs,** using the “publish” function in MATLAB. This will display all of your code and all of your outputs together. If you write a 40-line script, then change one line as an objective later, show both full scripts in your submission. **Do not screenshot your code and make sure to submit all code used in the lab (the MATLAB ‘type’ function is super helpful).**

Late policy: Your late assignments have at maximum of **3 days** before receiving a 0. Every day late receives a 10% late penalty on the maximum possible value. For example, if the assignment is out of 100 points and is due 11:59pm Oct 2, turning it in at 12:00am Oct 3 will result in a maximum of 90 points on the assignment.

Extension Policy: If you need an extension on an assignment due to university events, family, or anything major, you must provide documentation to the TA grading your lab **one week** before the due date unless it is something unpredictable, such as a death in the family. Failure to provide proof or not asking for an extension on time will require the assignment to be submitted on-time.

Re-grades: You may submit a regrade request no later than **one week** after the respective lab grade has been unmuted. No additional regrades will be accepted. **The re-grade be new PDF with comments that start with the word “RE-GRADE.”** These comments should state what you want points and why. Submit the new document in the same manner you submitted the assignment. **DO NOT EMAIL OR MESSAGE** asking for a regrade. If you still don't like the regrade from a TA, you can go to the instructor and ask for an appeal to the regrade, but please go through your lab TA first.

Mid-term Exam & Final Exam (1 midterm and 1 final in total)

When: The midterm is half-way thru the course on **October 14 & 16, 2020.** The final is at the end of the course on **December 7 & 9, 2020.**

What: Analytical problems that can be solved by hand. Similar to the classwork and big quizzes, but may require a deeper understanding of the material.

Why: Exams are an opportunity to show what you know about signals and systems.

Grading: Each exam is graded on a 100-point scale.

Make-up Exams: There are no make-up exams, but the final exam may be used in place of the midterm exam. \

Evaluation of Grades

Assignment	Percentage of Final Grade
Classwork	5%
Graded Labs	30%
Midterm Exam	20%
Final Exam	20%
Little Quizzes	5%
Big Quizzes	20%
	100%

Grading: If the final exam score is greater than the midterm score, then the midterm will be dropped and the final will count for 40% of the grade.

Grading Policy

Percent	Grade	Grade Points
93.3 - 100.0	A	4.00
90.0 - 93.3	A-	3.67
86.6 - 90.0	B+	3.33
83.3 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.6 - 80.0	C+	2.33
73.3 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.6 - 70.0	D+	1.33
63.3 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
00.0 - 60.0	E	0.00

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

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

Note that the table is given as a guideline from the university. The grade thresholds may be adjusted according to the class average.

Accreditation Information

Relation to Program Outcomes (ABET):

Outcome	Coverage
Outcome 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Students are assessed using: <ul style="list-style-type: none"> - Focused exam questions on <ul style="list-style-type: none"> o their ability to solve differential equations o using engineering techniques o their ability to work with complex numbers and exponentials. - Exam questions target the use of <ul style="list-style-type: none"> o impulse responses, frequency response, DTFT, and z-transform methods. - Using a MATLAB programming, the students are required to <ul style="list-style-type: none"> o apply filtering concepts to design a piano octave detection system to meet specifications.
Outcome 6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Students are assessed using: <ul style="list-style-type: none"> - A MATLAB assessment where <ul style="list-style-type: none"> o Students are provided EKG signals (actual data) of a number of patients from a public database. The students are required to break each EKG signal down into overlapping windows and apply FFT on each window. o From the FFT results, the students then generate a time trajectory of the heart rate of a patient. o As the EKG signals are noisy and could occasionally be distorted, the students are required to design algorithms that carefully interpret the FFT results to rid out readings that are not physically reasonable.

Course & University Policies

Modifying Syllabus by Class Vote

When: If you and/or other students believe the course would be improved by a change in the syllabus and I agree that it would be a reasonable change. **What:** The proposed change will be put to an anonymous vote with the entire class. If the majority of the class agrees to this change, it becomes part of the syllabus. **Why:** Changes to the syllabus may be necessary do to unforeseen situations. The class vote ensures the entire class agrees with the change.

Collaboration

Healthy collaboration: To solve homework assignments, healthy discussion and collaboration amongst classmates is encouraged. Healthy collaboration includes:

- Discussing and explaining general course material
- Discussing assignments for better understanding
- Providing assistance for general programming and debugging issues

If another student contributes substantially to your understanding of a problem, you should *cite* this student to let myself and the teaching assistants be aware of your similar interpretations of a problem. You will not be judged negatively for citing another student.

Cheating and plagiarism: While collaboration is encouraged, you are expected to *submit your own work*. Submitting work completed by another student is considered plagiarism and will be dealt with according to university policy. In general, if you do not fully understand your solution, the work is not your own. Examples of plagiarism or cheating include:

- Copying (or allowing someone to copy), even partially, an assignment solution or program from the course
- Submitting material, particularly code, using material taken from another source without proper a citation
- Obtaining solutions to assignments or exams through inappropriate means

Note that I may elect to use a plagiarism detection service in this course, in which case you will be required to submit your work to such a service as part of your assignment.

Consequences: If you are suspected of dishonest academic activity, I will invite you to discuss it further in private. Academic dishonesty will likely result in a grade reduction, with severity depending on the nature of the dishonest activity. I am obligated to report on academic misconduct with a letter to the department, college, and/or university leadership. Repeat offences will be treated with significantly greater severity.

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 which must be presented 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 feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/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. You are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions, please consult with the instructors or TAs.

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

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
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.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@ufl.edu

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

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

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>.