

ECE 3230: Signals Lab

Class Meetings

Practicum Schedule: F, 12:40pm-2:40pm

Place: In person: Dougherty Hall EASTL, online: Zoom

Instructor

Name: Meltem Izzetoglu, PhD

Office Location: Tolentine 429A

Phone number: 610-519-4982

Email: meltem.izzetoglu@villanova.edu

Office Hours

Instructor: T, 2:00 - 4:00 pm online or by appointment for further online or in person meeting.

Specific Course Information

- a. Catalog Description: Use of MATLAB on filtering, channel equalization, music synthesis and spectrum analysis. Two-hour practicum per week.
- b. Prerequisites: Undergraduate level ECE 2409 Minimum Grade of D- and Undergraduate level MAT 2705 Minimum Grade of D- and ECE 3225 Concurrency: Yes or ECE 3245 Concurrency: Yes

Course Objectives

This practicum/lab course will help students to gain hands on experience on theoretical signal processing concepts using various types of simulated and real world engineering data, to get proficient on programming in Matlab on topics related with continuous and discrete time signal and system analysis and to study data interpretation and report preparation.

Student Outcomes						
1	2	3	4	5	6	7
X		X			X	

Course Materials

Course Reference Texts (Recommended but not required):

- Course Notes in ECE 3225 Signal Processing
- Course Notes by Dr. Kevin Buckley – Available on the course Web page

List of Covered Topics and Schedule

Practicums are on Fridays, 12:40pm-2:40pm. There will not be any exams on the Practicums. However, after each practicum Sign off Sheets will be checked and all the materials for the report of each Practicum will be due in one week after each Practicum is finalized.

Tentative Schedule of Practicums:

Week	Lecture Content
1	Lab Introductions
2	Introduction to Continuous and Discrete Time Signals & Operations
3-4	Sampling, Aliasing, Decimation, Interpolation
5-6	Introduction to Discrete Time Signals & Systems
7-8	Convolution
9-10	Synthesis of Audio Signals
11-12	Continuous Time Fourier Series (CTFS)
13-14	Spectrum Analysis - CTFT and DTFT

Grading Policy

Your final grade will be determined from the following:

- Practicum Reports/Sign off Sheets (95%)
- Attendance and professionalism (5%)

Reporting Requirements: At the beginning of each practicum session it will be announced whether the practicum reporting requirement will be: 1) a full practicum report; or 2) submission of a practicum Sign Off Sheet & Report Form only. Either way, the Sign Off Sheet & Report Form, which will appear at the back of each Practicum Section, should be submitted.

The full report, if required, should be headed with your name, the course name, and the practicum number and title. The first section should be titled **Objectives and Conclusions** and should describe your understanding of objectives and conclusions. Nominally, this section should contain two or three paragraphs. The second section should be titled **Results and Comments** and should be organized in the same way that the procedures in the practicum are organized. Provide all derivations, comments, answers, plots and comparisons requested. Each plot should have a title, x,y coordinate labels, and your name printed on the plot using Matlab (e.g. using the "text" command). Include printouts of all Matlab .m files used (i.e. to compute values and generate plots). As a heading for each program printout, include a comment line with your name on it. The Sign Off Sheet & Report Form should be attached as the last page of the full report or from the material found Online. It should reflect your understanding of the material. Homework problems or practicum reports which are turned in and found to be verbatim copies of each other will be given zero credit, regardless of which is the original work. All work on a quiz/exam is to be entirely on your own.

The scale used to assign letter grades is:

Numerical Grade	Letter Grade	Numerical Grade	Letter Grade
A	94 to 100	C	73 to 76
A-	90 to 93	C-	70 to 72
B+	87 to 89	D+	67 to 69
B	83 to 86	D	63 to 66
B-	80 to 82	D-	60 to 62
C+	77 to 79	F	Less than 60

Inclusive Classroom

We consider this classroom to be a place where you will be treated with respect; and, we welcome individuals of all ages, backgrounds, beliefs, ethnicities, gender, gender identities and expressions, sexual orientation, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

Attendance

Attendance is not mandatory for the in-class lab sessions in general due to COVID related issues (please see below). However, it is strongly recommended since lab instructions and help will be provided in in-class sessions which will be recorded for further online viewing.

Where possible, students should inform their instructors if they plan to be late or absent from class. In all cases, students should be prepared to provide documentation to petition for *excused* absences to the Associate Dean for Student and Strategic Programs, Dr. Stephen Jones. Students should use the [form for requesting an excused absence](#). Excused absences do not count toward a failure in the course for first year students. Absence from class does not release the student from work assigned. Students who miss an in-class obligation (exam, presentation, etc.) due to an excused absence will not be penalized - the instructor may offer a make-up test, arrange an alternative time for a presentation, exempt a student from the assignment, or provide another arrangement. In the case of illness or injury, the form must be submitted within 24 hours of missing class.

The University's list of excused absences for all students includes the following:

- participation in NCAA athletic competitions
- participation in special academic events (e.g., conferences, field trips, project competitions)
- participation in official university business (e.g., student representatives attending meetings related to university governance)
- attendance at significant events involving the immediate family (e.g., funerals, weddings)
- religious holidays - see the University's policy on Religious Holidays
- college-approved participation in placement activities (e.g., job interviews, graduate school interviews, attending job fairs)
- legally required absence (jury duty, court appearance, short-term military service)
- documented serious illness, such as COVID, or disability

Academic Integrity

The College of Engineering is committed to creating an environment of academic integrity and ethical decision-making that we hope is reflected in the actions of our students and graduates. As Villanova students, integrity is central to the University mission. As engineers, our code of conduct requires us to place honor and integrity at the forefront of everything we do. As engineering students, it is expected that you will begin

to adopt these values and instill them into your work habits. Students violating the academic integrity policy will receive a zero on that assignment or exam and the violation will be reported to the Associate Dean for Academic Affairs.

Students are encouraged to read the [University's academic integrity policy](#).

The College of Engineering has adopted the following exam guidelines:

- Students must arrive before the start of the exam. Under exceptional circumstances a student may need to arrive late, but he/she can enter the exam no later than 5 minutes after the start of the exam.
- All cell phones must be turned off and stored away until the student exits the exam room.
- The official Villanova class attendance policy must be followed when requesting excuses for absences or lateness to an exam.
- Each student must write and sign the following statement, "*I have neither given nor received any unauthorized assistance in the completion of this exam.*" If taking an exam remotely, students still need to copy and sign this statement (even if signed for electronically).
- In the case of virtual exams, the instructor may implement video proctoring or other measures to ensure academic integrity. For consent purposes, the instructor will announce ahead of time to students if they plan to use any form of video proctoring during an assessment and whether a recording will take place.

Adherence to the Student Code of Conduct and the CARITAS Commitment

Students are expected to act in a professional and respectful manner to their fellow students, faculty, and staff. Students should become acquainted with and understand the responsibilities set forth in the Student

Handbook, especially those in the sections on Policy and Regulations. Adherence to University regulations is expected and required for successful completion of the program of studies. Enforcement within the classroom of policies regarding classroom behavior is the responsibility of the faculty member. All other discipline problems are to be referred to the Dean of Students.

Students, faculty, and staff are expected to comply with the [CARITAS Commitment](#). Students must wear masks, practice social distancing and good hygiene, wipe down their work area upon arrival and departure, and request an excused absence if they are not feeling well.

Online Expectations

To foster a professional environment, please wear appropriate clothes, mute if you are not talking to cut down on background noise, refrain from eating, and select an appropriate setting when we are meeting online.

Students with Disabilities

It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability please contact me after class or during office hours to make arrangements.

If you have a non-physical disability you need to register with the Learning Support Office by contacting 610-519-5176 or at learning.support.services@villanova.edu as soon as possible. Registration is needed to receive accommodations.

The Office of Disability Services collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The ODS provides Villanova University students with physical disabilities the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations, please contact and register with Gregory Hannah, advisor to students with disabilities @ 610-519-3209 or visit the office on the second floor of the Connelly Center.

Electronics Policy

In class and online portions of this class may be recorded so that students that are absent may view the content later.

The use of electronic devices, such as phones, tablets, etc., during class is prohibited.

Students are prohibited from making any audio or visual recordings (including taking photographs) of lectures, discussions, or other classroom activities, unless a student (1) has written permission in advance from the instructor, or (2) is permitted to record under terms and conditions as approved by the University's Office of Disability Services or Learning Support Services. Students who have received approval to record classes as an academic accommodation must provide supporting documentation from the Office of Disability Services or Learning Support Services in advance of any recording. Students may use authorized recordings only for the purposes of individual study in the course and may not disseminate or share them with a wider audience without explicit permission.

Copyright Policy

The materials used in Villanova University courses ("Course Materials") generally represent the intellectual property of course instructors, third parties and/or the University which may not be disseminated or reproduced in any form for public distribution (e.g., sale, exchange, etc.) without the written permission of the course instructor. Course Materials include all written or electronic documents and materials, including syllabi, current and past examination questions/answers, and presentations such as lectures, videos, PowerPoints, etc., provided by a course instructor. Course Materials may only be used by students enrolled in the course for academic (course-related) purposes.

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Professorial Duties

Please note that teaching is one of the many duties that professors perform as part of their job responsibilities. In addition to teaching, professors perform research, advise graduate students, edit journals and review journal articles, serve on committees for the university and professional societies, travel to conferences to remain abreast of current developments and to present their results...