

## COURSE SYLLABUS

---

### 1 ECE 3230 - Signals Lab

### 2 Meeting Information

1 credit, 2 contact hours One 100-minutes lab per week

a. **Section 001:**

Lab: Date/Time: Tuesdays from 09:00 am to 10:40 am, Room: Tol. 316,

### 3 Course Instructor(s), TA(s)

a. **Section 001:**

Lab Instructor: [Meltem Izzetoglu, PhD. Email: mizzetog@villanova.edu](mailto:mizzetog@villanova.edu)

Office Hours: Tolentine 429A, Tue: 11:00am-12:00noon, Wed: 11:30 am -12:30 pm, or by appt.

TA(s):

[Stephen Slovensky, Email: sslovens@villanova.edu](mailto:sslovens@villanova.edu)

Office Hours: Tolentine 416B, Thu: 3:00-5:00pm, or by appt.

### 4 Textbook

This course does not have a prescribed textbook

- a. **Other Supplemental Materials:** Recommended but not required: a. Course Notes in ECE 3245 Discrete Time Signals & System b. Supplementary Notes - Available on the course Web page

### 5 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:** ECE 2409 and MAT 2705 and ECE 3225 Concurrency: Yes or ECE 3245 Concurrency: Yes; **Co-requisites:** None

- c. Required for BS EE

### 6 Course-specific Goals

- a. 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 signal and system analysis in time and frequency domains and to study data interpretation and report preparation.

b.

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

The above student outcomes are defined by the Accreditation Board for Engineering and Technology (ABET) as:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
3. an ability to communicate effectively with a range of audiences
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

## 7 List of Covered Topics

1. Continuous and discrete time signals
2. Operations on signals – dependent and independent variable
3. Sampling and aliasing
4. Convolution operation
5. Frequency content - Synthesis
6. Frequency content - Analysis
7. Systems operations and analysis, difference equation, modulation and filtering

## 8 Tentative Schedule

Tentative schedules for all sections follow. Be sure to refer to the schedule for your specific section, if more than one is provided.

### Tentative Schedule for **All Sections**

Week or Date	Content
1	Course Introductions & Matlab Overview
2	Practicum 1: Intro. to Signals & Operations on Signals
3-4	Practicum 2: Sampling, Aliasing, Decimation, Interpolation
5-6	Practicum 3: Synthesis of Audio Signals
7-8	Practicum 4: Convolution
9-10	Practicum 5: Continuous Time Fourier Series (CTFS)
11-12	Practicum 6: Spectrum Analysis - CTFS and DTFT
13-14	Practicum 7: Discrete Time Systems & Applications

## 9 Grading Policy

Final grade will be determined from the following:

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

Letter grade scale: A(93–100), A–(90–92), B+(87–89), B(83–86), B–(80–82), C+(77–79), C(73–76), C–(70–72), D+(67–69), D(63–66), D–(60–62), F(<60)

## 10 HW Assignment and Laboratory Report Submission Policy

**General Instructions:** For each practicum, student’s codes and outcomes will be checked and appropriate parts on the Sign-off Sheets (which will be provided at the end of each Practicum document) will be signed by the instructor (or the TA). The report of each Practicum will be due in one week after each Practicum is finalized. The reports should be submitted online via Blackboard as one file (docx or pdf). All Matlab .m files should also be submitted online via blackboard.

**Penalties:** Every late day after the submission due date, 5 points will be cut from the report grade out of 100. 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.

**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) a short report format. Either way, the signed Sign-Off Sheet, should be submitted.

The Short Report (if required): should contain the Sign-Off Sheet signed by the instructor (or the TA), derivations, comments and answers to questions provided in the Practicum document and interpretations of the outcomes, and plots of the results with appropriate labels on the x and y coordinates.

The Full Report (if required): should be headed with the student’s name, the course name, and the practicum number and title. The first section should be titled “Objectives and Conclusions” and should describe the student’s 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. The student should provide all derivations, comments, answers, plots and comparisons requested reflecting the student’s understanding of the material. Each plot should have a title, x,y coordinate labels, and the name printed on the plot using Matlab (e.g. using the “text” command). The Sign Off Sheet should be attached as the last page of the full report.

## 11 Attendance Policy

Attendance is mandatory. Lab instructions and help will be provided in class sessions.

Whenever possible, students should inform the instructor if they plan to be late or absent from class. In all cases, documentation is required to petition for *excused* absences to the Associate Dean for Student and Strategic Programs, Dr. Stephen Jones. The excused absence form is posted at: <https://www1.villanova.edu/villanova/engineering/resources/undergraduates.html>.

Excused absences do not count towards a failure in the course for first year students. Absence from class does not release the student from assigned work. Students who miss an in-class obligation such as an exam, a 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 a class. The University’s list of excused absences for all students includes the following:

1. Participation in NCAA athletic competitions
2. Participation in special academic events such as: conferences, field trips, project competitions, etc., and in official university business such as student representatives attending meetings related to university governance

3. Attendance at significant events of the immediate family such as: funerals, weddings, etc.
4. Religious holidays - see the University's policy on Religious Holidays
5. College-approved participation in placement activities such as: job interviews, graduate school interviews, job fairs
6. Legally required absence such as: jury duty, court appearance, short-term military service
7. Documented serious illness or disability

## 12 Examination Policy

The College of Engineering has adopted the following general examination guidelines:

1. Students must arrive before the start of the examination. Under exceptional circumstances a student may need to arrive late, but he/she can enter the examination room no later than five (5) minutes after the start of the exam.
2. Cell phones must be turned off until the student exits the examination room.
3. The official Villanova class attendance policy must be followed when requesting excuses for absences or lateness to an examination.
4. Each student must write and sign the following statement, "I have neither given nor received any unauthorized assistance in the completion of this examination."
5. For online examinations, the instructor may implement video proctoring or other measures to ensure academic integrity. For consent purposes, the instructor will inform students in advance if (s)he plans to use any form of video-proctoring and whether the examination will be recorded.

## 13 Academic Integrity Policy

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. The University's academic integrity policy can be found on the following web page:

<https://www1.villanova.edu/villanova/provost/resources/student/policies/integrity.html>.

## 14 Adherence to the Student Code of Conduct

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.

## 15 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.

## 16 Inclusive Classroom

This classroom is a place where you will be treated with respect; 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 to allow all among us to learn and flourish.

## 17 Students with Disabilities

It is the policy of the university to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability (non-physical) please register with the office of Learning Support Services (LSS) by emailing [Learning.support.services@villanova.edu](mailto:Learning.support.services@villanova.edu) or by phoning 610-519-5176 as soon as possible. Registration is *required* in order to receive accommodations.

The Office of Disability Services (ODS) 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 at 610-519-3209 or visit the office on the second floor of the Connelly Center.

## 18 Tutoring Services

Villanova's tutoring services include The Writing Center, The Learner's Studio, and The Center for Speaking and Presentation. These services are offered free of charge to students. Drop in as-needed or book a regular weekly session to supercharge your academic success. Sessions can be 30 or 60 minutes in length.

Register for an account and book sessions in advance at [villanova.mywconline.com](http://villanova.mywconline.com). If you don't see your class listed, request a tutor for a missing subject at: [tutorrequest.villanova.edu](http://tutorrequest.villanova.edu) For more information, contact Juliana Struder at [juliana.studer@villanova.edu](mailto:juliana.studer@villanova.edu) or at 610-519-5862.

## 19 Electronics Policy

The use of electronic devices, such as phones, laptops, tablets, calculators, etc., during class is generally allowed, unless their use causes a disturbance to others. During examinations, the use of any electronic device is prohibited, unless it is expressly authorized by the instructor.

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.

## 20 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, slides, etc., provided by a course instructor. Course materials may only be used by students enrolled in the course for academic (course-related) purposes.

Published course readings (book chapters, articles, reports, etc.) available in “Blackboard” are copyrighted materials. These works are made available to students through licensed databases or fair use. They are protected by copyright law, and may not be further disseminated or reproduced in any form for distribution (e.g. uploading to websites, sale, exchange, etc.) without the permission of the copyright owner.

Follow these links for more information on [Intellectual Property](#), [Copyright](#), and [Computer Acceptable Use](#).

## 21 Professorial Duties

It is important to 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... to name just a few commitments.