**Course number: EEL 3135 - U03**

**Course title: Signals and systems**

**Class Number: 16013**

**Course ID:** 015494

**Prerequisite:** MAP 2302

**Class Days:** Tu,Th 500 PM–615 PM

**Class Room:** EC–3239

**Professor:** Dr. Jean H. Andrian

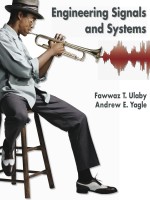
**Office:** EC–3912

**Office tel.:** 305-348-2115 (during office hours **only**)

**Department tel.:** 305-348-2807

**Office Hours:** Tu : 1100–1200, Th: 1500-1600

**E-mail:** andrianj@fiu.edu

**Textbook:** “Engineering signals and systems”  
by F.T.Ulaby and A.E.Yagle  
© 2013 National Technology and Science Press  
ISBN: 978-1-934891-16-2

**References:** none

**EEL 3135 Signals and Systems (3).** Use of Fourier analysis in electrical and electronic systems. Introduction to probability theory, linear algebra and complex variables. Corequisite: MAP 2302.

**Course Policies:**

1. To get assistance try to see Dr. Andrian during listed office hours.
2. Students are encouraged to ask questions and to discuss course topics with the instructor and with each other.
3. Any work submitted should be signed, as the students’ own work, and that no unauthorized help was obtained.
4. According to University policies, cheating is considered as a serious offense. Students who are caught will receive the appropriate consequences. Baseball or other brimmed caps/hats are not allowed to be worn during an exam.
5. Cell phones, communicators, MP3 players, headsets are not allowed to be used in the class. Cell phone must be turned off and put away before coming to class. Computers are not allowed in the class unless they are needed for in class work. Students using cell phones or computers for any reason other than stated above will be asked to leave the class immediately, charged with an ABSENCE, and it will cause deduction of 1 (one) full point from final score.
6. A student is considered present only if he/she has arrived on time and remains until the class is dismissed. Coming to class late or leaving early is disruptive and thus discouraged.
7. Students who were absent from a class are responsible for material covered in that class.
8. Any student who is absent during a test, presentation, demonstration or any other graded class activity will obtain a zero mark unless he/she is able to present a *documented verifiable excuse*. If students are not able to attend class they should call instructor or department secretary (305-**348-2807**) to notify of problem **prior** to the due date.
9. Late exam, demonstration, presentation, assignment submission – not available. Not participating in the projects or exams will result in a grade of “F”. In the event of a medical emergency (documentation must be provided) an “Incomplete” may be given upon request.
10. An incomplete grade is a temporary symbol given at the discretion of the instructor for work not completed because of serious interruption not caused by the student’s own negligence. An incomplete must be made up as quickly as possible but no later than two consecutive semesters after the initial taking of the course or it will automatically default to an “F” or the grade that the student earned in the course. There is no extension of the two semester deadline. The student must not register again for the course to make up the incomplete. Students who have incomplete grades on their records must remove the incomplete by the end of the fourth week of the term in which they plan to graduate. Failure to do so will result in a cancellation of graduation. It will be possible for a student to request a grade of INCOMPLETE only when the standard conditions used within FIU are met:
11. Must contact the instructor or the secretary immediately **before** or during the part missed, so the instructor will be aware of the circumstances causing the incomplete
12. Must be passing the course prior to that part of the course that is not completed
13. Must be unable to complete the course through **documented** circumstances beyond his/her control
14. Must make up the incomplete work through the instructor of the course and should not sit through another entire course to make up the incomplete
15. Must make up all missed work **before** the last two weeks of the following term
16. Grade components:

Quiz 10%  
Homework 10 %  
Project 10 %  
Midterm test 35 %  
 Final exam 35 %

1. Last day to drop a course with a DR grade: March 6.
2. **Final exam:** 500 PM–615 PM, Thursday, April 16, 2020.

**Class Schedule:**

Classes to be held twice a week on Tuesdays and Thursdays, from January 7, 2020 to April 16, 2020. Midterm test will be held on February 20, 2020.

**Course Topics:**

This course is fundamental to the study of many fields that constitute the ever-expanding discipline of electrical engineering. The course will serve as a prerequisite for further coursework in the study of communications, signal processing and controls. Although the signals and systems that arise across these diverse fields are naturally different in their physical make-up and application, the principles and tools of signals and systems are applicable to all of them. This course will expose students to fundamental concepts like Fourier transform, Laplace transform, and convolution.

1. Complex numbers
2. Introduction to signals and systems
3. Time domain analysis of continuous LTI systems
4. The Fourier series and the Fourier Transformation
5. Laplace Transformation

Course topics will be illustrated using modern computational tools.

**Course Goals:**

The purpose of this course is to provide students with a fundamental understanding of continuous-time and discrete-time signals and systems and to give students the necessary mathematical tools in preparation for advanced engineering courses in the field of communication systems, control systems, and digital signal processing.

**Course Objectives:**

After completing this course, students are expected to have learned the following:

1. to think logically
2. classification of different signals and systems: continuous or discrete time, analog or digital, periodic or aperiodic, energy or power.
3. basic signal models: unit step, decaying exponential, unit impulse, sinusoid, and exponential function
4. classification of systems and signals according to linear or nonlinear, time-varying or invariant, dynamic or instantaneous, causal or non-causal, continuous or discrete time, analog or digital, stable or unstable
5. properties of linear time-invariant (LTI) systems
6. computation of the response of an LTI system to an arbitrary input in both time and frequency domain using Laplace transformation
7. to understand the concept of a system’s impulse response and the use of convolution for the zero-state solution
8. to be able to represent a periodic signal in a Fourier series trigonometric or exponential form
9. to understand and to be able to apply Laplace and Fourier transformations to the analysis and description of LTI continuous-time systems.

**Project:**

Every student will be assigned a project topic on computational analysis of a system. Project deliverables:

1. Printed project report written and printed using Mathematica (or other mathematical software package if such was used)
2. Mathematica® notebook file (.nb) available in class on due date (or other original file, if different statistical software package was used)

Deadline for the project to be ready is December 10 tentative. Project will be graded by professor based upon quality of in class presentation and submitted paper report.

**Homework policy:**

Homework is mandatory. It will be periodically assigned by instructor in the class. Students must turn in the homework at the beginning of class period **1 (one) week** after day it was assigned. **Late homework will not be accepted nor graded (no exclusions!).** Collaboration on homework is not only allowed, it is highly encouraged. However, homework submission has to be an individual effort.

**Exam policy:**

* All exams are closed book and notes. Selected formula tables will be allowed.
* Use of any electronic devices (computers, tablets, phones, smart phones, devices with alphabetical keyboard, graphical calculators etc.) is prohibited.
* Access to internet and any communication using WiFi, LAN, cell, 3G, 4G, LTE, Bluetooth, etc. networks are not allowed.
* During exam time, bags, cellphones, and other electronic devices must be left in front of the exam room.
* No discussions.
* Late Final exam is not available.
* Instructor is not compelled to give credit for something he cannot read or follow logically.
* Cheating is considered as a serious offense. Students who are caught will receive the appropriate consequences.
* Grading scale:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | | B | | | C | | | D | | | F |
| A | A- | B+ | B | B- | C+ | C |  |  | D |  | F |
| 100 – 96 | 90 – 94 | 85 – 89 | 84–80 | 75–79 | 70–74 | 65–69 |  |  | 60–64 |  | 0 – 59 |

*Dr. Jean Andrian*

EEL-3135, Syllabus

Appendix

1. *Missed graded class activity*

The only acceptable excuses for missing test, presentation, demonstration or any other graded class activity:

1. Documented medical emergency. A doctor’s or hospital original note (not a copy) on official letterhead (with business address and telephone number for verification purposes) clearly stating that you were in his/her office or a hospital emergency room for illness or accident on the day and during the time of the class. That constitutes an EMERGENCY. A regular medical checkup is not an excuse. Nor is a general note stating that you are under the doctor’s care.
2. Unjustifiable imprisonment – and it will have to be documented.
3. Death or serious illnesses in the family when documented appropriately.

Instructor reserves the right to contact any person to verify the validity of any written document.

1. *Absence from regular class*

If student forced to miss class for some official reason, it is his/her responsibility to procure signed official written verification on letterhead explaining the reason for the absence. That document should be given to the instructor prior to missed class.

Acceptable excuses:

* Sickness. Documentation required: original note from doctor or hospital on official letterhead with business address, telephone number and e-mail.
* Work emergency. Documentation required: original official Memo from Employer on official letterhead with business address, telephone number and e-mail.
* Court Appearance. Documentation required: original Court document (i.e. Notice to Appear, Subpoena)
* Car died. Documentation required (only accepted for absence on the day the car dies): original official Auto Shop Bill indicating address, telephone and contact person.

Instructor reserves the right to contact any person for verification purposes.

1. *Unacceptable excuses*

The following are examples of unacceptable excuses for missing class:

* “I stuck in traffic” or “My shuttle delayed” – plan ahead and leave plenty of time for all such conditions.
* “I had an appointment with my physical therapist (my lawyer, parole officer, advisor, astrologist, baker, wedding consultant, etc.)” – Should not have made that appointment.
* “I fell asleep between classes” – I wished I do the same.
* “I don't feel well” – Neither do I.
* “My cousin is in the hospital” – Personnel will look after your cousin just fine while you are in the class.
* “I had to return home to get book/paper/assignment” – I totally understand. And you totally absent.
* “I was preparing for another class test” – If you have decided to remain in the class you are committed to the schedule.

These are certainly not the only unacceptable excuses. If your particular excuse does not appear on this list, do not assume that it is ok, therefore, to miss the class.

1. *Late arrival to class*

An official late involves arriving to class more than 5 (five) minutes after the beginning. Being late to class is not only rude and inconsiderate, it is also very disruptive.

Things happen, therefore, will be given 2 (two) “free” lates. After that, 1 (one) full point will be deducted from your final score for each late. If student is more than 30 (thirty) minutes late, he/she will be charged with an unexcused absence.

1. *Class interruption*

Use of cell phones, computers, players, cameras or any other electronic devices is not allowed during class period, unless required to perform assigned work. Any time a phone is exposed, or used, or goes off, or student is seen text-messaging during class time, it will cause student dismissal and deduction of 1 (one) full point from final score.

1. *Class attendance*

When class attendance is taken, single occurrence of falsified signature in the class attendance sheet will result in zero attendance score regardless of who wrote that falsified signature.

1. *Access to Blackboard and other online resources*

It will be student’s responsibility to log on to the course shell or other online resources and read any important information and announcements about the course and complete all the assigned tasks.