ECE 220: Signals and Systems 1  
Spring 2017  
SYLLABUS  
Organization and Structure

Instructors:  
Professor Lloyd Griffiths  
Nguyen Engineering Building  
Room 3206  
(703) 993-1729  
lgriff@gmu.edu  
Professor Timothy Beatty  
tbeatty@gmu.edu

Class:  
Innovation Hall 103  
Tues/Thurs 4:30 pm – 5.45 pm

Teaching Assistants  
Marjan Saadati  
msaadati@gmu.edu  
Ismail Khalique  
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Textbook:  

Software:  
MATLAB

MATLAB tutorials by Edward Neuman, posted on Blackboard
1. Tutorial 1: Getting Started With MATLAB  
2. Tutorial 2: Programming in MATLAB  
3. Tutorial 3: Using MATLAB in Linear Algebra

MATLAB tutorial from Univ. South Wales, Australia

Course Assignments and Exams  
Weekly homework assignments  
In class quizzes  
Two midterm exams and a final exam  
Laboratory projects and laboratory quizzes

Course Handouts  
All handouts for the course (lecture notes, problem sets, solutions, lab assignments plus other material) will be available on Blackboard
Course Objectives

1. To introduce students to the basic types of signals and systems encountered in engineering and to important properties of these systems.
2. To introduce students to methods of characterizing and analyzing continuous-time signals and systems in the time and frequency domains.

Course Organization

Each week of this course consists of two lectures, one recitation section, and one laboratory session. Lectures will introduce important concepts and applications. These will be used to illustrate their use through examples and problems. Lectures will not be a reading of your textbook, and may often contain new material not found in the book, and different interpretations of the theory. The goal is to instill a deep and intuitive understanding of fundamental concepts, why they are important, and how they are used or applied.

Course Content

This course will follow selected chapters in the course text *Linear Systems and Signals*, Second Edition by B.P. Lathi. The order of material covered is as follows:

- **Background:** Chapter B
- **Signals and Systems:** Chapter 1
- **Time-Domain Analysis of Continuous Systems:** Chapter 2
- **The Fourier Series:** Chapter 6.1 – 6.4
- **The Fourier Transform:** Chapter 7
- **The Laplace Transform:** Chapter 4

Prerequisites and Co-requisites

The academic prerequisite for this course is a C or better in ECE 201. In addition, two math courses (MATH 203 and MATH 214) are co-requisites. It is assumed that you are familiar with MATLAB, which you used in ECE 201, and proficient in the use of complex numbers.

However, the most important prerequisite for the course is the willingness to work hard and an eagerness to learn. If you find yourself having trouble understanding a concept and putting it into practice, it will be extremely important to acknowledge that you are having trouble and get help, ask questions, and work extra problems.

Lecture

Lectures are on Tuesdays and Thursdays from 4:30 pm to 5.45 pm. The course meets in Innovation Hall, Room 103. There will be random in-class quizzes, and if you are not present for these classes, you will receive a quiz grade of zero. These quizzes will be based on material in the assigned reading sections of the text.

In order to get the most out of the lecture, (and to maximize your grade on the in-class quizzes) it is strongly encouraged that you come prepared by reading the assigned sections in your textbook and reviewing any posted notes.
Cell phones, pagers, and other communicative devices are not allowed to be used in the class. It is also expected that you will not have a laptop computer or tablet open to browse the net or communicate with others. For 75 minutes it is expected that you will remain unplugged from the outside world.

Homework

There will be regular homework assignments (problem sets) that are due at the beginning of class on the assigned due date. It is important to understand that a significant number of points will be deducted for any homework solution that is not neatly written and easy to follow, with clear explanations of the work and how the answers were obtained. Simply writing down an answer will not be sufficient to receive full credit.

You are allowed to discuss the homework problems with other students in the class. However, your homework must be written and prepared by yourself, and not copied in full or in part from another student, or from any other source including solutions manuals and the web. Such copying will be considered to be a violation of the George Mason University Honor code.

It cannot be stressed enough how important it is to put in a significant amount of time working the homework problems. Your performance in the class will be highly correlated with the amount of time spent on the homework.

Homework is be turned in at the beginning of class on the assignment due date. Late homeworks are not allowed and unless you have a valid medical or other excuse, you will receive a grade of zero for homework that is submitted late. You may only submit your own homework, and not the homework for another student.

Recitation

There will be one 50-minute recitation per week led by Prof. Beattty. The recitation session will include additional examples designed to enhance your understanding of the material covered in class. Extensions of material covered in class may also be presented in recitation and you will be responsible for all material covered in recitation. Class participation in the recitations is expected. Students may be asked to work problems, to answer questions, or participate in a discussion. A part of your grade for the course will be based on your participation in recitation.

Laboratory

There will be a series of six MATLAB assignments to be completed in the laboratory. The laboratory assignments are a required component of the course. Failure to complete all lab assignments will result in a failing grade for the course. The project reports must be handed in at the beginning of the lab in which they are due. The syllabus for the labs will be distributed and discussed in your first laboratory session. Prior to the due date for the first laboratory, instructions on how to prepare your lab report will be discussed and handed out.

NOTE: Twenty percent (20%) of the maximum number of points assigned to a lab project will be deducted for each day that the lab report is late. If you have not submitted your lab report within four days of the due date, your score will be zero. If this happens, make sure that you turn in a single page for the lab that contains your name. This will show that you did the lab but did not turn in the report. If you do not do this, it means that you missed the lab and you will fail the course.
As with homework, your lab reports must be done by yourself, and copying of material from any student or any other source will be a violation of the honor code, and will be grounds for immediately reporting the infraction to the Office of Academic Integrity.

Teaching Assistants and Learning Assistants

The course Adjunct Faculty member, Dr. Timothy Beatty, will be running the course recitations. Prof. Beatty will also oversee the lab exercises and will be available for questions and help during his office hours. He will coordinate the course lab projects.

There are two teaching assistants for this course, Marjan Saadati (msaadati@gmu.edu) and Ismael Khalique (ikhaliqu@gmu.edu). They will be responsible for grading the course assignments and quizzes. In addition, they will run the lab sessions. These TAs are committed to helping you learn the material and succeed in the course. They will be available to help you when you find yourself having trouble understanding a concept or working a problem, so feel free to seek their help and to ask questions when necessary.

Administration of the Course

This course involves Professor Griffiths, Professor Beatty (an Adjunct Faculty member), and two TAs. This group will have weekly meetings to coordinate and organize the course and to identify and address any problems or issues that come up.

Office Hours

Office hours of the entire ECE 220 staff are a time for you to seek help in understanding the assigned reading or concepts introduced in lecture or recitation, and to answer any questions you may have about the ECE 220 material. Although these office hours may be used to get some guidance on homework or other assignments, they will not be used to show you how to solve a homework problem that is to be submitted for grading, or to check your answers. Please take advantage of office hours! They can be extremely helpful.

Exams

There will be two in-class midterm exams during the semester and one comprehensive final exam during final exam week. It is likely that one or more of the problems may be similar to one of the homework problems or to a problem worked in recitation. All of the exams are closed book and closed notes, and no electronic devices of any kind will be allowed. However, a formula sheet will be provided, so it is not expected that any student will have to spend time memorizing formulas. Prior to each exam there will be a review session to answer questions and to solve some practice problems.

There will also be several in-class quizzes that are given at the beginning of class. The purpose of these quizzes is to test whether or not you have completed the reading assignment prior to class
Course Grade

The final grade in the course will be based on the following formula:

- In class Quizzes     10%
- Midterm I Exam      15%
- Midterm II Exam     15%
- Final Exam          25%
- Laboratory Grade    15%
- Homework            10% (Lowest score will be dropped)
- Recitations         10%

A student requesting a grade change for any assignment or exam must provide the instructor with the assignment or exam and a detailed explanation describing why it is felt that additional credit should be received.

Re-grading of any resubmitted assignment or exam will not be limited to the particular problem or item in question. The entire assignment or exam will be regarded, and it may turn out that you end up with fewer points after re-grading.

Study Groups

Study groups can be extremely beneficial and effective in mastering the course material. It is strongly recommended that groups of students get together on a regular basis to work problems in the textbook, and to discuss the lecture and recitation material. Working a problem on a whiteboard and explaining your solution to a group of fellow students is a terrific way to learn.

Academic Integrity

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. All ECE 220 students are expected to abide by the George Mason University Honor Code and the rules outlined below. Any reasonable suspicion of an honor code violation will be reported.

Three fundamental principles to follow at all times: (1) all work submitted must be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on an assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, factual information, graphs or figures from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Note that paraphrased material must also be cited. A simple listing of books or articles is not sufficient.

Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see me. You are allowed and encouraged to collaborate on the homework assignments and discuss problems with each other. Talking to other students, explaining your ideas and questioning their ideas, is a great way to learn. However, you must write up your own solution for the homework problems. Simply copying someone else’s answer is not working collaboratively, and is not permitted. The same rules that apply to homework also apply to the MATLAB assignments. Moderate discussion of ideas on the projects is permitted, but copying code or lab reports is explicitly forbidden.
Since examinations are strictly your own effort, any extreme inconsistencies between your performance on the homework and on exams will be scrutinized.

**Course Blackboard Website**

All materials relevant to the course will be posted on Blackboard (mymason.gmu.edu). Log into this website using your GMU ID and password. After login, select the “Courses” pull down tab and select ECE-220-P01 / ECE-220-001 (Spring 2017). You will then have access to the Course Syllabus as well as introductory materials under “Course Content”. All homework solutions that you write and all laboratory reports must be submitted through this Blackboard web page.

**Reposting of Course Material to Other Websites**

The course materials (lecture notes, homework, projects, exams, solutions, and anything else posted on the course website) are copyrighted. You may not upload them to any other website or share them with any on-line or off-line test bank.

**GMU Email Accounts**

Students must check their Mason email account to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information.

**Office of Disability Services**

If you are a student with a disability and you need academic accommodations, please see the professor and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

**Other Important Dates** (From Mason calendar)

- Tues. Jan. 24: First day of classes
- Mon. Jan. 30: Last date to add courses and last date to drop with no tuition penalty
- Mon. Feb. 13: Last date to drop with 33% tuition penalty
- Fri. Feb. 24: Last date to drop with 67% tuition penalty
- Mar. 13 – 17: Spring Break
- Thur. May 4: Last day of classes
- Tues. May 16: Final Exam 4:30 PM – 7:15 PM, Innovation Hall 103