GEORGE MASON UNIVERSITY  
SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING  
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  

ECE 220  
Signals and Systems I  
Summer 2009  

Professor Gerald Cook  
Engineering Building Rm - 3207  
(703) 993-1699  

OFFICE HOURS: Tuesday: 3:00-4:30, Thursday: 3:00-4:30, Other times as necessary by appointment  

GTA for Homework:  
GTA for Lab:  
GTA for Recitations:  

Lab Web address:  


HONOR CODE AND EXAM POLICY: All students are expected to abide by the George Mason University Honor Code. Sharing of ideas and comparison of answers on homework is acceptable and encouraged, but copied work will not be accepted. All tests and the final exam will be closed book and closed notes unless specifically stated otherwise by the Instructor. All work must be your own. Any reasonable suspicion of an honor violation will be reported.  

Students must arrive in class within 15 minutes of the scheduled starting time for all tests and exams. Students arriving later than 15 minutes after the scheduled starting time will not be allowed to take the test/exam and will receive a grade of 0 for the test/exam.  

OBJECTIVES:  

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

GRADING:  

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<tr>
<th>Component</th>
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<tbody>
<tr>
<td>2 Tests</td>
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<tr>
<td>Homework</td>
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<td>Lab</td>
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<td>Final Exam</td>
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TEST SCHEDULE

Test 1  Thursday, June 18  Test 2 Tuesday, July 7  Final Exam  Tuesday, July 21

COURSE OUTLINE

Chapter 1  Introduction to signals and systems, overview and outline of the course, signals and systems -- their definitions and mathematical representations. Basic waveforms, impulse function, step function, ramps, parabolas. Derivative/integral relationships between certain signals-2 class periods

Chapter 2  Convolution methods, system properties, input-output differential equation description of systems-2 class periods

Chapter 3  System response to complex exponentials. Periodic signals and their representation as a sum of sinusoids or of complex exponentials, i.e., the Fourier Series. -2 class periods.

Chapter 4  Transition from periodic signals to aperiodic signals and the derivation of the Fourier Transform from the Fourier Series. Frequency spectrum for aperiodic signals. System transfer functions.-3 class periods

Chapter 6  Time and frequency characterization of signals and systems. -1 class period

Chapter 8  Communication and amplitude modulation.-1 class period

Chapter 9  Laplace transforms, transforms of signals, inverse transforms of signals, partial fraction expansion, transfer functions of systems-3 class periods

Homework Assignments

Homework Assignments: Homework assignments are due each Tuesday. The last set is due at the time of the final exam.

1. Reading: pages 1-56  Problems 1.10, 1.17, 1.20a, 1.23a, 1.27 1.31a, 1.34d, 1.42a, 1.51, 1.54b, d
2. Reading: pages 1-56
3. Reading: pages 74-137  Problems 2.8, 2.11a, 2.14a,b, 2.20a,b, 2.22a (first part) 2.29abce, 2.33a,i, 2.39b, 2.44a, 2.56d, 2.61b, 2.33 (a)(i)
4. Reading: pages 74-137
5. Reading: pages 182-250  Problems 3.1, 3.3, 3.4, 3.8, 3.13, 3.15, 3.20, 3.23d, 3.25a,b, 3.33a,b
6. Reading: pages 182-250 Test 1
7. Reading: pages 284-334  Problems 4.1, 4.3, 4.9, 4.15, 4.19, 4.20, 4.21b,h, 4.24a(1,2,6), 4.26a(ii,iii)
8. Reading: pages 284-334
9. Reading: pages 284-334  Problems 4.31a, 4.33a, 4.34a,b, 4.36a,b, 4.47c, 6.9, 6.10, 6.11a, 6.14, 6.15, 6.18, 6.19
10. Reading: pages 423-483
11. Reading: pages 585-600  Problems 8.2a, 8.3, 8.4, 8.21, 8.22, 9.1a,c,e, 9.2a, 9.4, 9.5, 9.10, 9.19
12. Reading: pages 654-721 Test 2
14. Reading: pages 654-721