ELEC 2120 – Linear Signals and Systems Analysis

Spring 2003

Instructor: Dr. Hulya Kirkici, Broun Hall-222, email: kirkih@eng.auburn.edu
Office Hours: Drop-in or by appointment.

Prerequisite: ELEC2110

Goals: In this course, systems and the interactions of signals in systems will be studied by developing time and frequency domain methods for modeling and analyzing continuous and discrete-data signals and systems.

Course Policies:

Class Attendance: Class attendance is strongly recommended since it will affect your learning and will help you develop the skills to comprehend the subject matter to perform better on the tests. Class attendance is not mandatory and does not have any direct effect on the course grade, however, students are held responsible for the material covered and/or assigned in class regardless of class attendance.

- Be on time (exactly at 1:00 pm you need to be ready for the class). Late arrivals and early departures are distractions for your classmates.
- No eating/drinking/talking unrelated to the course material is allowed after the class starts. Ask me, should you have questions related to the course material, not to your friend next to you.
- You are responsible of the material covered in class if you miss a class period.

Tests and Grading: There will be three in class tests and a final exam. Each exam will include sections covered in the class. The final exam will be comprehensive and will cover all the material studied during the semester. All exams are “closed-book” format, however calculators are permitted. Grading will be according to the following weight:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework assignment</td>
<td>14%</td>
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<tr>
<td>Test-1</td>
<td>17%</td>
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<tr>
<td>(Date: February 3, 2003)</td>
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<tr>
<td>Test-2</td>
<td>17%</td>
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<td>(Date: March 7, 2003)</td>
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<td>Test-3</td>
<td>17%</td>
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<td>(Date: April 16, 2003)</td>
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<tr>
<td>Pop-Quiz</td>
<td>4%</td>
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<tr>
<td>In-Class HW assignment:</td>
<td>3%</td>
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<td>Final Exam:</td>
<td>28%</td>
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<td>Official AU-scheduled day&amp;time</td>
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Homework Assignments: HW is designed to prepare the students for the tests, and there will be regular collection of HW problems for grading. Students may work together, however, it is strongly recommended that the students do their own work – DO NOT BLINDLY COPY someone else’s work. Late HW will NOT be accepted under any circumstances, unless an arrangement is made with the instructor prior to the due date of the homework.

- HW will NOT be accepted from a third party.
- HW will no be accepted after the start of the class period
- Must use “engineering paper” and use ONLY one side of the paper.
Each submission should be labeled with course number, date, assignment number, and your name printed, and the pages are stapled together.

Problem solution should include the problem statement along with any pertinent diagrams, all solution steps, and the result(s) in a flowing manner.

If your work is not legible, it may not get full credit even the work is technically correct.

**Computer Programming Assignment:** Students will use MATLAB to solve problems. MatLab problems are part of the homework assignments. You will have to submit a “hard-copy” of your program as well as the solution. Also, you are required to electronically submit your MatLab program by emailing it to me. The same rules as in the HW submission apply to the MatLab problems.

**In-Class HW assignment:** There will be in-class group study/problem solving assignments. Students will work a specific problem guided by the instructor in class and will turn in the work at the end of class for grading. The dates for these assignments may be announced in advance.

**Pop-Quiz:** Although the class attendance is not mandatory, because regular attendance to the classes is important for your learning, there will be un-announced pop-quiz time-to-time covering the recent material studied in this course. Quiz will be given at the start of a class period.

**Make-up Exam:** There will be NO make-up tests given under any circumstances. If you miss a test and you have a university-approved excuse then your final exam grade will be substituted for the missing grade. Otherwise a grade of “zero” will be recorded.

**Office Visits:** All students are encouraged to meet with me any time or by appointment in my office. The instructor can be more helpful for your learning if there is feedback from the students.

**Student with disabilities:** These students are encouraged to arrange a meeting with the instructor as soon as possible to discuss required accommodations.

**Topics:**

1. Signal modeling concepts: definition and models
2. System Modeling and concepts
3. Convolution
4. Transfer function definition and modeling (block diagram)
5. Applications
6. Fourier theorem, trigonometric and exponential forms
7. Spectral plots
8. Applications
9. Frequency response
10. Filters
11. Laplace Transform, and Laplace transform theorems
12. Applications
13. Transfer function and stability
14. State variable techniques
15. Discrete time signals and systems
16. DFT and FFT algorithms
17. Review and Final Exam