George Mason University
Electrical and Computer Engineering Department

ECE 535: DIGITAL SIGNAL PROCESSING
Spring 2004

Instructor: Dr. Kathleen Wage
Sci and Tech II, Room 243
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Class: Tuesday 4:30-7:10 pm
Innovation Hall 133
Office hours: Monday 4-5 pm
Tuesday 3-4 pm
Friday 4-5 pm
or by appointment

Prerequisite: ECE 320 & ECE 528, or permission of instructor

Required Text: Discrete-Time Signal Processing, Second Edition

Computer Explorations in Signals and Systems Using Matlab, Second

Course Webpage: http://teal.gmu.edu/~kwage/ece535/spr04

Course Description
This course examines the representation, analysis, and design of digital signals and systems. Topics covered include sampling, quantization, interpolation and decimation, Z-transform, discrete Fourier transform, digital filter realizations, design techniques for recursive and nonrecursive filters, fast Fourier transform algorithms, and spectral analysis.

Grading
The final grade in the course is based on my best assessment of your understanding of the material and participation during the semester. The exams, homework, and projects are combined with the following rough weighting to give a preliminary final grade:

- Homework: 10% (lowest score will be dropped)
- Matlab Projects: 25%
- Exam I: 20%
- Exam II: 20%
- Final Exam: 25%

General Policies

- The course website contains assignments, solutions, lecture materials, and announcements. Check it regularly for updated information.
- Email is the best way to contact me to set up an appointment or to ask short questions.

Class Meetings

- It is assumed that you will attend all classes, but attendance will not be formally recorded.
  If you need to miss class, it is your responsibility obtain the notes from another student.
- It is strongly recommended that you do the assigned reading prior to coming to class.
Homework & Matlab

- Homework and Matlab Projects are due at the beginning of class on the day indicated by the handout. Solutions will be posted on the course webpage. No late assignments will be accepted.
- The homework should be neat with the pages stapled or clipped together. The problems should be in sequential order. Answers should be circled or otherwise indicated. All plots should be appropriately labeled.

Exams

Exams dates are specified on the syllabus. Under certain circumstances, rescheduling of an exam may be allowed, provided that the exam is taken before the regularly scheduled exam.

Grade Changes

A student requesting a grade change for any assignment must provide the instructor with the following within 2 class periods after the work is returned: the assignment and a paragraph describing why you feel you should receive additional points for the work. Note that in some cases, it is possible that what you wrote for the assignment indicated a better understanding of the problem than you actually possess. If the paragraph you submit indicates that you don’t understand the problem as well as the grader thought you did, then your score may be reduced.

Honor Code

All students are expected to abide by the George Mason University Honor Code. Moderate sharing of ideas and comparison of answers on homework and Matlab projects is acceptable, but copied work is not acceptable. All exams will be closed book and closed notes unless specifically stated otherwise by the instructor. All exam work must be your own. Any reasonable suspicion of an honor code violation will be reported.
## Syllabus

<table>
<thead>
<tr>
<th>Date</th>
<th>Problem Set</th>
<th>Matlab</th>
<th>Lecture Topic</th>
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</thead>
<tbody>
<tr>
<td>1/20</td>
<td>1</td>
<td></td>
<td>Introduction, Pre-test, Signals &amp; Systems Review</td>
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<tr>
<td>1/27</td>
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<td>Class cancelled due to snow!</td>
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<tr>
<td>2/3</td>
<td>2</td>
<td>1</td>
<td>LTI Systems, Convolution, DT Fourier Transform</td>
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<td>2/10</td>
<td>3</td>
<td>2</td>
<td>1.0-2.9</td>
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<td>2/17</td>
<td>4</td>
<td>3</td>
<td>3.0-3.5, 5.0-5.3</td>
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<td>2/24</td>
<td>5</td>
<td>4</td>
<td>4.0-4.5</td>
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<td>3/2</td>
<td>6</td>
<td>5</td>
<td>5.0-5.3</td>
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<tr>
<td>3/9</td>
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<td>Class cancelled due to snow!</td>
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<tr>
<td>3/16</td>
<td>7</td>
<td>6</td>
<td>6.0-6.5</td>
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<td>3/23</td>
<td>8</td>
<td>7</td>
<td>7.0-7.1</td>
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<td>3/30</td>
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<td>Delayed Spring Break</td>
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<td>4/6</td>
<td>9</td>
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<td>DT Filter Design</td>
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<td>4.7-4.9</td>
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<td>TBA</td>
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<td>Special Topic</td>
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<td>Final Exam, 4:30-7:15pm (Comprehensive)</td>
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Note: Problem Set 11 will be for practice. It will not be turned in.

## Important Dates for Spring 2004

- **February 3:** Last date to drop without tuition liability
- **February 3:** Last date to add courses
- **February 20:** Last date to drop
- **March 7-14:** Spring Break
- **May 4:** Makeup date for snow day (1/27/04).

## Rescheduling of Classes

- **Tuesday May 4** (originally designated as “Reading Day”) will be used as a makeup date for the class that was cancelled due to snow on 1/27/04.
- The class on March 30 must be rescheduled due to a conflict with a workshop the instructor must attend. The original makeup date was scheduled for March 9th (during spring break). With the cancellation due to snow, Exam 1 now falls on March 9th. Students who are available to take the exam on March 9th will do so. Students who are not available then should email Professor Wage to arrange for an alternative time to take the exam (any time between 3/2 and 3/9). Note that Exam 1 will cover material up through lecture on 2/24 and problem set 5. It will not cover material presented in lecture on 3/2.