

## EE530: Digital Signal Processing II (Spring 2005)

**Instructor:** K. Sivakumar                      Tel: 335 4969                      Email: siva@eecs.wsu.edu  
Office Hours:    Tu,Th    1:00 - 2:30 p.m. (EME 403)  
Lecture Hours: Tu,Th    2:50 - 4:05 p.m. (Sloan 9; **NEW CLASSROOM**)

### Textbook:

Richard A. Roberts and Clifford T. Mullis, *Digital Signal Processing*, Addison-Wesley, 1987 (ISBN 0201163500).

### References:

1. J. G. Proakis and D. G. Manolakis, *Digital Signal Processing: Principles, Algorithms, and Applications*, Prentice Hall, 1996 (ISBN 0133737624).
2. B. Porat, *A Course in Digital Signal Processing*, John Wiley, 1997 (ISBN 0471149616).
3. D. G. Manolakis, V. K. Ingle, and S. M. Kogon, *Statistical and Adaptive Signal Processing*, McGraw Hill, 2000 (ISBN 0070400512).

### Course Outline:

This is a first-year graduate level course in Digital Signal Processing. We will build upon the material in EE464 and cover a few advanced topics in Digital Signal Processing:

1. Design of FIR and IIR frequency selective filters
2. Least-squares filter design
3. Adaptive filters
4. Multi-rate signal processing
5. Spectral estimation

Additional sources besides the text will be used, particularly for topics 3 and 4. Details will be mentioned as we proceed.

### Grading:

The grades in this course will be based on:

Homework	20%
Midterm exams* (Mar 3, Apr 19)	25% each
Final exam* (Friday May 6)	30%

\* Dates are tentative

**Prerequisites:** EE464 or equivalent. In particular, familiarity with the following topics (typically covered in a first course in digital signal processing) is necessary: Laplace transform, Fourier transform, Discrete-time linear systems, sampling theorem, Z-transform, discrete-time Fourier transform (DTFT), discrete Fourier transform (DFT).

**Course mailing list:** A mailing list for this course has been setup using the email address you have registered with the Registrar's office.

- If you did not receive a test email from me (sent on 1/11/05), you do not have an email address registered. Please register an email address with the registrar's office.
- If you have received the test message but would like to change the email address at which you receive future messages sent to the list, please set your mail forwarding appropriately.

Everyone enrolled in this course is required to subscribe to this list. Please subscribe as soon as possible, so that you don't miss any announcements. It is necessary to subscribe to this list, since important course related information would be sent to this list. Please check your mail often (at least once a day, more often if feasible).

The mailing list is intended to be an open forum for any course-related announcement and discussion. On occasion, if I feel the reply to an individual student's query would benefit the whole class, I might copy the reply to the whole class.

### **General Course Policy:**

- **Submission of Homework:** All required submissions have to be turned in class on the day it is due. If for some reason you cannot make it, I would normally accept it by the end of that day, with no penalty. However, it is your responsibility to get it to me or slide it under my office door. Late submissions will not be accepted (except in very unusual circumstances).
- **Office hours:** If you cannot see me during regular office hours (or even otherwise), you are encouraged to send me email and/or setup another mutually convenient time. I will try to answer email queries as soon as possible (within a few hours in most cases, if I am in town).
- **Academic honesty:** Discussion of class material and, to a limited extent, homework problems among students is encouraged. However, it is not permitted, for any reason, to collaborate with other students in the class, when solving assigned homework problems. It is not permitted, under any circumstances, to consult or plagiarize past homework/exam solutions. Cheating during an exam is considered to be a serious violation of ethical integrity. Any material you turn in for a grade must be your own work. Cases of academic dishonesty shall be dealt with in accordance with Academic Integrity Policy in the Student Handbook. If you are aware of any incidents of cheating by fellow students, please bring it to my attention, as soon as possible.
- **Attendance:** Although I do not intend to impose regular attendance, I don't expect anyone to be habitually absent. In case you miss a class, it is your responsibility to make-up the material covered in class (see me before or after the class or ask one of your friends). You are also responsible for all announcements made during that class.
- **Make-up Exams:** Absence from an exam will be excused only for very serious medical or personal emergencies. Please let me know as soon as possible, preferably before the exam, if you would be unable to take an exam. In such cases, usually a make-up test will not be given, but your future exams will be prorated appropriately. For example, if you cannot take the first midterm test for valid reasons, your score in the second and third midterm test, the final, and the appropriate class averages will be used to compute your score. If you miss the final exam for valid reasons, you will need to schedule a make-up exam with me.
- **Computer accounts:** All students registered for this course are encouraged to get an account on the EECS computer systems. Contact the systems staff about this (let me know if you still have difficulties). This would also serve as an email account.
- **Disability Accommodation Statement:** Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. All accommodations must be approved through the Disability Resource Center (DRC) in Administration Annex room 205, 509 335 1566, e-mail [drc@mail.wsu.edu](mailto:drc@mail.wsu.edu).