

# Data Processing and Analysis (GEOP 505/Math 587) Overview and Syllabus for Spring, 2005

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- Notes and other web Information: [www.ees.nmt.edu/Geop/Classes/GEOP505.html](http://www.ees.nmt.edu/Geop/Classes/GEOP505.html)
- Contact information: [aster@ees.nmt.edu](mailto:aster@ees.nmt.edu) (x5924)
- Meets in: MSEC 351, M, W, F 11:00-11:50
- Text (recommended): *The Fourier Transform and Its Applications*, 3rd ed. by Ronald Bracewell, WCB/McGraw Hill, 2000.
- Substantial primary and ancillary lecture notes will be provided by the instructors.
- Grades will be based on six homework assignments (75%), on an approximately 30-minute (including questions) scholarly class presentation, with an accompanying class handout and web-linkable PDF write-up, based on your research or general interests in an appropriate subject (20%), and on general class contributions such as stimulating discussion, illuminating applications, and identifying corrections and/or suggesting improvements to the notes (5%). There is no final exam.
- Notes will cover all required material, but students are strongly encouraged to consult outside sources from the ancillary notes, bibliography or elsewhere as needed.
- It is required that numerical and graphical assignments be done in MATLAB. MATLAB is available on the Geop/Hydro workstations and at the Tech Computer Center. A MATLAB primer is provided on the class website.
- While we encourage students to discuss all aspects of the course with the instructors and each other, your work must be clearly your own. Sharing/copying of answers between students will be strongly penalized. Presentations and write-ups must be presented in an original manner with appropriate references. Plagiarism will be cause for severe downgrading of your final grade, likely to the point of failing.

- Notes and homework will be posted on the web site. Students are expected to download (and print at will) their own copies of the notes as they are posted.
- Dates and other details of the Syllabus are subject to revision as the semester proceeds. I will keep this schedule updated as travel and other responsibilities accumulate. We may need to schedule extra lectures at agreed-upon times to compensate for my travel days (thanks in advance for your flexibility!).

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**Class Schedule (tentative)**


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Date	Notes	Topics
1/19	1	Class Overview/Linear Systems in the Time Domain
1/21	1	Linear Systems in the Time Domain
1/24	1	Linear Systems in the Time Domain
1/26	1	Linear Systems in the Time Domain
1/28	2	Linear Systems in the Frequency Domain
1/31	2	Linear Systems in the Frequency Domain
2/2	2	RA Gone, Substitute lecturer or no class
2/4	2	RA Gone, Substitute lecturer or no class
2/7	2	Linear Systems in the Frequency Domain; HW 1 due
2/9	3	Power Spectra
2/11	3	Power Spectra
2/14	4	Sampled Time Series
2/16	4	Sampled Time Series
2/18	4	Sampled Time Series ; HW 2 due
2/21	4	Sampled Time Series
2/23	4	Sampled Time Series
2/25	4	RA gone, Substitute lecturer or no class
2/28	5	Discrete Fourier Transform Techniques
3/2	5	Discrete Fourier Transform Techniques
3/4	5	Discrete Fourier Transform Techniques
3/7	5	Discrete Fourier Transform Techniques ; HW 3 due
3/9	6	Digital Filtering
3/11	6	Digital Filtering
3/14	-	SPRING BREAK, No Class
3/16	-	SPRING BREAK, No Class
3/18	-	SPRING BREAK, No Class
3/21	6	Digital Filtering ; HW 4 due
3/23	7	Random Processes
3/25	7	GOOD FRIDAY, No Class
3/28	7	Random Processes
3/30	7	Random Processes
4/1	8	RA gone, Substitute lecturer or no class
4/4	8	Statistical Aspects; HW 5 due
4/6	8	Statistical Aspects
4/8	8	Statistical Aspects
4/11	8	Statistical Aspects
4/13	8	Statistical Aspects
4/15	8	Statistical Aspects ; HW 6 due
4/18	8	Statistical Aspects
4/20	-	Student Presentation
4/22	-	Student Presentation
4/25	-	Student Presentation
4/27	-	SSA Meeting, RA likely gone
4/29	-	SSA Meeting, RA likely gone
5/2	-	Student Presentation
5/4	-	Student Presentation
5/6	3	Student Presentation