Ese 347 Preliminary Course Information for Spring 2011

1 Instructor:

Lectures: John J. Murray
Labs (Teaching Assistant): TBD

2 Books:

Text: Chassaing, Rulph, and Reay, Donald, "Digital Signal Processing and Applications with the C6713 and C6416 DSK", 2nd ed., 2008, Wiley-Interscience. ISBN: 978-0-470-13866-3

Suggested Reading: K. Steiglitz, "A DSP Primer: with Applications to Digital Audio and Computer Music", Addison-Wesley.

Recommended Software: Access to MATLAB or Student Edition of MATLAB

Highly Recommended Skill: C/C++ programming ability

3 Website:

http://www.ece.sunysb.edu/~ese347/

4 Office Hours

(Room numbers are in Light Engineering.)

	Phone	Hours	Office	email
John Murray	2-8413	TBD	253	John.Murray@sunysb.edu

5 Course Outline

This is a course in implementation techniques for Digital Signal Processing.

The course consists of two main parts: lectures and laboratory work. The lectures will cover the basic architecture and features of the TMS320C67xx family of floating-point DSP chips from Texas Instruments, an overview of the development tools for this family, and the basic theory of simple DSP algorithms: FIR and IIR filtering, modulation, FFT, and (possibly) adaptive filtering. The laboratory work will consist of implementing and testing these algorithms on the TMS320C67xx processors, and comparing their performance to that predicted by the theory. Apart from the beginning labs, which will introduce the simulator in the CADLAB, the implementation will be in real time, with analog input and analog output, and will be done mostly on the TMS320C6713-based DSP Starter Kit (DSK).

We will cover the following topics in some detail:

1. Basic DSP concepts; sampling and reconstruction of signals.

2. Architecture and features of the TMS320C6713 and the DSK
3. Algorithm Support Levels
4. Integrated development environments – Code Composer Studio™
5. Convolution and FIR filtering
6. FIR filter design and implementation
7. Signal flow-graphs and digital filter structures
8. IIR filter design and implementation
9. Discrete and Fast Fourier Transforms (DFT and FFT)
10. Adaptive filtering.

This corresponds roughly to chapters 1 – 7 in the text.

5.1 Note:

Appendix A provides a concise reference for the TMS320C67xx instruction set and registers, and appendix D provides an overview of some MATLAB digital signal processing tools.

6 Grading

In addition to the labs, there will be one midterm test and a final. The labs will count for 35% of the overall grade, and the midterm and final will each count for 30%. In addition to counting for 30% of the grade, the final will also be divided into two parts, with the first part functioning as a makeup for the corresponding midterm test. If the final is missed, a makeup will be allowed only for the most serious reasons; written evidence of the reasons for missing the final will be required.

You are also required to make up a "course portfolio" consisting of copies of all of your graded work, including lab reports, homework, and graded tests. This is to be turned in at the end of the semester, and the presentation (not the content) will count for 5% of the grade.

7 Schedule

- Classes will be held from 3:50 to 5:10 pm on Mondays and Wednesdays, except for the week of Spring break
- Labs will be in room 179, Light Engineering, from 6:55 to 9:55 pm on Mondays, except for the week of Spring break.

8 Disability

If you have any condition, such as a physical, psychological, medical or learning disability, which may impact on your ability to carry out the work, I urge that you contact the staff in the Disabled Student Services office (DSS) at Room 128 in the ECC building. The telephone number is 632-6748/TDD. DSS will review your concerns and determine, with you, what accommodations are necessary and appropriate. All information and documentation of disability is confidential.

9 Academic Honesty

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at

http://www.stonybrook.edu/uaa/academicjudiciary/

10 Conduct

The University at Stony Brook expects students to maintain standards of personal integrity that are in harmony with the educational goals of the institution; to observe national, state, and local laws and University regulations; and to respect the rights, privileges, and property of other people. Faculty are required to report disruptive behavior that interrupts facultys ability to teach, the safety of the learning environment, and/or students ability to learn to Judicial Affairs.