EECS120: Signals and Systems
Fall 2003

Instructor: Anant Sahai, Room 267 Cory. sahai@eecs. Office Hours: TuTh 1pm-2 and by appointment.

Lecture: TuTh 9:30-11am in 277 Cory

Grading: HW (20%) Two Midterms (40%) Final Exam (40%)

The midterms will be in class and you should expect them around Oct 2nd and Nov 6th. The final is 8am Dec 12th.

Students are encouraged to collaborate on homework and groups of one to three students may hand in a common solution.

Prerequisites: EECS 20 (absolute must), and Math 53/54 or equivalent.

Texts: In Campus Bookstore

- Primary: Lee and Varaiya, *Structure and Interpretation of Signals and Systems*, 2003.
- Secondary: Oppenheim, Willsky, and Nawab, *Signals and Systems*, 2nd Edition 1996.
- For advanced material, you might also consider getting Oppenheim, Schafer, and Buck, *Discrete Time Signal Processing*, 2nd Edition 1999.

GSIs: We have two TAs for the course:

- Roy Wang (ee120-ta@cory.eecs.berkeley.edu) OH: 297 Cory Mon 11-12,12-1
- Krishnan Easwaran (ee120-tb@cory.eecs.berkeley.edu) OH: 297 Cory Wed 10-12

Discussions: Start Friday of the first week. You are free to attend any of the scheduled recitations regardless of which one you are officially registered for. Students with scheduled discussions are strongly encouraged to attend another section if there is no class on their scheduled day due to an instructional holiday.

- M 12-1 293 Cory GSI: Roy Wang
- Tu 3-4 102 Moffitt GSI: Krishnan Easwaran
- W 9-10 293 Cory GSI: Krishnan Easwaran
- F 10-11 293 Cory GSI: Roy Wang

Newsgroup: ucb.class.ee120

This course will build on EECS 20 and will help give you the tools and understanding you will need to get to senior/grad level classes like 121, 123, 125, 128, 192, 221a, 224, and 226a. EECS 126 (Probability and Random Processes) is not required for this course and gives a complementary set of tools needed for advanced material, especially in the area of communications. We will be assuming that you have familiarity with lower division physics and circuits since these are the source of many simple examples. In addition:

- We want you to master the material covered in this class and to get a good grade. We understand that different students have different ways of learning, and so extra credit will be made available for a range of activities: from "scribing" good lecture notes for sharing with the class (make them in LaTeX format with eps figures) to doing projects that demonstrate deeper understanding.
- To understand this material well, you have to work out problems and explore on your own. The assigned homework is the bare minimum — you should be working out book problems and playing with MATLAB on your own.
- While helping your classmates learn the material and getting help from upperclassmen who have taken the class is a good idea, cheating on exams is dishonorable and will be severely punished.
- When turning in homework, please turn in a photocopy of your solutions and keep the originals with you. This way, you can check your answers without waiting for your graded problem sets to be returned to you.
- Give feedback to us if you have comments or questions.
- HKN is your friend. Take advantage of their free tutoring.

Course Outline:

4 Weeks: Introduction, motivating examples, review of linear systems, and transform properties.

3 Weeks: Communications: Sampling, modulation/demodulation, filters, basic digital encodings (PAM, QAM, FSK), channels as linear systems, and equalization.

3 Weeks: Control: Unstable systems, using Laplace and Z transforms, and feedback.

3 Weeks: Signal Processing: Filter design, aliasing, windowing, interpolation, and the FFT.

1 Week: Review