

## ECE 330 Course, Instructor and TA Information

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**Course:** ECE 330 Signals and Systems, Fall 2002

1:00-2:15 TR, 159 Mechanical Engineering (lecture)

4:00-5:30 W, ~~2345~~ Engineering Hall (optional discussion)(On Oct. 30, room for Discussion is 2345EH)  
1227

**Instructor:** Dan Sebald  
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**Teaching Assistant:** Divya Harave  
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**Inst Office Hours:** 11:00–12:00 T  
3:00–4:00 T  
12:00–1:00 W  
11:00–12:00 R

**TA Office Hours:** 3:00–4:30 M  
~~10:00–11:30 R~~ 11-12.30 R

**Textbook:** Haykin and Van Veen, *Signals and Systems*, Wiley 1999 is the required text.

**Grading:** Fifth week quiz (10%)  
Midterm exam (25%)  
Pop quiz (10%)  
Final exam (35%)  
Homework (15%)  
Matlab programs (5%)

**Homework:** Partial credit will be given. Each homework problem will be assigned a point value based upon its difficulty with the point range being roughly 3-8 points per problem and a median of approximately 5 points. Therefore the value of each homework will vary slightly. Final homework grades will be assigned based upon a curved percentage of total points for all assignments. Please observe the following guidelines for handing in homework:

- Use  $8\frac{1}{2} \times 11$  white paper.
- Staple in upper left corner.
- Place name, class and assignment # in upper right corner.
- **Show your work.** That is, describe important assumptions made, math steps, concepts, and so forth.
- Place a box around the final answer.
- **Do your own work!** This is not meant to discourage sharing ideas and concepts among fellow students (that is fine after you've given the problem thought on your own), but your work should reflect your understanding, knowledge and viewpoint of the problems. Any suspiciously similar homework will have points deducted.

**Reserves:** Multiple viewpoints is an excellent way to learn. Hopefully the course text, teaching assistant and instructor cover all grounds. But, if you get stuck on a particular concept and would like an alternative presentation seek the following references:

- [1] D. W. Jordan and P. Smith, *Mathematical Techniques: An Introduction for the Engineering, Physical, and Mathematical Sciences*. New York, NY: Oxford University Press, 1994. Summarizes many mathematical techniques for engineering and provides problems.
- [2] P. Kraniuskas, *Transforms in Signals and Systems*. Reading, MA: Addison-Wesley, 1992. An excellent book for visualization of complex exponentials and transforms.
- [3] C. D. McGillem and G. R. Cooper, *Continuous and Discrete Signal and System Analysis*. New York, NY: Holt, Rinehart and Winston, 1984. A very good book that has a more engineering oriented slant on signals and systems.
- [4] A. V. Oppenheim, A. S. Willsky, and I. T. Young, *Signals and Systems*. Englewood Cliffs, NJ: Prentice Hall, 1983. Text book often used for this course in the past.

## Syllabus

- Week 1–2: Blood pressure system demo  
Course mechanics, introduction  
Continuous and discrete-time signals  
Elementary signals  
Property of signals  
Continuous and discrete-time systems
- Week 3–4: Properties of systems  
Modeling systems  
Sifting  
LTI systems  
Convolution  
Properties of convolution
- Week 5–6: Difference and differential equations  
Basis functions, transform concepts  
Continuous-time periodic signals (the FS)  
Continuous-time aperiodic signals (the FT)  
**R (10/3): Quiz**
- Week 7–8: Fourier transform properties  
Discrete-time periodic signals (the DTFS)  
Discrete-time aperiodic signals (the DTFT)
- Week 9–10: Duality concepts  
Mixing of signal classes  
Applications of LTI principles  
Filtering (signal processing)  
**W (10/30): Review during optional discussion**  
**R (10/31): Midterm exam**
- Week 11–12: Modulation (communication)  
Sampling (A/D conversion)  
Reconstruction (D/A conversion)
- Week 13–14: One-sided Laplace transforms  
Convergence of Laplace transforms  
Pole/zero concepts  
Properties of Laplace transforms  
(11/28): No class
- Week 15: Applications of Laplace transforms  
Solving differential equations  
Linear feedback systems (control)  
(12/12): Last day of class  
**W or R (12/18 or 12/19): Review in evening (??)**  
**F (12/20): Final exam 12:25-2:00pm**