ECE 222 Signals & Systems I

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Scholarship Information Fair

• Office of Student Financial Aid will host a Scholarship Information Fair
• Thursday, January 10, 1-5 p.m. in Smith Memorial Center, rooms 290/2
• May be helpful to students exploring ways to pay for their education
• Representatives from
  – The Office of Student Financial Aid
  – Various PSU schools and departments
  – Oregon Student Assistance Commission (OSAC)
• Break-out sessions
• Contact Michelle Holdway at (503)725-5445 or mholdway@pdx.edu for more info.

Lecture Overview

This Time
• Syllabus
• Miscellaneous Notes
• Class overview & logistics
• Introduction to Signals & Systems

Classrooms

We will use the distance learning technology to enable attendance in multiple classrooms
• DLC 204: seats 48 students, room from which I will teach
• DLC 304: seats 32 students, 2-way audio & video
• MPEG2: On-campus broadcast to desktops (full screen, high quality), uses streamplayer 2 client installed in general access labs, 1-way audio & video
• Windows Media Stream: 1-way audio & video, need fast connection
• Windows Media Archive: 1-way audio & video, posted within 24 hours of lecture, can skip forwards and backwards
• Video Tape Archive: available at reference desk in Millar Library within 24 hours of class
• Eastern Oregon University and Mt. Hood Community College will be with us electronically this term
ECE 202 Lab Assignments
- The ECE 202 & 201 labs start next week
- Accessible online from http://ece.pdx.edu/~ece2xx/ECE202
- Two of these labs will be new this term
- Will be posted a little later in the term

My Background
- Ph.D. 1999
- Teaching in PSU ECE dept. two years
- Fifth time teaching this course
- Research area: Biomedical signal processing (see http://bsp.pdx.edu)

Sophomore Sequence
- There are a number of significant changes in the sophomore sequence this year
- Previous course titles
  - ECE 222: Signals & Systems
  - ECE 223: Feedback & Control
- New course titles
  - ECE 222: Signals & Systems I
  - ECE 223: Signals & Systems II
- There are many changes to ECE 222
- ECE 223 will be an entirely new course primarily focused on discrete-time signals & systems

ECE 222 New Topics
- Introduction to discrete-time signals & systems
- Discrete-time convolution
- More practical examples
- More thorough introduction to signals & systems
- Group delay
- Incorporation of MATLAB
- Time-domain properties including impulse and step response
- Introduction to analog filter design
Course Comments

- First time this new version of the course has been taught
- Will be a little rough and experimental
- Some of the ECE 222 material from previous terms will be pushed into ECE 223
  - Continuous-time Fourier series?
  - Continuous-time Fourier transforms?
- We will go as far as we can this term
- The course schedule may change as we progress through the term

Textbooks

- Text: *Fundamentals of Electric Circuits*
  - Concise
  - Many examples
  - Problems of moderate difficulty
  - Doesn’t cover problems at sufficient depth
  - Required
- Text: *Signals & Systems*
  - One of the gold standards
  -Verbose
  - Designed to be read, rather than referenced
  - Problems are mostly advanced
  - Fairly advanced treatment of topics
  - Required

Textbooks Continued

- Text: *Signals and Systems Made Ridiculously Simple*
  - Very concise
  - Not comprehensive, but a good short explanation of the most critical concepts
  - Recommended
- Text: *Computer Explorations in Signals and Systems*
  - Applies the concepts using MATLAB
  - Required for the ECE 202 & 203 labs

Our Path - Planned

- Fundamentals of Signals (SS Ch. 1)
- Linear Time-Invariant Systems (SS Ch. 2)
- Laplace Transform (EC Ch. 15)
- Laplace Transform Circuit Analysis (EC Ch. 15)
- Transfer Functions (EC Ch. 15)
- Analog Filters (EC Ch. 14 & SS Ch. 6)
- Two-Port Networks (EC Ch.18)
- Fourier Series (SS Ch. 3)
- Fourier Transforms (SS Ch. 4)
Course Resources

- Textbooks
- Recitation sections
- IEEE Tutors
- Course web site
- Lecture notes (second draft)
- Homework solutions
- Distance learning classroom
- Web site: http://ece.pdx.edu/~ece2xx/ECE222

Course Web Site

URL: http://ece.pdx.edu/~ece2xx/ECE222

- Syllabus
- Course outline
- Lecture notes
- Online lectures
- Errata
- Homework assignments & solutions
- Previous course web pages (old exams)
- Grades

Lecture Notes

- Lecture slides were created last year
- Posted on the class web site
- I will be updating them significantly this term
- Watch for updates as late as 6 pm the day before lecture
- Updates will sometimes be drastic, sometimes minor
- Workspace is provided for examples that will be filled in during lecture

Homework & Online Lectures

- Homework solutions will be posted shortly after assigned
- Previous students have used the solutions as a learning tool
- Lectures will also be posted online
- Both will be password protected
  - User name: ECE222 (no space)
  - Password: Impulse
- Lab assignment passwords
  - User: ECE202 (No space)
  - Password: Laplace
- Labs will be updated this term
6-digit Codes

- I use 6-digit codes to post your grades online and for anonymous identification on exams
- Email code to me this week
- Can be any character that you can send via a plain-text email
- Remember it for exams
- Homework labeling:
  - First letter in last name
  - 6 digit code
  - Class & term (ECE 222, Winter Term 2002)

Scientific Calculators

- Less important than for ECE 221
- This term will work more with variables than numbers
- Will not be allowed during exams

Homework Assignment 1

- Email me 6-digit code
- Read
  - Chapter 1 of Signals & Systems
  - Can skip sections 1.3.3 & 1.5.2
  - Section 7.4 of Electric Circuits
- Problems
  - SS Ch. 1: 3,6,9,21,22,24,25,27
- Assignment is also posted on the class web site
- Solutions will be posted soon
- Due on Monday, Jan. 14 - 1 week

Logistics: Text & Lab Assignment Errata

- Each error worth 50% of a homework
- Find two errors = can skip an assignment
- Cannot receive more than full credit for homework
- Typos and grammar do not count
- Must be first to email me
- Known errata are posted on the web site
- New HW will be assigned this term, so expect errors in the HW solutions
- I do not know how many errors are in the Signals & Systems texts
General Comments on Class

- Challenging
- Rapid pace, but slower than ECE 221
- Less number crunching, more abstract analysis than ECE 221
- Many new abstract concepts
- Essential knowledge for other ECE classes, especially ECE 321