Goals

- Introduce industry standard CAD software for electronics (analog and digital) and systems engineers
  - MATLAB
  - PSpice
  - Use of this software will continue in ECE Labs II-IV as well as other ECE courses
- Perform measurements on devices and circuits
  - Based on ECE 200 and ECE 201
Goals

- Develop technical writing skills
  - Writing will be assessed at least twice per term
  - This is a Writing Intensive course
    - Students entering Drexel Fall '02 or later must take 3 WI courses, with 2 being in their major

PSpice and MATLAB

- How can these software packages work together?
  - PSpice can be used for circuit simulations of various types using actual device models and subsystem subcircuits
  - MATLAB can be used as a post-processor to calculate device parameters or do curve fitting, statistical analysis, 2- and 3-D plots
Design Flow

Course Organization

- PSpice Introduction
  - Operating point and dc voltage sweep
  - Transient response and ac frequency sweep
- MATLAB Introduction
  - Matrices and arrays
  - Loops, IF statements, graphing
- Applications of PSpice and MATLAB
Course Organization

• Applications of PSpice and MATLAB
  - Diode Circuits
  - Operational Amplifiers
  - Transistor Characteristics and Circuits

Course Organization

• We have two web sites
  - http://www.ece.drexel.edu/courses/ECE-L301/
    - Lecture notes, assignments, report formats, reference links
  - http://webct.drexel.edu (or enter WebCT through Drexel One)
    - Grade posting, quizzes, discussion area
      - Not yet updated
Methods

- Lecture with demonstrations
- Lab exercises in small groups
  - Groups of 2
  - 3 only when there is an odd number in a section
- Lab reports
  - Each student submits a report
- Quizzes

Lab Reports

- Individual reports for all experiments
- Format given on course web page
- Each lab section will be graded on writing style twice during the term
  - Some reports will be returned for revision and resubmission
Lab Reports

“As a student, you spend 90% of your time in engineering doing calculations and 10% of your time writing. As a professional on the job, you spend probably 15% of your time working with numbers and 85% of your time writing.

- David Bloomquist, Univ of Florida


Lectures

- Intro to PSpice I
  - Operating point
- Intro to PSpice II
  - DC voltage sweep & transient analysis
- Intro to PSpice III
  - AC voltage sweep, circuit measurements
- Intro to MATLAB I
- Intro to MATLAB II
Grading
- Each experiment receives a numerical grade. All lab reports are equally weighted.
- Several quizzes (2 to 4) may be given
  - Quizzes will be done by individual students
  - Will be no more than 10% of the course grade
- Reports are due no later than one week after your scheduled lab meeting.
  - Late reports will lose 20% in value per week until four weeks have gone by, at which time the report will not be accepted.
  - All materials must be received by the first day of finals week. After this time, they will not be accepted.
- A grade curve is not expected

Course Policies
- Come to lecture
- Attend the lab section on your schedule
- Be a good partner
  - Keep a bound notebook
  - Get your assignments done on time
  - Share the keyboard/instruments
- Do not duplicate another groups work
Bibliography