ECE 521 Fall 2016
Analog Circuit Simulation

Instructor: Karti Mayaram
Office: KEC 4095, 737-2972 (karti@eecs.oregonstate.edu)
Office Hours: TBA
Web page: http://www.eecs.oregonstate.edu/~karti/ece521.html

Course Objective:
Learn the theoretical and practical aspects of building a circuit simulator such as SPICE and be exposed to the current state of the art and the future challenges.

Prerequisites:
A background in circuit theory, ability to write software in (C, C++, or Fortran), and an appreciation for numerical methods

Grading:
Homework (4-5 assignments) 40% (Part 1 - 10%; Part 2 - 30%)
Exam 30% (M 11/21/16)
Final Project 30%

Cheating Policy:
You may work together on homeworks but not copy someone else’s work. Cheating is unacceptable.

TextBook:
Lecture notes.

References:

Course Outline

(1 week) Formulation of Circuit Equations: Nodal Analysis, Modified Nodal Analysis (MNA), and Sparse Tableau Approach (STA)
(1 week) Solution of linear equations: Direct and iterative methods, Sparse-matrix techniques
(1 week) DC analysis: Solution of nonlinear equations and convergence issues
(3 weeks) Small-signal ac, transient, and Fourier analyses. Anatomy of a circuit simulator
(1 week) Sensitivity and noise analyses
(1 week) Pole/zero analysis and moment matching methods
(2 weeks) Latest advances and analysis methods for RF circuits
The Five Levels Of Plagiarism

1. Uncredited verbatim copying of a full paper. Results in a violation notice in the later article’s bibliographic record and a suspension of the offender’s IEEE publication privileges for up to five years.

2. Uncredited verbatim copying of a large portion (up to half) of a paper. Results in a violation notice in the later article’s bibliographic record and a suspension of publication privileges for up to five years.

3. Uncredited verbatim copying of individual elements such as sentences, paragraphs, or illustrations. May result in a violation notice in the later article’s bibliographic record. In addition, a written apology must be submitted to the original creator to avoid suspension of publication privileges for up to three years.

4. Uncredited improper paraphrasing of pages or paragraphs (by changing a few words or phrases or rearranging the original sentence order). Calls for a written apology to avoid suspension of publication privileges and a possible violation notice in the later article’s bibliographic record.

5. Credited verbatim copying of a major portion of a paper without clear delineation of who did or wrote what. Requires a written apology, and to avoid suspension, the document must be corrected.

The guidelines also make recommendations for dealing with repeated offenses.