ESE 530 Computer-Aided Design

(Syllabus)

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Course Description

The course discusses modern techniques used in computer-aided design of analog, digital and mixed-signal circuits and systems, including CAD for layout design, circuit sizing, topology generation and modeling. Papers will also discuss creativity, group collaboration, and Machine Learning topics. The lectures present research papers that have been published recently published in the most relevant CAD journals. Three projects are part of the required course work. Students are also expected to actively participate to the discussions in class.

Bulletin description

The course presents techniques for analyzing linear and nonlinear dynamic electronic circuits using the computer. Some of the topics include network graph theory, generalized tableau and hybrid analysis, companion modeling. Newton's method in n-dimensions, numerical integration, sensitivity analysis and optimization.

Prerequisite: BS in Electrical Engineering

No. credits: 3 credits

Grading: ABCF

Textbook: There is no textbook. Research papers will be discussed.

Grading: Three projects (each 25% of the grade) + 25% for participation to class discussions. The projects will involve software development in a high-level programming language (C, C++, Java, Python, Matlab) and project report writing.

The list of papers to be discussed in class will be posted on Blackboard.