This course reviews the major components of the modern computer-aided circuit design flow, concentrating on models and algorithms for physical design and timing analysis. An important motivation for the course is to explore the directions in which computer-aided circuit design evolves as it copes with the challenges brought about by the increased complexity of deep submicron silicon technology. The course will survey the major disruptive technological trends, and study their impact on timing analysis and physical design. It will also explore the techniques in computer-aided design for testability, reliability, and manufacturability. The course will build the links between solid-state technology, circuit design, and CAD, and will be of interest to students in all these areas.

**Prerequisites**
Digital Integrated Circuit Design (360S) or consent of the instructor.
Solid-State Electronic Devices (339) and Algorithms (360C): recommended

**Topical outline**
Overview of the automated synthesis flow, basics of logic synthesis; partitioning, placement, routing, compaction, timing analysis; yield, reliability, and process variations; computer-aided design for testability, reliability, and manufacturability.

**Reader**
A collection of articles will be available as a reader.

**Grading**
10% Homework, 25% Midterm #1, 25% Midterm #2, 40% Project
The class project may be either a theoretical or practical investigation of open problems in areas discussed in the course. The students will write a mid-semester and a final report, and will present the project results in class at the end of the semester. Collaboration on homework assignments and projects is encouraged. Turning in identical homework solutions is considered cheating.

**College of Engineering Drop/Add Policy**
The Dean must approve adding or dropping courses after the fourth class day of the semester.

**Students with Disabilities**
The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY or the College of Engineering Director of Students with Disabilities at 471-4382.