CS400/500: Logic in Computer Science
Spring 2007

Time and place: Tuesday 10:40–11:30 (FENS L055), Thursday 10:40–12:30 (FENS L061)

Instructor: Esra Erdem (esraerdem@sabanciuniv.edu)

Office hour: Monday 14:40-15:30 (FENS G053)

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Course description. Logic plays a fundamental role in various areas of computer science, such as computer architecture (circuit design, hardware verification), software engineering (specification of programs, software verification), programming languages (semantics, type theory, logic programming), databases (relational algebra, query languages), artificial intelligence (knowledge representation, automated reasoning), theory of computation (complexity, computability, expressiveness), etc.

This course provides an elementary but mathematically solid introduction to logic (propositional logic, first-order logic, second-order logic, etc.), as well as an understanding of some of its applications in computer science. Mathematical logic is studied from a computer science perspective, covering the syntax, semantics, decision procedures, formal systems, etc.

Course objective. To prepare students for using logic as a formal tool in computer science.

Prerequisite. A course on discrete mathematics.

Textbook. There is no textbook; the necessary materials (e.g., lecture notes, homework problems) will be handed out in class or posted on the course webpage

http://people.sabanciuniv.edu/~esraerdem/teaching/lcs07.html.

Class participation. Students are expected to volunteer to present their own solutions to homework problems, and to participate in discussions about the solutions presented by others.

Exams. There will be a midterm exam and a final exam. Students will be allowed to use the lecture notes and their notes, but no books.

Grading (tentative). Grades will be determined by class participation (40%), the midterm exam (30%), and the final exam (30%).