

COT 6421 – Theory of Computation II

Catalog Description

Advanced computability theory; diagonalization and reductions; applications of computability theory to logic; computational complexity; the classes P, NP, and PSPACE; polynomial-time reductions and completeness. (3 credits)

Prerequisites

Students need to know discrete mathematics such as set, functions, and logic; and abstract computational models such as finite automata and Turing machines. (COT 5420)

Type

Can be an elective for MSCS, MSIT, and Ph.D.

Course Objectives

Students will learn the fundamental concepts in computability and complexity. Students will learn the major techniques to show (un)decidability and complexity.

Topics

Abstract Computation Models Revisited

The Church-Turing Thesis

Decidability & Reducibility

Advanced Topics in Computability

Time Complexity

Space Complexity

Intractability

Advanced Topics in Complexity

Textbook

Michael Sipser, *Introduction to the Theory of Computation*, 2nd edition, The MIT Press, 2006.

Last Update

Xudong He 9/8/2012