ECE 60800 – Computational Models and Methods

Type of Course
Graduate course

Catalog Description
Computation models and techniques for the analysis of algorithm complexity. The design and complexity analysis of recursive and nonrecursive algorithms for searching, sorting, set operations, graph algorithms, matrix multiplication, polynomial evaluation and FFT calculations. NP-complete problems.

Credits
3

Contact Hours
3

Prerequisite Courses
Graduate standing

Textbook
T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, Introduction to Algorithms, MIT Press, Current Edition.

Course Objectives
This course introduces fundamental knowledge regarding algorithm design in computer engineering area. The emphasis is on the understanding the classes of problems that can be solved by computers and quantifying the performance of algorithms used to solve such problems.

Lecture Topics
1. Time and space complexity, analysis methods
2. Models of computation, Turing machine
3. Recurrence formulas, discrete mathematics
4. Sorting
5. Search, set operations
6. Graph algorithms
7. Polynomial, matrix and FFT algorithms
8. NP-complete problems

Computer Usage
High

Laboratory Experience
None

Design Experience
High

Coordinator
Chao Chen, Ph.D.

Date
10/01/2018