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| **Course** | 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
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| **Computer Usage** | High |
| **Laboratory Experience** | None |
| **Design Experience** | High  |
| **Coordinator** | Chao Chen, Ph.D. |
| **Date** | 10/01/2018 |