COURSE NAME: *DESIGN AND ANALYSIS OF ALGORITHMS*

COURSE DEVELOPER: Anxiao Jiang, PhD
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Textbooks: Introduction to Algorithms (3rd Edition).

Course Content:

Divide and conquer, time complexity, dynamic programming, greedy algorithms, amortized analysis, graph algorithms, maximum flow, linear programming, NP completeness, approximation algorithms.

Course Learning Outcome:

The objective of this course is to study the principles and methods for designing and analyzing computer algorithms. Students are expected to obtain a comprehensive understanding of fundamental algorithm design techniques including divide and conquer, dynamic programming, greedy algorithm, graph algorithm, etc., and also learn basic theories on the hardness of problems and the methods for obtaining approximate or randomized solutions.

COURSE OVERVIEW:

Modern computers rely on efficient algorithms for solving all types of problems. This course will help students grasp the fundamental concepts of algorithm design and analysis, understand its underlying theories, and learn essential algorithm-design techniques.

Topics to be covered

- Week 1……**Dynamic Programming**
- Week 2……**Greedy Algorithm**
- Week 3……....**Divide and Conquer**
- Week 4……**Amortized Analysis**
- Week 5……**Graph Algorithms**
- Week 6……**Graph Algorithms**
- Week 7.....… **Maximum Flow**
- Week 8…....….**Maximum Flow**
- Week 9…….**Linear Programming**
- Week 10……**Linear Programming**
- Week 11……**NP Completeness**
- Week 12…..……**Approximate Algorithm**

- Week 13:……**Randomized Algorithm**
- Week 14…..……**Summary**

Evaluation and Understanding

2 Tests
1 Final Exam
9-11 Homework assignments
Reading Assignments

Grading: 90 to 100 for A, 80 to 89 for B, 70 to 79 for C, 60 to 69 for D, 0 to 59 for F.

Aggie Honor Code and Statement

“An Aggie does not lie, cheat or steal, or to tolerate those who do.” See
http://aggiehonor.tamu.edu

Statement: All students with disabilities are guaranteed a learning environment that provides for reasonable accommodation. For any assistance, please contact the instructor.