

## COT 6405 Analysis of Algorithms

**Credits:** 3 credits

**Text book, title, author, and year:** *Introduction to Algorithms*, 3rd edition, by T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, The MIT Press, 2009, ISBN: 0262033844.

**Reference materials:** *Algorithm Design*, J. Kleinberg and E. Tardos, Addison-Wesley Publishing Company, 2006.

**Specific course information:**

**Catalog description:** Design and analysis of algorithms from several areas of computer science. Topics include advanced data structures, dynamic programming, greedy algorithms, approximation algorithms.

**Prerequisites:** Prerequisites: COT4400 Design and Analysis of Algorithms

**Specific goals for the course:** To acquire working knowledge of analysis and design techniques. To learn different methods for designing algorithms for hard problems.

**Brief list of topics to be covered:**

1. Introduction
2. Foundations: Growth of Functions and Recurrences
3. Advanced Data Structures
4. Divide and Conquer
5. Network Flow
6. Greedy Algorithms
7. Dynamic Programming
8. Probabilistic Analysis and Randomized Algorithms
9. NP-Completeness
10. Approximation Algorithms