



CSC 313 Design & Analysis of Algorithms

(3 contact hours – 0 lab hour - 3 credits)

Syllabus¹

- **General Information**

Instructor	
Office	
Phone	
Class Time	
Class Location	
Office Hours	
Teaching Assistant	

- **Required Textbook**

- *Algorithms, Fourth Edition, Robert Sedgewick, 2011.*

- **Supplementary Textbook**

- **Algorithms in C++, Parts 1-4: Fundamentals, Data Structure, Sorting, Searching, Third Edition, Robert Sedgewick.**

- **Algorithms in C++ Part 5: Graph Algorithms, Third Edition, Robert Sedgewick.**

- **Course Description**

Basic techniques for design and analysis of efficient algorithms. Sorting, searching, graph algorithms and string processing. Design techniques such as dynamic programming and the greedy method. Asymptotic, worst-case and average-case analysis. Data structures including heaps, hash tables and trees.

- **Course Prerequisites**

CSC 225 (Programming & Data Structures)

- **Course Category**

Required

¹ This syllabus may change as needed. In such a case, students will be informed accordingly

- **Course Outcomes:**

At the completion of this course, students will be able to:

1. Apply the fundamental principles underlying algorithm analysis and design in specific instances. [ABET a, b, j]
2. Use essential algorithm design techniques such as divide and conquer, dynamic programming and the greedy method. [ABET a, c, j]
3. Analyze complexity and correctness of algorithms. [ABET a, c, j]

- **Tentative Schedule**

Topic	Week
Syllabus	1
Ch1: Fundamentals and asymptotic, worst-case and average-case analysis	1-2
Ch2: Sorting	3-5
Ch3: Searching	6-8
Ch4: Graphs	9-12
Ch5: Strings	13-15

- **Grading Scheme**

Quizzes	20%
Assignments	25%
Midterm Exam	20%
Final Exam	35%