**Program Structures and Algorithms: SEC 02 INFO 6205, Spring 2017**

**Instructor: Ashish**

**Office Hour: After Class, or by appointment**

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**Phone: (425) 457-2115**

**Class Time: Wednesday 6:30 – 9:30 PM**

**Place: Room # 307 225 Terry Avenue**

**Course Description:** In this course we will discuss fundamentals of programming data structures and basic algorithms. We will cover data structures of arrays, linked list, stacks and queues, hash tables and hash maps, trees, graphs, suffix trees and few other specialized data structures. We would also learn about order of complexities for each one of these data structures. In addition to this we would be discussing searching and sorting, backtracking, dynamic programming, bit manipulation, pattern searching etc.

**Prereq. INFO 6205**. Basic understanding of any high level programming language.

**Grading: (TBD)** Assignments/Quizzes 60%, Mid Term 20% Final 20%

**Academic Honesty:** The Northeastern University academic integrity policy applies to your work in this course. All students are expected to adhere to this policy. For more information on academic integrity policy, please visit website: http://www.northeastern.edu/osccr/academicintegrity/index.html

**Attendance policy:** The Information Systems Department has a strict class attendance policy. Students who miss two or more Classes will automatically receive one letter grade lower in their final grade. Students who miss three Classes will receive an automatic F for the class. No exceptions are allowed for this rule.

**Course Schedule: (Subject to change)**

Week 1 Searching and Sorting

Week 2 Searching and Sorting continued

Week 3 Recursion and Backtracking

Week 4 Dynamic Programming

Week 5 Dynamic Programming

Week 6 Dynamic Programming

Week 7/Mid Term

Week 8 Trees Basics + BST

Week 9 Trees, Suffix Trees B+ Trees, Self-Balancing Trees

Week 10 Link list, stacks and queues

Week 11 Graphs

Week 12 Graphs

Week 13 Bit Manipulation + Hash Table

Week 14 Matrix data structures

Week 15 Greedy Algorithms, Divide and Conquer

Week 16 Final