Department of Electrical and Computer Engineering
North South University (NSU)

Course Outline - Spring 2019

CSE 225: Data Structures and Algorithms

Instructor: Dr. Md. Mahfuzur Rahman, Assistant Professor, ECE Department, NSU
Office Location: SAC 1044A
Office Hours: **S** : 11:45 - 12:45, **M** : 10:15 - 11:15 & 3:00 - 7:00,
T : 11:45 - 12:45, **W** : 10:15 - 11:15

Course Summary:

This course is about an introduction to the theory and practice of data structuring techniques. Topics include internal data representation, abstract data types (ADT), stacks, queues, list structures, recursive data structures, trees, graphs and networks. Concept of object orientation as a data abstraction technique will be introduced.

Course Objectives: The objectives of this course are to

a. introduce the basic data structures for storage and retrieval of ordered or unordered data using arrays, linked lists, binary trees, heaps, graphs and hash tables.
b. introduce the concept of problem domain analysis and exploit the domain features to improve data structures efficiency.
c. develop the concept of asymptotic analysis using Big-O techniques to compare different algorithmic solutions.

Course Credit: 3 credits

Pre-Requisites: CSE 215: Programming Language II

Co-Requisites: CSE 225L: Data Structures and Algorithms Lab

Textbook: C++ Plus Data Structures by Nell Dale, Jones & Bartlett Learning (5^{th} edition)

Reference Text & Materials:

- Data Structures & Algorithms in C++, Michael T. Goodrich, Roberto Tamassia
- C++: The Complete Reference, Herbert Schildt
- Additional reading materials will be provided and uploaded in the course website

Class Schedule

There will be three classes per week following NSU Academic Calendar. Three classes in each week will be completed with two meetings. Each class meeting will be for 90 minutes.

Contents Overview:

The course material is divided into seven units where each unit consists of a series of learning activities including attending classes, reading from class notes and textbook, programming practices, lab participation, and completion of works for evaluation.

Unit	Topic(s)	Week(s)	Related Works
1	Software Engineering Principles	1	Quiz and Assignment
2	Lists	2.5	
3	Stack, Queue, Recursion	2.5	
			Mid Exam
4	Binary Search Tree	1.5	Quiz and Assignment
5	Heaps, Hash Tables	1.5	
6	Graphs	1.5	
7	Sorting and Searching	1.5	
			Final Exam

Assessment Scheme:

Assessment Tools	Weightage (%)
Class Performance	5%
Quizzes (best 3)	15%
Assignment	10%
Midterm	25%
Final Exam	25%
Lab Work	20%

Class performance: Asking questions, taking part in discussions, and so on.

Exams and Quizzes: Exams and quizzes will be closed book and closed notes. No electronic devices except non-programmable calculators will be allowed during exams. Calculators cannot be shared with friends. **There will be no makeup quizzes or exams.** If you miss a quiz or exam, you will get zero for that. Final exam will be comprehensive.

Assignments: There will be several home works/ assignments throughout the semester **No late submission will be accepted.** To be successful in the exam, you should solve assignment problems independently, although you may discuss with your friends to understand a more comprehensive picture of the problems.

Lab Work: Lab Outline and Manuals will be provided separately. "**Fail**" in Lab will make you "Fail" in Theory Course as well and vice- versa.

Grading Scheme

Scores (in %)	**Letter Grade**	**Grade Points**
93 & above	A Excellent	4.0
90 to <93	A-	3.7
87 to <90	B+	3.3
83 to <87	B Good	3.0
80 to <83	B-	2.7
77 to <80	C+	2.3
73 to <77	C Average	2.0
70 to <73	C-	1.7
67 to <70	D+	1.3
60 to <67	D Poor	1.0
00 to <60	F*	0.0
	I** Incomplete	0.0
	W** Withdrawal	0.0
	R** Retaken	0.0

Class etiquette: Distracting others in class is violating others rights to be attentive. **So, laptop, tablets, cell phones or any other devices cannot be turned on during class time.** You have to share any talk with the whole class. Attendance will be counted at the beginning of the class and if you are late then **no late attendance will be counted.**

Grade dispute: If you dispute your grade on any homework, quiz or exam, you have one-week time (from the date that the graded paper was returned to you) to request a change in the grade. After this time, no further change in grade will be considered.

Academic dishonesty: Any means of unauthorized assistance in preparing materials, which a student submits as own work, is deemed to be cheating and constitutes grounds for disciplinary action. Instructors are expected to use reasonably practical means of preventing and detecting cheating. Any student judged to have engaged in cheating might receive a reduced grade for the work in question, a failing grade in the course, or such other lesser penalty, as the instructor deems appropriate. Serious instances may be referred to the Disciplinary Committee of NSU.