Course Description: Introduction to the design, implementation and analysis of data structures. Topics will include lists, stacks, queues, trees, and graphs. Credit will only be granted for one of COSC 210 or COSC 222. Credits: 3 Prerequisites: A score of 60% or higher in COSC 121. Course Overview, Content and Objectives: The course will introduce various common data structures such as lists, stacks, queue, graphs, and trees for solving complex problems. Students will also learn about mathematical techniques to analyze the efficiency of various algorithms and common operations on data structures. Additionally, they will understand how to design new algorithms for the data structure that they studied to solve problems. Topics to be covered include Algorithm Analysis, Stacks and Queues, Array and Linked Lists, Recursion, Binary Trees, B-Trees, Sorting and Searching, Heaps, Graph Theory and Hash Tables. Learning Outcomes: Upon completion of this course, students will be able to: Describe common data structures and mathematically analyze them; Understand how to implement various data structures and related algorithms; Understand and quantify why one data structure and its related algorithmic solution is better than another. Topics include: Course overview, Algorithm analysis, Lists and Linked Lists, Stack, Queue, Trees and Terminology, Binary search tree and operations, Binary search tree and operations, Balanced tree, AVL, Red-Black tree, Priority queues, heaps, Graph terminology, graph traversal, Minimum spanning tree, table, hashing, Sorting & Searching.