



Course Competency Report by Code

Code: C189

Data Structures (C189)

Course of Study: C189 - Data Structures
 Course Level: Undergraduate
 Course Division: Lower Division Major
 Discipline: Information Technology
 Course Type:
 Department: Information Technology

COMPETENCY #	COMPETENCY NAME	COMPETENCY TEXT
4021.1.1	Introduction to Abstract Data Types, Algorithms, and Data Structures Using Bags (unordered lists)	The graduate explains how to design abstract data types (ADTs), data structures to represent an ADT in storage, and algorithms to manipulate ADTs (using the bag ADT as an example) and describes bag data types and the use of both sequential and linked allocation to implement them.
4021.1.2	Introduction to Analysis of Algorithms	The graduate analyzes the time and space complexity of basic algorithms.
4021.1.3	Stacks, Queues, and Deques	The graduate describes design, specification, and implementation of stacks, queues, and deques and implements a simple application using sequentially allocated queues as well as stacks that employ a linked allocation.
4021.1.4	Lists	The graduate describes design, specification, and implementation of list structures.
4021.1.5	Sorting and Sorted Lists	The graduate identifies basic selection and insertion sorting algorithms, as well as faster sorting algorithms, and describes the design and implementation of sorted lists.
4021.1.6	Basic Searching Algorithms and Associative ADTs	The graduate describes how to use searching algorithms for lists and explains the concept of a dictionary as an associative ADT.
4021.1.7	Hashing Algorithms and Structures	The graduate describes the use of hash tables and bucket hashing as an efficient way to implement an associative ADT, and implements a simple application that uses bucket hashing.
4021.1.8	Tree Structures	The graduate describes tree structures and binary trees and implements a simple application involving building and searching a binary tree.