

## Master Syllabus

### CIS 2207 - Data Structures & Algorithms

**Division:** Business and Public Services

**Department:** Computer Information Systems

**Credit Hour Total:** 3.0

**Lecture Hrs:** 3.0

**Prerequisite(s):** CIS 1202

**Date Revised:** April 2017

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### Course Description:

This course covers data structures using the C++ Programming Language. Topics include data abstraction, encapsulation, information hiding, the use of recursion, searching and sorting algorithms, and the creation and manipulation of various data structures: lists, queues, tables, trees, heaps, and graphs.

### General Education Outcomes:

- Critical Thinking/Problem Solving Competency

### Course Outcomes:

#### Analyze a given problem and select the appropriate solution.

Use the understanding of data structures to provide the appropriate solution to a problem

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher on a standard rubric

**Assessment Method:** Simulations

**Performance Criteria:**

70% or higher on a standard rubric

#### Define each of the algorithms and data structures studied.

Create C++ classes using inheritance, polymorphism and data structures.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher on a standard rubric

**Assessment Method:** Simulations

**Performance Criteria:**

70% or higher on a standard rubric

#### Create programs or classes using the C++ programming language for each of the data structures studied.

Develop abstract data structures such as linked lists, stacks, queues, and binary trees.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher on a standard rubric

**Assessment Method:** Simulations

**Performance Criteria:**

70% or higher on a standard rubric

#### Evaluate the different algorithms in terms of time using Big O notation to determine their efficiency.

Analyze problems and design, code and test the C++ software solutions.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% or higher on a standard rubric

**Assessment Method:** Simulations

**Performance Criteria:**

70% or higher on a standard rubric

### Outline:

Data abstraction and encapsulation

Information hiding

Recursion

Searching and sorting algorithms

Creation and manipulation of various data structures including lists, queues, tables, trees, heaps, and graphs.