COMP 2210, Fundamentals of Computing II

Credit hours: 4 lecture
Contact hours: 3 lecture, 3 lab

Catalog Description: Software development in the context of collections (e.g., lists, trees, graphs, hashtables). Communication, teamwork, and a design experience are integral course experience.

Prerequisites: COMP 1210
Corequisites: None

Required Course (CSCI, ECPE, SWEN, WIRS)

Instructor or Course Coordinator: Dr. Dean Hendrix

Required Textbook

Reference Materials

Software Used
• Java 2 (J2SE) Development Kit (JDK) 8u66 or later
  (http://www.oracle.com/technetwork/java/javase/downloads/index.html)
• jGRASP IDE (http://www.jgrasp.org/)
• JUnit testing framework (http://junit.org/junit4)
• Checkstyle static code analysis tool (http://checkstyle.sourceforge.net/)

Course Outcomes
The student will be able to
• design and implement data structures and collections based on specifications.
• apply concepts and techniques from object-oriented programming.
• apply data structures and collections effectively in the solution to computing problems.
• perform fundamental testing and debugging techniques.
• perform fundamental time and space analysis on algorithms.
• develop software solutions that meet stated performance constraints

Topics Covered
• Introduction and Overview (1 hour)
• Searching (2 hours)
• Correctness and Testing (3 hours)
• Generality (3 hours)
• Efficiency and Algorithm Analysis (3 hours)
• Sorting (3 hours)
• Divide and Conquer (1 hour)
• Recursion (2 hours)
• Collections, Bags (3 hours)
• Linked Structures (3 hours)
• Lists, Stacks, and Queues (3 hours)
• Breadth-First and Depth-First Search (2 hours)
• Binary Search Trees (5 hours)
• Binary Heaps (2 hours)
• Hash Tables (3 hours)
• Graphs (3 hours)
• Exams (3 hours)

Course Requirements
• Programming assignments (40%)
• Exam 1 (15%)
• Exam 2 (15%)
• Exam 3 (15%)
• Final Exam (15%)

Syllabus prepared: Spring 2016