

**Virginia Western Community College**  
**CSC 202**  
**Computer Science II**

**Prerequisites**

CSC201 Co-requisite: Calculus I MTH 263 (old number: MTH 174 or equivalent (MTH176)).

**Course Description**

Examines data structures and algorithm analysis. Covers data structures (including sets, strings, stacks, queues, arrays, records, files, linked lists, and trees), abstract data types, algorithm analysis (including searching and sorting methods), and file structures

**Semester Credits: 4    Lecture Hours: 4    Lab/Clinical/Internship Hours: 0**

**Required Materials****Textbook:**

Required: Starting Out with Java From Control Structures through Data Structures by Tony Gaddis and Godfrey Muganda, 3rd ed, Pearson, ISBN 9780134038179

**Other Required Materials:**

Eclipse software – provided in class

**Course Outcomes**

**At the completion of this course, the student should be able to:**

- Code Programming Fundamentals - multi-dimensional arrays, recursion
- Code and understand Java Topics - interfaces and abstract classes, applications, inner classes
- Grasp Graphical User Interface - events, listeners, components
- Code OO java programs using Data Structures - stacks, queues, vectors, lists, binary tree concepts, binary search tree concepts
- Understand and code programs using Recursive Sorting and Searching Concepts - quicksort, merge-sort, binary search (arrays and trees)
- Grasp OO Topics objects, references, classes, methods, fields, instance vs. class members, inheritance, polymorphism, persistence, serialization, overriding
- Implement Software Engineering Problem solving, Software Analysis and Design, Testing and debugging, Documentation and program structure, UML, encapsulation, Abstraction and Data Structures
- Understand and code Language Topics - linked structures, recursion, exceptions
- Write java code using Recurring Theme - Analysis of Algorithms

**Topical Description**

<u>MOD 1</u> (2 WEEKS)	Review Ch 1-10 Review Chapter 11: Exceptions and Advanced file I/O
<u>MOD 2</u> (2 WEEKS)	Chapter 16: Recursion Chapter 18: Generics
<u>MOD 3</u> (2 WEEKS)	Chapter 17: Sorting, Searching, and Algorithm Analysis
<u>MOD 4</u> (3 WEEKS)	Chapter 19: Collections and Streams
<b><u>MIDTERM</u></b>	
<u>MOD 5</u> (3 WEEKS)	Chapter 20: Linked Lists
<u>MOD 6</u> (3 WEEKS)	Chapter 21: Stacks and Queues Chapter 22: Binary Trees, AVL Trees, and Priority Queues
<b><u>FINAL EXAM</u></b>	

**Notes to Instructors**

- A midterm exam is required after the third or fourth module
- A comprehensive final exam is required
- An optional group project can be assigned for the class