

CPS-272 – Data Structures with C++ Course Syllabus

Course Code:

CPS-272

Course Title:

Data Structures with C++

Course Description:

In this course; students continue the C++ sequence and study more advanced computer science features as implemented in C++. Topics include advanced data structures; complexity/efficiency of algorithms; recursion and problem-solving.

Prerequisites:

Academic Reading and Writing Levels of 6; CPS 271 minimum grade C

Outcomes and Objectives:

[Please refer to the CPS-272 Master Syllabus](#)

Required Text and Materials:

Please confirm edition with [WCC Website](#) or go to the WCC Bookstore and use the Find the Course Materials feature to view the required and recommended course materials: <https://washtenaw.bncollege.com/course-material/course-finder>

- No text is required - materials are included within the Bb course site.

Software

For IBM users, you will need Microsoft Visual Studio or any C++ compiler. For Mac users, you will need xcode.

- Either the standard edition or the professional edition can be used.
- You will need this software if you wish to do homework on your own computer.
- Before buying this software, make sure you look at the minimum specifications to run it.

Optional Materials

C++ Programming: Data Structure with C++ (2nd edition)

Author: D.S. Malik

Publisher: Course Technology

Technical Requirements

- Computer with Internet Access
- Microsoft Visual Studio or xcode (see required materials for more information)

Course Overview and Structure:

Course Overview

This course is an introduction to Data Structure using C++ language. Students should have experience using C++ or Java language. Students learn about Data

Structure concepts that are new to traditional languages programmers, ADTs, and improved software development algorithms.

Course Goals

Upon successful completion of this course, you will be able to:

- Identify appropriate use of object-oriented design methods.
- Identify appropriate use of recursive programming.
- Identify appropriate use of programming data structures: vectors, linked lists, stacks, queues and binary trees.
- Demonstrate sound software engineering techniques in developing a working software program.

Course Objectives

1. Demonstrate proficiency in algorithms.
2. Demonstrate proficiency in using lists.
3. Demonstrate proficiency in using stacks.
4. Demonstrate proficiency in using queues.
5. Demonstrate proficiency in using linked lists.
6. Demonstrate proficiency in using binary trees
7. Demonstrate proficiency in using advanced data structure.
8. Demonstrate proficiency in using heap.
9. Demonstrate proficiency in using recursion.
10. Create a program that is logical, easy to understand, and properly indented to solve a stated problem.
11. Create a program that solves a stated problem and compiles properly.
12. Create a program that executes properly to solve a stated problem.

Time Commitment

To meet the due dates on the schedule, expect to spend 12-16 hours per week for this 4-credit course. Designing programs is often time consuming. If you are having difficult designing a program, please e-mail me for additional help.

Grading

- Grades are posted in Blackboard under **My Grades**.
- Grading is typically completed within a week of the due date.

Determining Your Grade

Participation

Discussion Boards

Throughout the course there will be discussion boards started for anyone requiring help on the Machine Problems. It is important to use these to help one another work through problems while building your programs. In addition, you will be required to answer questions about the difficulty of the assignment, and to reflect upon challenges/problems you faced. Please see academic integrity for information on what can and cannot be posted. These discussion boards will be graded under participation, you **MUST** participate in order to receive full points.

Labs

After each module, you will be assigned practice problems within Zybooks. These problems will help you practice the concepts you learn and will always be due on Thursdays.

Machine Problems

Throughout the course, you will work on seven (7) machine problems. These problems are to help you apply what you have learned in a certain unit. These problems will require you to create a program according to a certain scenario using what you have learned. Each machine problem is worth 50 points and will be due every two weeks.

Quizzes

You will have 15 quizzes throughout your course. These will be due at the end of each unit or module on Sundays.

Graded Items	Number of Assignments	Points Each	Points Total
Quizzes	15	50	750
Machine Problems	7	50	350
Participation	-	-	100
Total	-	-	1200

Fluency in programming cannot be attained by simply reading and studying; you must practice the skills by designing, writing and debugging computer programs on your own. You may get help by emailing me – but there may be some days when I do not check my email so do not expect immediate help this way. My concept of helping you with machine problems is that I will help you learn to debug programs, but I will not debug them for you. Therefore, when you seek help, you should already have some idea about the nature of the program bugs. Make sure to include a copy of your code in your e-mail to speed up the process for me.

Course Deadlines

All assignments will be due on their due dates at 11:59 pm. Please refer to the course schedule for specific due dates and pacing for units.

Late Assignments

No late assignments will be accepted and will receive an automatic zero.

Communication

Email Communication

- Please send emails from your WCC account to be in compliance with [federal privacy regulations](#).
- Provide a clear subject line.
- Always include your first and last name in the email message.

Expectations and Availability of Instructor

I will usually respond to email within 24 hours Monday-Friday and 48 hours on the weekends and Holidays. You should make a habit of checking your Blackboard course as well as your email on a regular basis as well.

Other Important Information

An incomplete will only be given for emergencies that arise during the last week of the semester and will not be given for failure to complete assignments when due or to allow a student to complete work to obtain a higher grade.

Academic Integrity:

Plagiarism and other forms of academic dishonesty will result in discipline according to the [WCC Student Rights & Responsibility guidelines](#). Always complete your own work using your own words. If you do use information, ideas, or words from other sources, credit that source using MLA or APA format.

Accommodation of Special Needs:

[Learning Support Services Department](#) provides support to students who may need accommodation for documented disabilities, or other learning need. WCC will work with you to accommodate any of your individual learning needs, however, I need to know of any requests in advance in order to make the necessary arrangements.

WCC Student Policies and Support Information:

Review the material within the Washtenaw Community College Student Policies and Support Information for additional policies and procedures that affect you and your course. Find this information [on this shared page](#).