Syllabus

CPS 272 – Data Structure using C++

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Office Hours: on Blackboard (Instructor Contact)**

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.

**Pre-Requisite:** CPS 271 (Advanced C++) or CPS 261 (Advanced Java)

Course Goals

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

1. Identify appropriate use of object-oriented design methods.
2. Identify appropriate use of recursive programming.
3. Identify appropriate use of programming data structures: vectors, linked lists, stacks, queues and binary trees.
4. 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.

Required Materials

1. Software

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

* 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

This semester we are using OER from LinkedIn Learning. Use your WCC credentials to sign in for free. The following book is recommended:

C++ Programming: Data Structure with C++

Author: D.S. Malik

Publisher: Course Technoloy

Technical Requirements

* Computer with Internet Access
* (see required materials for more information)

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.

Accommodations

Washtenaw Community College has an open computer lab with the required software. These are located in the Gunder Myran (GM) building above the library. Call 734-973-3420 for hours of operation or visit the [Computer Lab Commons website](http://www.wccnet.edu/resources/computercommons/). Also, study groups are available. Please contact the computer department at 734-677-5431 for the schedule.

If you have a documented disability, contact Learning Support Services at 734-973-3342 as soon as possible to discuss accommodations. Learning Support Services is in room LA 104.

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.

Machine Problems

Throughout the course, you will work on six (6) 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 12 quizzes throughout your course. These will be due at the end of each unit or module.

| **Graded Items** | **Number of Assignments** | **Points Each** | **Points Total** |
| --- | --- | --- | --- |
| **Quizzes** | **12** | **50** | **600** |
| **Machine Problems** | **6** | **50** | **300** |
| **Final Exam** | **1** | **100** | **100** |
| **Total** | **-** | **-** | **1000** |

| **Grading Scale** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | 93– 100% | **B** | 82 – 87% | **C** | 72 – 77% | **D** | 62 – 67% |
| **A-** | 90 – 92% | **B-** | 80 – 81% | **C-** | 70 – 71% | **D-** | 60 – 61% |
| **B+** | 88 – 89% | **C+** | 78 – 79% | **D+** | 68 – 69% | **F** | 59% and below |

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](http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html).
  + 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

It is always suspect to have machine problem scores significantly higher than your test scores! This usually indicates that you are getting too much help in writing the machine problems. The basic rule is that you may not give or receive assistance for any work that you are submitting as your own.

Some examples of cheating:

* Having someone else write your program (in whole or in part).
* Copying a program someone else wrote (in whole or in part).
* Collaborating with someone else to the extent that the programs are identifiably similar (in whole or in part).

What is not cheating?

* Talking to someone in general about topics and concepts involved.
* Asking someone for help with a specific error message from the compiler. Getting help with the specifics of C++ syntax.
* Using information from the program write-up e.g. copying text describing the problem for your comments.

In addition, please 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 under the Syllabus and Schedule area of this course site.