Palomar College
CSCI 222 C++/Object Oriented Programming
Syllabus Spring 2024

Course Information
Instructor: Duy Nguyen
Email: dnguyen@palomar.edu or duy@sigma-3.com
Course Number and Section: CSCI 222
Location and Time: Monday, 6:00 – 8:50pm, Wednesday 6:00 – 8:20pm
Office Hours: MW 5:30-6:30pm in MD-232, TTh 12:00-1:00pm, F 4-6:00 online
Total Units: 4.0
Prerequisite/Recommend Preparation: CSCI 114 with a 'C' or higher

Catalog Description

Detailed study of the C++ programming language and its support for data abstraction and object-oriented programming. Presents an introduction to the fundamental elements of object-oriented programming including encapsulation, classes, inheritance, polymorphism, templates, and exceptions.

Course Objective
This course is an introduction to programming and design using C++. The course focuses on implementation and testing of software in a platform-independent and event-driven environment. It covers the basics of data representation, user interface design, and software engineering. Includes hands-on laboratory experience reinforcing the lecture material. As a note, this class will be heavily focused on labs requiring students to apply the concepts to solving problems.

Student Learning Outcomes
- Students will be able to effectively use software development tools including libraries, compilers, editors, linkers, and debuggers.
- Students will be able to utilize the syntax and semantics of C++ in the development of software.
- Students will be able to construct programs utilizing classes, encapsulation, inheritance relationships, and polymorphism.
- Students will be able to employ design principles of modularity, abstraction, and encapsulation in the creation of C++ classes.

Required Textbook

Cay Horstmann, Big C++: Late Objects, Third Edition, 2018, ISBN: 978-1-119-40297-8.

Course Work

This course requires more work, mostly on programming, than the average course. In general, you will need to devote at least three hours of study for each class hour. If you are uncertain about your time commitment, please discuss it with your instructor as soon as possible.
Minimum Number of Semester Hours
90 (63 lecture / 27 laboratory)

Computer Lab Assignments
Labs must be written in C++. At least six labs will be assigned for the semester and each lab will be graded out of ten or more points. While group discussion is allowed at the algorithm level, you must do your own homework and write your own code. Do not take any portion of the lab from another student. Labs will be due on the date announced and will be accepted late, with penalty, for three days after the due date for spring or fall semester or two days after the due date for summer session. Please note that if you are repeating this class and have previously received a passing grade for a lab, you will not be allowed to resubmit that lab for a grade. You will be assigned a different lab.

Student Code of Conduct
http://www.palomar.edu/Code_of_Conduct_condensed_version.pdf

Collaboration Policy
You are encouraged to discuss course material with other students, provided that you adhere to the following restrictions. Violations carry severe penalties. If you have questions about any of this, or if you need advice for specific situations, please ask your instructor.

All material turned in for credit must be your own work. For the labs you may discuss design issues with other students, but you must write your own code. For the homework you may discuss ideas (and of course go over class material) with other students, but you should work out all details and write up all solutions on your own. Copying part or all of another student's assignment, with or without the student's knowledge, is prohibited. Similarly, copying old solutions is prohibited. You should do the work yourself. Of course, you should always feel free to get help from the instructor during office hours.

Receive help with care. Avoid working too closely with another student. Otherwise, you can unwittingly become dependent on that student's help and fool yourself into thinking that you understand things better than you really do. Always attempt to do as much as you can on your own. Then, after you do seek help, be sure to work through similar problems on your own.

Give help with care. Don't help "too much." When you understand something, you may be tempted to show someone the complete solution. However, if you do this, you will rob them of the learning experience of reaching the solution on their own. Try giving a hint that will help them get "unstuck." If you don't see how to help without "giving away the whole thing," suggest that they see the instructor who may be able to help them through the process gradually.

Although you are allowed to help other students, you are never under any obligation to do so. If you feel uncomfortable answering a student's question for any reason, please do not attempt to answer the question. Instead, suggest that the student see the instructor.

Written Homework Assignments
Written homework assignments will be assigned typically on a weekly basis and will be due approximately one week after it is assigned. Late homework will not be accepted. Students who do not hand in their homework will have their grade considerably affected.

Exams
A midterm and a final exam will be scheduled during the semester to assess the student's comprehension of the course material. The exam material will cover reading assignments, homework, lab material, and any additional material covered throughout the course of the semester. For online students, the midterm and final exams will be available to take in the Palomar College Library Tutoring Center.

My official policy is that there are no makeup exams. I consider very few circumstances grave enough to issue a makeup exam. In the rare instance of illness that prevents you from taking an examination, a doctor's excuse will be required and I must be notified prior to the exam time. Unless special arrangements are made with the instructor, makeup exams must be completed within one week following the scheduled exam.

Drop Policy
The policy and dates stated in the Palomar College Catalog and Class Schedule apply to this course. Please be sure to review them. Students may drop the class through eServices. Students who stop attending class will not necessarily be dropped by the instructor and will receive an appropriate letter grade (A-F) at the end of the semester.

Grading Policy
Tentative grading policy will be as follows:
20% - Homework
15% - Midterm Exam
15% - Final Exam
50% - Computer Labs

Final course grades will tentatively be determined as follows:
90% - A
80% - B
70% - C
60% - D
Below 60% - F

Academic Integrity:
Palomar College does not tolerate cheating. You are responsible for ensuring the academic integrity of all work presented. Violation of this requirement may result in a grade of F for the work and/or your final grade. PLEASE DO NOT PLAGIARIZE. Copying and pasting from the

Internet or your colleagues violates Palomar College's integrity policy and will result in a grade of F.

Disability Accommodation
Students with disabilities, whether physical, learning, or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disability Resource Center (DRC) as soon as possible to ensure that such accommodations are implemented in a timely manner. Their phone number is 760-744-1150 Extension 2387, or e-mail at dsps@palomar.edu. They will help you determine what assistance is available to you.

Outline of Course Content

Week 1: Overview of course, compiling code, writing a first C++ program, etc. Chapter 1

Week 2: Beginning C++, branching statements, arrays, pointers, loops, Chapter 2-6

Week 3: Functions in C++, Namespaces, Streams, Chapters 7-8

Week 4: Objects and classes part I, Chapter 9

Week 5: Objects and classes part II, Chapter 9

Week 6: Classes and dynamic memory allocation, operator overloading, Chapter 7 and 9

Week 7: Public inheritance I, Chapter 10

Week 8: (Midterm online, chapters 1-9), Multiple inheritance, Chapter 10

Week 9: Spring Break

Week 10: Containment vs. private or protected inheritance, Chapter 13

Week 11: Sorting and Searching, Chapter 12

Week 12: Friends, nested classes, and exceptions, from handouts

Week 13: Generic programming and C++ templates and data structures, Chapter 13 and Chapter 14

Week 14: Advanced Standard Template Library (STL), Chapter 14-15

Week 15: Introduction to Graphs Data Structure, supplemental notes

Week 16: Graph Implementations and Dijkstra Shortest Path, supplemental notes

Week 17: Review & (Final exam online)

Assignments and Laboratory Schedule

Due Date	Details		
2/5/24	Writing First C++ Program	Assignment 1 (P1.1)	due by 11:59pm
2/12/24	C++ String processing	Lab 1 (P3.15)	due by 11:59pm
2/19/24	Fundamental Datatype	Assignment 2 (P2.1, P2.4)	due by 11:59pm
2/26/24	Decisions/Loops	Assignment 3 (P4.8, P5.18)	due by 11:59pm
	Re-implement C code into C++ Class	Lab 2	due by 11:59pm
3/5/24	Arrays & Vector	Assignment 4 (P6.10)	due by 11:59pm
3/12/24	Operator Overload	Lab 3	due by 11:59pm
3/19/24	Pointers and structures	Assignment 5 (P7.7, P7.10)	due by 11:59pm
3/26/24	Input/Output Streams	Assignment 6 (P8.8, P8.10)	due by 11:59pm
4/16/24	Linked List STL	Assignment 7 (P14.5, P14.9)	due by 11:59pm
4/23/24	Inheritance	Assignment 8 (P9.11, P9.18)	due by 11:59pm
4/23/24	Handout	Lab 4	due by 11:59pm
5/9/24	Multiple Inheritance	Assignment 9 (P10.9)	due by 11:59pm

Due Date	Details		
5/14/24	Operator Overload	[Assignment 10](#) (P13.7, P13.8)	due by 11:59pm
5/26/24	Handout	[Lab 5 (last one)](#)	due by 11:59pm

All problems beginning with PX.XX are taken from the class required textbook.

All laboratory and assignments shall be graded according to the following rubrics.

Assignments and Labs Rubrics

Description	Excellent	Good	Needs Improvement	Unsatisfactory	Max Score
Code Compilation	Code compiles without errors or warnings (50)	Code compiles without errors but has warnings (31-49)	Code compiles with minor errors (11-30)	Code compiles with many errors (0-10)	**/50**
Code Execution	Code runs to completion and produces correct results for all test cases (40)	Code runs to completion and produces correct results for most test cases (30-39)	Code runs to completion but produces incorrect results (10-29)	Code execution produces run-time errors (0-9)	**/40**
Code Documentation	Code has sufficient and detailed documentation (10)	Code has sufficient documentation but lack details (5-9)	Code has minimal documentation, lacking details (1-4)	Code has no documentation (0)	**/10**
Total Score					**/100**