

**PALOMAR COLLEGE**  
**COURSE OUTLINE OF RECORD FOR**  
**DEGREE CREDIT COURSE**

X Transfer Course    X A.A. Degree applicable course  
(check all that apply)

**COURSE NUMBER AND TITLE:** CSIS 280    C++ and Object-Oriented Programming

**UNIT VALUE:** 4

**MINIMUM NUMBER OF SEMESTER HOURS:** 80

**BASIC SKILLS REQUIREMENTS:** Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS**

**PREREQUISITE:** CSIS 221 or CSIS 235

**COREQUISITE:** None

**RECOMMENDED PREPARATION:** None

**SCOPE OF COURSE:**

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.

**SPECIFIC COURSE OBJECTIVES:** Successful students will be able to:

1. Utilize the syntax and semantics of C++ in the development of software.
2. Utilize the principles of modularity, abstraction, and encapsulation in the creation of C++ classes.
3. Create programs utilizing abstract data-types, user-defined data types and data structures, classes, and inheritance relationships.
4. Analyze a C++ algorithm in terms of its time and space complexity.
5. Apply design principles of polymorphism, virtual functions, templates, and exception handling in the development of software
6. Analyze and construct efficient and effective algorithms and translate to appropriate control structures in an implementation language.
7. Effectively use software development tools including libraries, compilers, editors, linkers and debuggers.

## **CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Basics of Object-Oriented Programming
  - A. OOP terminology
  - B. Data Abstraction
  - C. Object, classes, methods
  - D. Inheritance and multiple inheritance
  - E. Polymorphism
- II. C++ and Object-Oriented Programming
  - A. Object-oriented programming in C++
  - B. Data abstraction in C++
  - C. Constructors and destructors
  - D. Inheritance in C++ classes
  - E. Polymorphism and dynamic binding
- III. Object-Oriented Software Design
  - A. Software engineering concepts
  - B. Object-oriented approach
- IV. C++ and ANSI C
- V. Predefined Classes in C++
- VI. Building Objects with Classes
- VII. VII. Defining operations on objects
- VIII. Using Inheritance in C++
- IX. Virtual functions and polymorphism
- X. Using C libraries in C++ programs
- XI. Building class libraries in C++

## **REQUIRED READING:**

Johnsonbaugh, Tim. Object-Oriented Programming in C++. Englewood Cliffs: Prentice Hall, 2002.

## **SUGGESTED READING:**

**None.**

## **REQUIRED WRITING:**

Problem solving exercises are assigned, requiring students to complete five or six computer programming labs. Each programming lab will consist of a hands-on exercise applying theory principles learned in class. Programs must be well documented (at least one paragraph) in terms of their overall design goals. Additionally, each subprogram must be documented (two or three sentences) as to its purpose and overall performance.

**OUTSIDE ASSIGNMENTS:**

**Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.**

There are written homework exercises within each section of each chapter which are assigned, requiring an average of one hour to complete. In addition, numerous programming assignments are assigned, each ranging from one to ten hours to complete by an average student.

**INSTRUCTIONAL METHODOLOGY:**

**Check all that apply:**

- lecture
- laboratory
- lecture-laboratory combination
- directed study

**DISTANCE LEARNING:**

**This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.**

Yes  No

**If yes, check all that apply:**

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

**GRADING POLICY AND STANDARDS** (include methods of determining whether the stated objectives have been met by students):

Programming Assignments	45%
Midterm	25%
Final	30%

**IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?**

Yes  No  Number of times course may be taken for credit: 3

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

**CONTACT PERSON:** Richard Stegman

**SIGNATURES ON FILE**