Department of Computer Science

CPTG 122
Introduction to Computer Science II (4 units)
Winter Quarter, 2025

Time and Location

Lecture: 1/6/2025 – 3/20/2025, MTRF 9:00 A.M. – 9:50 A.M., PSC 145.
Lab: W 8:00 A.M. – 10:50 A.M., PSC 145.

Textbook (Required): Tony Gaddis, *Starting Out With C++ From Control Structures through Objects*, Pearson, 9th Edition.

Instructor

Dr. Hwang. Office PSC 255. E-mail: ehwang@lasierra.edu. Office hours: Email me anytime to make an appointment or if you have any questions. Appointments can be either in person in my office or virtual on Zoom.

Course Description

Bulletin Course Description: Structured and object-oriented programming in C++, emphasizing good programming principles and development of substantial programs. Topics include strings, classes, recursion, pointers, linked lists, abstract data types, and libraries. Three class periods, one three-hour laboratory per week.

Prerequisite: CPTG 121 – Introduction to Computer Science I.

Student Learning Outcomes

The computer science and information systems curriculum at La Sierra University provides opportunities to reach various goals under the broad mission statement: "To Seek, To Know, To Serve." This second computer science course covers more advanced computer programming techniques, analysis of problems, development of algorithms, and design of efficient object-oriented programs.

Achievement at this intermediate level will be specifically demonstrated through the following:

- Students will develop logical thinking skills by learning how to write computer programs using a high-level language; (SLO 1)

- Students will be able to correctly analyze problems, develop computer algorithms for solving the problems, and implement the solution by writing computer programs in the high-level language; (SLO 1)

- Students will communicate effectively by completing weekly programming assignments and through class discussions. (SLO 10)

Topics (Numbers in parenthesis are chapter/section numbers in the textbook.)

1. Structured data. Abstract data types (11.1,2,3). Enumerated data types (11.11)
2. Classes (13, 14)
   - Operator overloading ==, +, = and ++
   - Friends of classes << and >>
   - Constructors and destructors
3. Function templates (16.2)
4. Pointers (9) and Linked lists (18)
5. Advanced file operations. Sequential and random file access (12)
6. Standard Template Library (STL) (17)
7. Recursion (20). Tower of Hanoi
8. Inheritance and polymorphism (15)

Requirements and Evaluation

Tests: 2 Midterms: Tuesday January 28 and Thursday February 20. Final: Thursday March 20, 2025, 8:00 A.M. – 10:00 A.M.

Quizzes: There will be pop quizzes where you will be asked to write short programs on materials that have just been covered in class.

Homework assignments: There will be approximately one homework assignment with several computer programming problems each week. These assignments must be turned in at the beginning of the class period on the given due date. Late assignments are not accepted unless you have a medical or emergency excuse. Unless otherwise noted, all programming assignments must be executable on the computer.

Labs: Weekly lab exercises to be done during the lab period.

Final Project: A final programming project due on the day of the final exam.

Attendance and Class Participation

This course will include much computer programming and discussion on how to solve problems. Students are expected to be on-time for class and ready to actively engage the material. Proper class preparation, active participation in class, and thoughtful conversation on the topic being discussed are expected. Since so much of what we learn takes place in dialogue with each other, the presence of each student is valued and necessary at every class period. To be excused from a class, you must provide an official note documenting the

reason(s) for your absence. It is still your responsibility to catch up on any material that you have missed.

Grading

Homeworks 10%
Labs 10%
Quizzes 5%
Final Project 10%
Subjective observation of your problem solving skills 15%
Midterms 2 @ 15% each
Final 20%.

Grading Scale

After the grades for the above requirements and their percentages have been calculated for each student, the final grades will be based on the following scale:

95 – 100%	A
90 – 94.9%	A-
87 – 89.9%	B+
83 – 86.9%	B
80 – 82.9%	B-
77 – 79.9%	C+
73 – 76.9%	C
70 – 72.9%	C-
67 – 69.9%	D+
60 – 66.9%	D
0 – 59.9%	F

"Incomplete" grades are given only in extremely unusual circumstances. See *La Sierra University Undergraduate Bulletin* for the University's policy concerning required procedures and course completion.

Policy on Assistance for Physically and Learning Challenged Students

La Sierra University complies with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. The Office of Disability Services located in the Learning Support and Testing Center coordinates all student requests for accommodation relating to special needs (physical, learning, or psychological). A student with such needs should contact the Office of Disability Services the first week of the quarter by calling 785-2450. After proper documentation is established, instructor will meet with the student privately to discuss specific needs.

La Sierra University's Policy on Academic Integrity and Honesty

"Academic honesty is the cornerstone of institutional integrity. Academic dishonesty, on the other hand, is a treat to the intellectual fabric of an academic community and is, perhaps, the most serious violation of trust that can occur in a community of scholars and educators…. Students who commit any offense against academic integrity and honesty may receive from an instructor a failing grade in an assignment or a failing grade in a course, without

possibility of withdrawal. The nature of the offense may dictate probation, suspension, dismissal, or permanent expulsion as determined by the dean and the Administrative Committee of the student's school of enrollment" (*La Sierra University Undergraduate Bulletin*).

Faculty members are expected to report all incidents of academic dishonesty. The instructor for this course will follow the established protocol for faculty members, which includes a report to the Provost's office should such an incident occur.

To be sure that you have no misunderstandings about the definitions of academic honesty or academic dishonesty, refer to your *La Sierra University Student Handbook*. The University has significant penalties for academic dishonesty, so please take this suggestion seriously.

Important Dates

1/17 (Last day to withdraw with no record on transcript), 2/28 (Last day to withdraw with a "W"), 1/20 (Martin Luther King Day), 2/17 (President's Day).