



Department of Computer Science

CPTG 255
Systems and Network Programming (4 units)
Winter Quarter, 2025

Time and Location

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

Textbook (Required): Van Winkle, Lewis, *Hands-On Network Programming with C*, Packt, 2019. ISBN 978-1-78934-986-3

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: Programming projects using application program interfaces in the operating system and distributed environment. Projects selected from file services, concurrent processes, inter-process communications, sockets, remote procedure calls, TCP/IP, network protocols.

This course will introduce to the students how to write network programs using the C language.

Prerequisite: CPTG 244 – Data Structures.

Student Learning Outcomes

The computer science curriculum at La Sierra University provides opportunities to reach various goals under the broad mission statement: “To Seek, To Know, To Serve.” This course in the computer science program introduces students to programming aspects on how computers communicate with each other.

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

- Students will develop logical thinking skills by learning how to write networking programs in C using system network APIs. (SLO 1, 3 & 4)

- Students will be able to correctly analyze problems, develop computer algorithms for solving the problems, and implement the solutions by writing computer programs for network communication. (SLO 1)
- Students will learn how computers are connected together in a network and the protocols they use to communicate with each other. (SLO 3)
- Students will communicate effectively by completing weekly programming assignments and through class discussions. (SLO 2)

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

1. Introduction to network and protocols (1).
2. Socket APIs (2).
3. TCP connections (3).
4. UDP connections (4).
5. Hostname resolution and DNS (5).
6. Building a web client (6).
7. Building a web server (7).
8. Building an email client (8).
9. Encrypted protocols and Open SSL (9).
10. Implementing a secure web server (10).
11. Establishing SSH connections (11).
12. Internet of Things (14).

Requirements and Evaluation

Tests: 2 Midterms: Tuesday January 28 and Friday February 21. Final: Wednesday March 19, 2025, 11:00 A.M. – 1:00 P.M.

Programming Projects: There will be approximately one or more programming project each week. These projects must be completed by the given due date. Late completions are not accepted unless you have a medical or emergency excuse.

Attendance and Class Participation

This course will include much computer programming for networking 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

Programming Projects 50%
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.

Additional Information

A. Discrimination and Harassment Policy

Faculty members are committed to supporting students and upholding the University’s Title IX policy. Under Title IX discrimination based upon sex and/or gender is prohibited. This includes any act of sexual misconduct or sexual assault. In addition, our Title IX policy prohibits dating violence, domestic violence, stalking and sexual exploitation.

If you experience an incident of sex or gender based discrimination, sexual assault or sexual misconduct, we encourage you to report it to our Title IX Office.

You may talk to a faculty member, but understand that faculty members **MUST** report to the Title IX Coordinator what you share.

If you would like to speak with someone who may be able to afford you confidentiality, you may contact our Counseling Services located in the Student Wellness Services facility.

You may also want to visit our Wellness Center. Please know that all services at our Wellness Center are subject to confidentiality.

B. Academic Honesty

Because scholars communicate, consider ideas, and contrast understandings in writing, it is important to be able to rely on each other in an atmosphere of openness, trust, and clarity. The proper use of citations allows colleagues to double-check one’s interpretation of someone else’s work, or to follow-up in greater depth if interested in a particular idea. For this reason, academic

honesty is of critical importance. It is important to use quotation marks where needed and to cite the source of all significant ideas, concepts, paraphrases, and quotations.

Because we need to be able to rely on each other's work with confidence, please make sure that you provide proper attribution of all ideas, paraphrases, and quotations inserted into your papers **and programs**. A purposeful or careless breach of academic integrity will result in penalties.

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. La Sierra University's policy and other important information regarding academic honesty can be found at <https://lasierra.edu/academic-integrity/>.

C. Special Assistance:

It is the policy of La Sierra University to accommodate students with disabilities. Any student with a documented disability who requires reasonable accommodations should contact Office of Accessibility Services in Sierra Vista Hall at (951) 785-2452 or <https://lasierra.edu/accessibility-services/>. For those who need proctoring for testing accommodations, hours are Thursdays 8:30am-12pm and 1-4:30pm and Friday 8:30-12PM.

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).