POINT LOMA NAZARENE UNIVERSITY

Mathematics Information and Computer Sciences (MICS)/STEM

CSC2054 - Data Structures and Algorithms (4 units)
CSC2052 - Data Structures in C++ (2 units)

4 Units
Fall 2026
Meeting days/times:
Lecture: MWF 11:00 am - 11:55 am
Lab: T - 10:30 am - 1:00 pm
Meeting location:
Lecture: Latter 11
Lab: Rohr Science 295
Final Exam:
Friday, December 18th, 10:30 am - 1:00 pm (CSC2054)
Tuesday, October 20th, 11:00 am - 11:55 am (CSC2052)

Course Information	Specifics for the Course
Instructor title and name:	Professor Noah Spahn
Phone:	x2401
Email:	nspahn@pointloma.edu
Office location and hours:	Rohr Science 210: signup form

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

MICS Department Mission

The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

Course Description

CSC2052
Students transition to the C++ language and are introduced to additional data structures, including queues, stacks, trees, and graphs, considering their implementation with both arrays and linked lists. Concepts are reinforced through weekly programming assignments. Lecture three hours and laboratory two hours each week (this is a quad class). Annually. CSC2052 is the first quad of CSC2054.

CSC2054
Standard data structures, including queues, stacks, trees, and graphs, as objects are defined and illustrated with associated dynamic storage management mechanisms. Introduces formal techniques to support the design and analysis of algorithms, focusing on both the underlying mathematical theory and practical considerations of efficiency. Topics include measuring the complexity of recursive and iterative algorithms, algorithmic strategies, the concept of intractability, and the theory of NP. Emphasis is placed on non-numerical algorithms such as sorting, searching, graph and network algorithms, both sequential and parallel. Concepts are reinforced through weekly programming assignments. There are three hours of lecture and two hours of lab work each week.

Program and Course Learning Outcomes

Graduates of the program will be able to:

- write correct and robust software.
- use well-known algorithms and computational techniques to solve problems.
- analyze the interaction between hardware and software.
- apply their technical knowledge and critical thinking to solve problems.
- speak about their work with precision, clarity and organization.
- write about their work with precision, clarity and organization.
- identify, locate, evaluate, and effectively and responsibly use and cite information for the task at hand.
- collaborate effectively in teams.
- understand and create arguments supported by quantitative evidence.
- understand the professional, ethical, and social issues and responsibilities with the implementation and use of technology.

Course Learning Outcomes (CLOs):

Upon successful completion of this course, students will:

1. Write correct and robust software in C++, utilizing common data structures.
2. Analyze the interaction between hardware and software.

3. Apply their technical knowledge to solve problems.
4. Speak about their work with precision, clarity, and organization.
5. Write about their work with precision, clarity, and organization.
6. Collaborate effectively in teams.
7. Have a working knowledge of their vocational calling.
8. Students will use the theory of algorithms and computation to solve problems. (**CSC2054 only)**

Required Texts and Recommended Study Resources

All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

- **Starting Out with C++ from Control Structures to Objects, 10th edition**, Tony Gaddis
- **Secure Data Structures and Algorithms with C++: Walls and Mirrors**, 8th edition, Frank M. Carrano & Timothy M. Henry (**CSC2054 only)**

Course Credit Hour Information

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 4 unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework.

Assessment and Grading

Grades are based on the number of points accumulated throughout the course, with the following exceptions:

- In **CSC2054**, a student must pass at least one midterm and one programming exam to pass the class. That is, a score of 60% must be achieved on one of the examinations, or else the final grade will be an F regardless of all other point totals.
- In **CSC2052**, a student must pass at least one programming exam. That is, a score of 60% must be achieved on one of the programming in-class examinations, or else the final grade will be an F regardless of all other point totals.

Category	Weight
Warmup Quizzes	5%

Reading	5%
Exam 1	10%
Exam 2	15%
Exam 3*	15%
Labs	30%
Final Exam*	20%

*Exam 3 and the Final Exam apply only to students enrolled for the full semester (CSC2052). Students enrolled only for the first quad (CSC2054) are not assigned Exam 3 or the Final Exam; for these students, Canvas automatically recalculates the remaining categories so that they total 100% of the grade, with Exam 2 serving as their final examination.

Grades will be based on the following scale:

A	B	C	D	F
A 93-100	B+ 87-89	C+ 77-79	D+ 67-69	F Less than 59
A- 90-92	B 83-86	C 73-76	D 63-66	
	B- 80-82	C- 70-72	D- 60-62	

Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: Final Exam Schedules site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for *one* of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

PLNU Artificial Intelligence (AI) Policy

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro, GrammarlyGo, Perplexity, etc.) to generate ideas, as a learning tool, or in some cases generate portions of work you will submit. I will specify in individual assignments what constitutes appropriate use of AI for that assignment. Please use this Purdue resource to guide your citations when using AI.

Incompletes and Late Assignments

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

PLNU Academic Accommodations Policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center, by email or phone at 619-849-2533. Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines approved accommodations. Professors are able to view a student's approved accommodations through Accommodate. PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their approved accommodations in that particular course. Accommodations are not retroactive; as such, clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.
Students who need accommodations for a disability-related need should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. In accordance with ADA, accommodations cannot constitute a fundamental alteration to course outcomes; therefore, planning ahead is vital in establishing appropriate accommodations for equal access to this course. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC eligibility process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

LomaBooks Instructions for Students

This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.
You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your **LomaBooks** materials.

Additional Course Information

Additional PLNU policies and practices that apply to this course can be found at the TUG Syllabus policy portion doc.

Course Summary:

Date	Details	Due
Mon Aug 31, 2026	Page C++ Course Introduction	to do: 11am
	Page Week 1 Overview	to do: 5pm
	Quiz wk 1 | Academic Honesty Verification Statement	due by 8pm
	Discussion Topic Student Introductions	due by 11:59pm
Tue Sep 1, 2026	Assignment wk 1| Revel: Programming Review	due by 12pm
Wed Sep 2, 2026	Assignment wk 1| Revel: C++ Introduction	due by 10am
	Discussion Topic wk 1 | warmup - Vocational thinking	due by 11:10am
Fri Sep 4, 2026	Assignment wk 1 | Revel: Expressivity and Interactivity	due by 8am

	Assignment wk 1 | day 4	due by 11am
	Quiz wk 1 | Vocation survey	due by 11:55am
Mon Sep 7, 2026	Calendar Event Labor day (no class)	12am
	Assignment wk 2 | Revel: Pointers Introduction	due by 8am
	Page Week 2 Overview	to do: 5pm
Tue Sep 8, 2026	Assignment Lab 01 - Compilation	due by 8am
Wed Sep 9, 2026	Assignment wk 2 | Revel: Arrays and Vectors	due by 8am
Fri Sep 11, 2026	Assignment wk 2 | Revel: Making decisions	due by 8am
Mon Sep 14, 2026	Assignment wk 3 | Revel: Pointers	due by 8am
	Page Week 3 Overview	to do: 5pm
Tue Sep 15, 2026	Assignment Lab 2	due by 8am
Wed Sep 16, 2026	Assignment Wk 3 | Revel: Arrays, Vectors and Pointers	due by 8am

Tue Sep 22, 2026	Assignment Lab 3	due by 10:30am
	Assignment Exam 1	due by 11:59pm
Tue Sep 29, 2026	Assignment Lab 4	due by 10:30am
Tue Oct 20, 2026	Assignment Exam 2	due by 11am
Fri Oct 23, 2026	Calendar Event Fall Break (no class)	12am
Tue Nov 10, 2026	Assignment Exam 3	due by 11:59pm
Wed Nov 25, 2026	Calendar Event Thanksgiving Break (no classes)	12am
Fri Nov 27, 2026	Calendar Event Thanksgiving Break (no classes)	12am
Fri Dec 18, 2026	Calendar Event Data Structures and Algorithms Final	10:30am to 1pm