

Point Loma Nazarene University
Mathematical, Information, and Computer Sciences
CSC 3022: Data Management for Computational Science
Units: 2
Meeting: Monday 1-2:15pm in Latter 11
Fall 2024

Instructor: Prof. Mara Sovde
Phone: 619.849.2219 (Stephanie Krahenbuhl department assistant)
Email: msovde@pointloma.edu
Office Hours: Monday 12-1pm Tuesday 10-12pm Friday 12-2pm
Final Exam: December 14, 2023 at 1:30 pm

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.

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

An introduction to data management in the context of scientific research. Students will explore the data storage and manipulation requirements for biology, chemistry, and physics and learn to choose the correct data management tool for a given situation. Tools include Microsoft Excel (with VBA), Visual Basic, and Microsoft Access. Students will learn to design, create, and query relational databases using the SQLite DBMS and SQL query language.

In addition, students will gain experience with data cleaning, HTML, and JavaScript. Students will be exposed to ethical dilemmas which they might encounter in future work along with ways to uncover and deal with them.

COURSE ORGANIZATION

This is an independent study class where you will be meeting once per week with me to discuss problems and projects. The majority of points earned in the course will result from coming to class prepared to participate and complete lab work that can be demonstrated in class.

COURSE LEARNING OUTCOMES

1. Students will understand how data is used in their specific scientific field
2. Students will be able to recommend the correct data management tool (spreadsheet, flat file, database, ETL process, ...) to use for a particular scientific application
3. Students will be able to build a basic RDBMS and create basic queries

4. Students will gain practice loading and configuring software
5. Students will be able to recognize unclean data and make informed choices on how to clean it
6. Students will consider ethical issues with data management

PROGRAM LEARNING OUTCOMES

1. Students will become conversant in computational research tools in the context of scientific problems.
2. Students will improve their ability to leverage statistics, scripting, and data management to complete scientific research better.
3. Students will become aware of computational techniques to solve research problems.

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Collect, Combine, and Transform Data Using Power Query in Excel and Power BI
Gil Raviv Microsoft Press; 1st edition (October 25, 2018)
ISBN-13 : 978-1509307951

Additional reading and study material will be provided in class.

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 2-unit course delivered over 15 weeks. Specific details about how the class meets the credit hour requirement can be provided upon request. (Based on 37.5 hours of student engagement per credit hour.)

Distribution of Student Learning Hours

Assignment	Hours
Online Videos, Reading and Labs	30
Lectures and class activities	30
Submitted work	10
Written Exams and quizzes including preparation	5
Total	75

ASSESSMENT AND GRADING

Graded Components

Prepared for Class: Before each class session, students will be given work to complete and concepts to research as part of class participation. Students who attend class and can demonstrate their respective assigned activities in class will be awarded full credit for class on that day. Students who are not fully prepared will earn less than full credit and possibly no credit for the class session. A missed class session will result in zero points for the day. Each Quad, students will be given two grace days where they may choose to earn full credit for a day they might not have been able to fully prepare for or a day which they missed class.

Tests: There will be a test given after each major module in the course. These tests will be assessed and reviewed and assist students in preparing for the Midterm and Final exam.

Midterm: The midterm is scheduled for **October 12** and will cover all lecture, discussion, and lab material to that point. These may have “how-to” questions, but will also ask questions about the appropriateness or ethical use of a particular tool. If you will miss the midterm for a school function, you must arrange to take it in advance. If you miss the exam without giving prior notice, there is a good chance you will receive a zero unless, of course, there was clearly an emergency.

Final Exam: The cumulative final exam is scheduled for the Thursday of finals week at 1:30. It will contain questions similar to those on both the midterm and tests.

Grading Distribution	Percent
Class participation and Assignments	55
Tests and Midterm	20
Final Exam	25
Total	100

Grading Scale

The grading scale for the course, in percentages of the maximum points in class is:

A	92.50 - 100%	C	72.50 - 77.49%
A-	90.00 - 92.49%	C-	70.00 - 72.49%
B+	87.50 - 89.99%	D+	67.50 - 69.99%
B	82.50 - 87.49%	D	62.50 - 66.49%
B-	80.00 - 82.49%	D-	60.00 - 62.49%
C+	77.50 - 79.99%	F	0 - 59.99%

INCOMPLETES AND LATE ASSIGNMENTS

All assignments are to be submitted/turned in by the due date in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

CLASS ENROLLMENT

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

FINAL EXAM 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.

SPRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If you have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the [Office of Spiritual Life and Formation](#).

STATE AUTHORIZATION

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a

student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU RECORDING NOTIFICATION

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

ARTIFICIAL INTELLIGENCE (AI) POLICY

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, GrammarlyGo, Perplexity, etc) to generate ideas or look for references, but you are not allowed to use AI tools to generate content (text, video, audio, images, etc.) that will end up in any work submitted to be graded for this course. If you have any doubts about using AI, please gain permission from the instructor.

PLNU ACADEMIC ACCOMODATIONS 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 (EAC@pointloma.edu or 619-849-2486). 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 allowed accommodations. The EAC makes accommodations available to professors at the student's request. PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so 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 should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. 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 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 special accommodations.

LANGUAGE AND BELONGING

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice free. Inclusive/Bias-free language is the standard outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality.

If you (or someone you know) have experienced a bias incident regarding language, you can find more information on reporting and resources at www.pointloma.edu/bias.

SEXUAL MISCONDUCT AND DISCRIMINATION

In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/title-ix.

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an "F" grade.

Note: The information below must be included under the "PLNU Attendance and Participation Policy" Section if you are teaching an Online or Hybrid course.

PLNU Course Modality Definitions

1. Online Courses: These are courses with class meetings where all instruction and interaction is fully online.

- Synchronous Courses: At least one class meeting takes place at a designated time.
 - Asynchronous Courses: All class meetings are asynchronous.
2. Hybrid Courses: These are courses with class meetings that take place both in the classroom and online synchronously and/or asynchronously.
 3. In-Person Courses: These are courses that meet in person with the instructor and students in a physical classroom setting. With approval by the area dean, this may include up to 25% of qualified class interactions through a Learning Management System (such as Canvas).

In some courses, a portion of the credit hour content will be delivered asynchronously and attendance will be determined by submitting the assignments by the posted due dates. See [Academic PoliciesLinks to an external site.](#) in the Undergraduate Academic Catalog.

ASYNCHRONOUS ATTENDANCE/PARTICIPATION DEFINITION

A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

USE OF TECHNOLOGY

In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements; please refer to the [Technology and System Requirements](#) information. Additionally, students are required to have headphone speakers, microphone, or webcams compatible with their computer available to use. Please note that any course with online proctored exams requires a computer with a camera (tablets are not compatible nor allowable) to complete exams online.

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

LOMA WRITING CENTER

The Loma Writing Center exists to help all members of the PLNU community cultivate transferable writing skills to engage their academic, professional, personal, and spiritual communities. We work toward this goal by conducting one-on-one consultation sessions, supporting writing education across the PLNU community, and participating in ongoing writing center research.

Getting feedback from the Loma Writing Center while you're in the process of working on an assignment is a great way to improve the quality of your writing and develop as a writer. You are encouraged to talk with a trained writing consultant about getting started on an assignment, organizing your ideas, finding and citing sources, revising, editing for grammar and polishing final drafts, and more. For information about how to make in-person or online appointments, see [Loma Writing Center webpage](#) or visit the Loma Writer Center on the first floor of the Ryan Library, room 221.

- Appointment Calendar: <https://plnu.mywconline.com/Links to an external site.>
- Website: <https://www.pointloma.edu/centers-institutes/loma-writing-center>
- Email: writingcenter@pointloma.edu

Expected Schedule

Wk	Week of	Tuesday
1	9/2/24	Orientation Meeting

2	9/9/2024	Excel DM - week 1 and 2
3	9/16/2024	Excel DM - week 3 and 4
4	9/23/2024	Excel DM - week 5 and 6
5	9/30/2024	Excel DM exam and wrap up and Excel VBA week 7
6	10/7/2024	Excel VBA - week 8
7	10/14/2024	Excel VBA - Custom Prob and Mid Term
8	10/21/2024	Excel Power Query / SQL Ch 1 and Fall Break
9	10/28/2024	Excel Power Query / SQL Ch 2
10	11/4/2024	Excel Power Query / SQL Ch 3
11	11/11/2024	Excel Power Query / SQL Ch 4
12	11/18/2024	Excel Power Query / SQL Ch 5
13	11/25/2024	Excel Power Query / SQL Ch 6 and Thanksgiving
14	12/2/2024	Excel Power Query / SQL Ch 7
15	12/9/2024	Excel Power Query / SQL Ch 8 and Presentations
16	12/16/2024	Final

Course Summary:

Date	Details	Due
Tue Sep 10, 2024	Assignment Week 01	due by 11:59pm
Tue Sep 17, 2024	Quiz Excel DM Test	due by 1:20pm
	Assignment Week 02	due by 11:59pm
Tue Sep 24, 2024	Assignment Week 03	due by 11:59pm
Tue Oct 1, 2024	Assignment Week 04	due by 11:59pm

Date	Details	Due
Fri Oct 4, 2024	Assignment Week 05	due by 11:59pm
Thu Oct 10, 2024	Assignment Week 06	due by 12:25pm
Tue Oct 15, 2024	Assignment Week 07	due by 12:25pm
Thu Oct 24, 2024	Quiz MidTerm	due by 1:20pm
Sun Oct 27, 2024	Assignment Week 08 - PQ Ch01	due by 11:59pm
Sun Nov 3, 2024	Assignment Week 09 - PQ Ch02	due by 11:59pm
Sun Nov 10, 2024	Assignment Week 10 - PQ Ch03	due by 11:59pm
Sun Nov 17, 2024	Assignment Week 11 - PQ Ch04	due by 11:59pm
Sun Nov 24, 2024	Assignment Week 12 - PQ Ch05	due by 11:59pm
Sun Dec 1, 2024	Assignment Week 13 - PQ Ch06	due by 11:59pm
Sun Dec 8, 2024	Assignment Week 14 - PQ Ch07	due by 11:59pm
Sun Dec 15, 2024	Assignment Week 15 - PQ Ch08	due by 11:59pm