

# CSC 322: Data Management for Computational Science

## Fall 2015

**Instructor:**

Dr. Lori Carter  
[loricarter@pointloma.edu](mailto:loricarter@pointloma.edu)

(619) 849-2352  
office: RS 214

**Office hours**

Monday 11-12, 1:30-2:45  
Tuesday 9-10, 1:30-4:30

Thursday 9-10, 1:30-2:45  
Friday 9-10

**Meeting Times and Location:**

TR 4:55-5:50 RS13

**Text:**

None

**Additional Supplies:**

Raspberry Pi, Power Supply, Software (needed before Oct. 20 – see me if this is a financial hardship)

**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. Students will learn to design, create, and query relational databases using the MySQL DBMS and SQL query language. They will become familiar with popular science-related databases and analysis tools.

**Class Learning Outcomes**

- Students will understand how data is used in their specific scientific field
- Students will be able to recommend the correct data management tool (spreadsheet, flat file, database, scripting language, or other) to use for a particular scientific application
- Students will be able to build a basic RDBMS and create basic queries
- Students will gain practice loading and configuring software

**Course Organization:****Lectures and Labs:**

Class time will be divided between lecture and lab.

**Lectures:** Student versions of the lecture slides can be obtained from [canvas.pointloma.edu](http://canvas.pointloma.edu). These slides will contain homework assignments and due dates.

**Labs:** Labs are to be completed on an individual basis unless otherwise stated. Points for lab assignments that look too similar will be divided between the participants. When working in groups, all group members must be at all lab meetings where the lab is worked on.

**Project:** During the final 2 weeks of the course students will be working on papers/presentations describing how data is used in their field and the appropriate tools to use to perform the required tasks. There is a possible alternative to this project. Three students will have the opportunity to present a lesson on one of R, VBA for Excel, or MATLAB to the rest of the class. A presentation that is well done will replace the paper for that student.

**Homework:** Should be completed on an individual basis unless otherwise stated. Points for homework assignments that look too similar will be divided between the participants.

**Exams:** There will be 2 exams. If you will miss an exam for a school function, you must arrange to take it in advance. If you ever miss an exam without giving me prior notice, there is a good chance you will receive a zero unless, of course, there was clearly an emergency. Exam content can include material from lectures, articles, labs, and homework. Exam 1 is scheduled for **Oct. 15**. It will include all material covered to that point. Exam 2 is scheduled for **Dec. 1** and will be comprehensive, but will emphasize material covered since the first exam.

**Final Exam:** Your culminating experience will be the presentation of your project at 4:30 on the Tuesday of finals week. If this time does not work, please let me know **immediately**.

### Grading:

Homework and Labs	50%
Exams	40%
Final Project	10%

Final grades will be determined as follows:

100-93%	A	80-82%	B-	67-69%	D+
90-92%	A-	77-79%	C+	63-66%	D
87-89%	B+	73-76%	C	60-62%	D-
83-86%	B	70-72%	C-	0-59%	F

### Credit Hour Information:

Distribution of Student Learning Hours

It is anticipated that you will spend a minimum of 37.5 participation hours per credit hour in your course. The estimated time expectations for this course are shown below:

Assignments	Total Course Hours
Reading: Papers and Notes	14
Written Assignments	7
Lectures	22
Labs and Lab assignments	28
Written and Programming Exams	4
<b>TOTAL</b>	<b>75</b>

### Attendance:

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes in which a student is registered is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements to be met. There are no allowed or excused absences except as approved in writing by the Provost for specific students participating in certain university-sanctioned activities. Excused absences still count toward the 10%-20% limits, but allow students to make up work, quizzes, or tests missed as a result of a university-sanctioned activity. Activities of a unique nature, such as labs or other activities identified clearly on the syllabus, cannot be made up except in rare instances when instructors have given advanced, written approval for doing so. Whenever the number of accumulated absences in a class, for any cause, exceeds ten (10) percent of the total number of class meetings, the faculty member should send an e-mail to the student and the Vice Provost for Academic Administration (VPAA) warning of attendance jeopardy. If more than twenty (20) percent of the total number of class meetings is reported as missed, the faculty member or VPAA may initiate the student's de-enrollment from the course without further advanced notice to the student. If the date of de-enrollment is past the last date to withdraw from a class, the student will be assigned a grade of W or WF consistent with university policy in the Grading section of the catalog. There are no refunds for courses where a de-enrollment was processed. For more details see the PLNU catalog: [http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Class\\_Attendance](http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Class_Attendance)

### 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.

### **Academic Accommodations:**

While all students are expected to meet the minimum academic standards for completion of their courses as established by the instructors, students with special needs may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center contacts the student's instructors and provides written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the university in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with special needs and guarantees all qualified students equal access to the benefits of PLNU programs and activities. For more details see the PLNU catalog:

[http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic\\_Accommodations](http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic_Accommodations)

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

### **Academic Honesty:**

The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose. Violations of academic honesty include cheating, plagiarism, falsification, aiding academic dishonesty, and malicious interference. The details of PLNU's meaning of each of these words can be found in the PLNU catalog at:

[http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic\\_Honesty](http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic_Honesty)

A student remains responsible for the academic honesty of work submitted in PLNU courses and the consequences of academic dishonesty beyond receipt of the final grade in the class and beyond the awarding of the diploma. Ignorance of these catalog policies will not be considered a valid excuse or defense. Students may not withdraw from a course as a response to a consequence.

A student who is caught cheating on any item of work will receive a zero on that item and may receive an "F" for the semester. See the PLNU Catalog for a further explanation of the PLNU procedures for academic dishonesty ([http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic\\_Honesty](http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic_Honesty)).

### **Final Exam: Date and Time**

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. Only in the case that a student is required to take three exams during the same day of finals week is an instructor authorized to change the exam date and time for that particular student.

### **Copyright Protected Materials**

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.