

CSC311 R for Computational Science

T 11:00-11:50 RS 211

Instructor: Ryan Botts, Ph.D.

Office Hours:

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Course Description

R will be introduced as a tool for analyzing and visualizing data. Students will learn to implement a typical data analysis workflow: gather, clean, explore and summarize data. Students will gain experience in selecting and using the appropriate tool for the job. The specific topics can be found in the course calendar below.

Required Materials

R in Action. Kabacoff, Robert I. 2011. ISBN: 9781935182399

R from R-project.org

R studio from Rstudio.com

Course Goals

Students will be able to construct a dataset, explore the data using basic numerical and visual summaries.

Students will be able to identify and implement the correct R tool for data analysis

Students will be able to find new packages and learn to implement new tools in R using the documentation.

Examinations

There will be one in class midterm and a final exam on **Tuesday May 5, 2015 10:30-1:00**.

Labs and Homework

Learning a programming language requires hands on experience, so the primary component of your grade will be from weekly labs and homework assignments.

Project

Each student will submit a written report and code solving a real world problem.

Grading Policies

Grades will be weighted in the following manner:

Project(20%), Labs and Homework (40%), Midterm (15%), Final (25%)

Approximate minimal percentages required to obtain a given grade are:

Grading Scale in percentages	A	B	C	D
+		(87.5, 90)	(77.5, 80)	(67.5, 70)
	[92.5, 100]	[82.5, 87.5]	[72.5, 77.5]	[62.5, 67.5]
-	[90, 92.5]	[80, 82.5]	[70, 72.5]	[60, 62.5]

- **Late work.** A written assignment or computer assignment is late if it is not received at the beginning of class on the due date. Late work will not be accepted. Make-up tests will be given only by arrangement with the instructor for reasons of documented emergency.

- **Format for Projects.** Assignments collected must be prepared in a style suitable for grading. The projects will be graded on clarity and writing quality.
 - the organization must be easy to follow
 - the work must be typed
 - complete solutions must be written for problems (not just answers); solutions must be clearly marked
 - use complete sentences to answer questions

Attendance Policy

There is a strong correlation between grade and attendance. It is your responsibility to attend. If more than 20% of the total number of class meetings is missed for any reason you may be de-enrolled from the course as per the undergraduate catalog.

Academic Accommodations

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, these students are requested to file documentation during the first two weeks of the semester with the Academic Support Center (ASC), located in the Bond Academic Center. This policy assists the University in its commitment to full compliance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. Once the student files documentation, the ASC will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual learning needs of the student.

Cheating Policy

A student who is caught cheating on an exam or an assignment will receive a zero on the assignment and may receive an "F" for the semester as per the guidelines in the course catalog. FYI- Cheating consists of using work other than your own and not citing it, storing answers on calculators for exams, obtaining copies of old exams, etc.

In this course you will be doing a variety of programming assignments. Working together is strongly encouraged, however you must submit your own programs. The logic may be the same as what someone else had, but you should write the solution yourself.

Week	Topic	Chapter
1	1/20/15 Getting started	Ch. 1
2	1/27/15 Data and Data Structures	Ch. 2
3	2/3/15 Graphing Basics	Ch. 3
4	2/10/15 Working with Data, and dealing with missing data	Ch. 4 & 15
5	2/17/15 Loops, conditionals, functions	Ch. 5
6	2/24/15 Summaries and basic analysis	CH. 6 and 7
7	3/3/15 Application Show and Tell	
8	3/17/15 Exam 1	
9	3/24/15 More exciting graphics	Ch. 11
10	3/31/15 Graphics demos and more advanced graphics	Ch. 16
11	4/7/15 The map packages: Maps, Rgooglemaps, etc.	
12	4/14/15 Guided project	
13	4/21/15 Application Show and Tell	
14	4/28/15 Project	
15	5/5/2015 Final / Project Due (10:30-1:00)	