

June 4th to July 6th

PSCI 2075: Quantitative Research Methods

Instructor: Joe Zamadics

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Office Hours: Monday 12:15-2:15 and by appointment, Ketchum 382 (APRL)

Class Meeting: GUGG 2

Course Description

Quantitative Research Methods is a class that provides students with the skills they need to conduct real social science research. This class will cover the scientific method, philosophies behind research, statistical reasoning, programming, and the vernacular needed to research. Given the wide scope of the class, students should be prepared to spend ample time working outside of class to understand course material.

What I Expect from You:

Effective outcomes can only be achieved if both parties are putting effort into the learning process. I expect students to devote as much time as needed into doing the homework, going back over lectures and studying. Students must come to class with their computers every day.

What You Can Expect from Me:

Beyond coming prepared to teach every class, it is also my job to make the class as useful as possible for all students. College is expensive and the outcomes should reflect the costs. I welcome all suggestions to make the class better. Any change that enhances the learning process are welcomed and should be brought to my attention.

Evaluation:

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-68
D-	60-62
F	<60
Other grades such as I, W	Per discussion with instructor

* All grades above X.5 will be rounded up. All grades below X.5 will be rounded down.\

Graded Assignments:

20% Homework- Each Week, the class will have a graded homework assignment (a total of 4). Each is worth 5% of your final grade. Each is due on midnight on Saturday. Students are permitted to work together on the assignments. However, each assignment will be run through plagiarism software, assignments must not be identical and in the own words of each student. Students that do not actively contribute to their homework group will likely fail the midterm and final

30% Midterm- The midterm will be on Friday, June 15th. It will cover material from the first two weeks of class. Students are permitted one sheet of paper for notes (front and back). Students will not be asked to do any coding in R. This exam is pencil and paper.

30% Final- The final will be on the last day of class, July 6th. It will cover material from the entire class. Students are permitted one sheet of paper for notes (front and back). Students may be asked to work in R to answer questions on this exam.

20% Paper- A final paper is due Monday, July 2nd at the start of class. Students are tasked to find existing published work in their field and critique the work based on what was learned in this class. The paper is to be 5-7 pages double spaced. The paper must use regression. Students are encouraged to find a paper quickly and run it by me first. More details on this paper will be provided in a different document.

Late Policy:

There are no makeups for the midterm and paper. The paper and homework assignments lose 20% for each day they are late.

Required Materials:

Microsoft Excel, R, R Studio. Readings are provided by the instructor; no textbook purchases are required. Note: R and R Studio are free open source programs that do not require a purchase. Students should already have Excel on their computers.

University Policies

See the Colorado University mandated requirements:

<http://www.colorado.edu/spanish/faculty-resources/required-syllabi-statements>

Special note: There is a zero tolerance for plagiarism. All work is run through plagiarism detection software. Any instance of plagiarism will result in a failing grade and a hearing before the school's academic dishonesty board.

Note

I reserve the right to reorganize the schedule for the course based on progress

Schedule

Monday June 4th

Go over syllabus and basics of the class

Tuesday June 5th

A “gentle” introduction to R (students must come to class with their computers). We will download R and R Studio this day.

Reading: Chapter 13. Students should come to class with R and R Studio loaded on their computers before class.

Wednesday June 6th

Introduction to concepts, terms and mathematical notation

Notes: Students that are not comfortable with summation operators can watch this video:
<https://www.khanacademy.org/math/algebra2/sequences-and-series/alg2-sigma-notation/v/sigma-notation-sum>

Thursday June 7th

Mean, median, mode, variance, visualizing distributions in R

Readings: Chapter 2

Friday June 8th

Hypothesis testing and difference in means. If there is time we will cover the basics of models.

Readings: Chapter 9 Pages 12-14

HOMEWORK 1 DUE

Monday June 11th

Bivariate regression day 1: intercept, slope, and statistical significance, continuous variables

Readings: Chapter 6

Tuesday June 12th

Bivariate regression day 2: intercept, slope, and statistical significance, discrete variables

Wednesday June 13th

Bivariate regression day 3: predicted values, residuals, and model assessment

Readings: Chapter 10

Thursday June 14th

Review for midterm

Friday June 15th

Midterm

HOMEWORK 2 DUE

Monday June 18th

Multiple regression and R^2

Readings: Chapter 7

Tuesday June 19th

Conditional hypotheses and interactions dichotomous by continuous

Readings: Chapter 8

Wednesday June 20th

Conditional hypotheses and interactions dichotomous by Dichotomous

Thursday June 21st

Regression Assumptions

Readings: Chapter 10

Friday June 22nd

Regression assumptions and assessing models, for loops

Readings: Chapter 9

HOMEWORK 3 DUE

Monday June 25th

Basics of Excel, storing data, basic functions

Tuesday June 26th

Different types of data, merging data

Wednesday June 27th

Visualizing data with GGPlot2

Readings: Chapter 4

Thursday June 28th

Time series data

Friday June 29th

Hierarchical data and fixed effects

HOMEWORK 4 DUE

Monday July 2nd

Panel data

Tuesday July 3rd

Bringing it all together, share research papers

Wednesday July 4th

Celebrate America

Thursday July 5th

Review

Friday July 6th

Final

HOMEWORK 5 DUE