Psychology 210

Quantitative Methods

Professor: Andrew Brandt, PhD
Office: 52-E Phillips Hall
Office hour: Monday 12:00 – 1:00

Teaching Assistant: Brooke Hall
Open Tutoring: Tuesday 12:00 – 1:00 and Thursday 12:00 – 1:00
Location: 16 Phillips Hall

Course Materials

1. *Statistics for the Behavioral Sciences 10th ed.* by Gravetter & Wallnau
2. Course website: http://go.owu.edu/~aebrandt/Documents.html
3. Blackboard course: https://bb.owu.edu/

Prerequisite skills: Students should be able to perform arithmetic operations and basic algebra.

Description: The course introduces graphical analysis and the null-hypothesis testing approach to evaluating behavioral data collected in experimental and correlational research studies. Students will learn to use RStudio to organize behavioral data, create graphs, and test hypotheses with inferential statistics such as ANOVA and multiple regression.

Objectives adapted from the American Psychological Association

1. Describe the basic characteristics of behavioral research design
2. Use appropriate statistical strategies to analyze and interpret data
3. Become proficient in the use of a statistical software package
4. Distinguish between statistical significance and practical significance
5. Recognize that theoretical and sociocultural contexts as well as personal biases may shape research questions, research designs, and data interpretation

Organization

- Class periods with assigned textbook material will be used to present and discuss key points; complete the assigned reading prior to class
- Class periods with an assigned R tutorial will be used to develop students' quantitative analysis skills; complete the assigned tutorial prior to class
- Exams may cover any course material, including the textbook, lectures, and tutorials

Coursework	
Reading Homework	10%
RMD Stats Reports	30%
Exams	60%

Grading Scale			
97% ≤ A+	87% ≤ B+ < 90%	77% ≤ C+ < 80%	67% ≤ D+ < 70%
93% ≤ A < 97%	83% ≤ B < 87%	73% ≤ C < 77%	63% ≤ D < 67%
90% ≤ A- < 93%	80% ≤ B- < 83%	70% ≤ C- < 73%	60% ≤ D- < 63%

Course Schedule

Week 1 Jan 10 - 14	Thur	Ch. 1.1 – 1.4 Introduction to Statistics*
Week 2 Jan 17 - 21	Tues	Ch. 2.1 – 2.3 Frequency Distributions*
	Thur	R Tutorial 0: Getting started with R and RStudio
Week 3 Jan 24 - 28	Tues	R Markdown Stats Report 0 [In-class practice assignment]
	Thur	Ch. 3.1 – 3.6 Central Tendency*
Week 4 Jan 31 – Feb 4	Tues	Ch. 4.1 – 4.6 Variability*
	Thur	R Tutorial 1: Data frames and descriptive statistics
Week 5 Feb 7 - 11	Tues	R Markdown Stats Report 1 [In-class assignment]
	Thur	Ch. 5.1 – 5.3 z-Scores* Ch. 6.1 – 6.3 Probability*
Week 6 Feb 14 - 18	Tues	**Exam 1**
	Thur	Ch. 7.1 – 7.3 Probability and Samples* Ch. 8.1 – 8.3 Introduction to Hypothesis Testing*
Week 7 Feb 21 - 25	Tues	Ch. 9.1 – 9.3 Introduction to the t Statistic*
	Thur	R Tutorial 2: Sampling distributions and hypothesis testing
Week 8 Feb 28 – Mar 4	Tues	R Markdown Stats Report 2 [In-class assignment]
	Thur	Open Conferences
Spring Break		
Week 9 Mar 14 - 18	Tues	Ch. 10.1 – 10.4 t-Test for Two Independent Samples*
	Thur	R Tutorial 3: t-tests
Week 10 Mar 21 - 25	Tues	R Markdown Stats Report 3 [In-class assignment]
	Thur	Ch. 11.1 – 11.4 t-Test for Two Related Samples*
Week 11 Mar 28 – Apr 1	Tues	**Exam 2**
	Thur	Ch. 12.1 – 12.6 Introduction to Analysis of Variance*
Week 12 April 4 - 8	Tues	Ch. 13.1 – 13.3 Repeated Measures ANOVA*
	Thur	R Tutorial 4: ANOVA
Week 13 April 11 - 15	Tues	R Markdown Stats Report 4 [In-class assignment]
	Thur	Ch. 15.1 – 15.4 Correlation*
Week 14 April 18 - 22	Tues	Ch. 16.1 – 16.3 Regression*
	Thur	R Tutorial 5: Regression
Week 15 April 25 - 29	Tues	R Markdown Stats Report 5 [In-class assignment]
Finals Week		**Exam 3**, Tuesday, May 3 from 1:30 – 2:50 pm
*Graded reading homework is assigned for each textbook reading assignment; students are encouraged to complete the homework prior to class, but the actual due date is shown in Blackboard		

Course Grade: A student's final grade will be determined by their academic performance. Students may request that the professor review and reconsider the evaluation of their academic performance. Such requests may result in no grade change, a higher grade, or a lower grade. After receiving the results of a regrade request, a student who believes their grade still does not adequately reflect their academic performance should follow the steps described in the "Academic Grievance Policy" in the "Academic Regulations and Procedures" section of the OWU Course Catalog.

If any circumstance adversely affects a student's ability to complete any part of the coursework, it is the student's responsibility to promptly inform the professor and provide a justification. Coursework will not be accepted late without a justification approved by the professor.

Respect for the In-Class Experience: Most students attend class because they wish to participate in the lecture and discussion, learn something new, and do well in the class. All students are expected to respect the right to a quality learning environment, which does not include talking, emailing, text messaging, checking social media, or disruptive behaviors while the instructor or another student has the floor. Any student who fails to respect this right will be asked to leave class. Repeated violations of this policy will result in a lowered course grade.

Direct Instruction and Out-of-Class Work: The usual 1-credit course spans 15 weeks with 3 to 4 hours of direct instruction delivered each week. Federal regulations require that students be responsible for an additional 6 hours of out-of-class work each week. Our compliance with the federal guidelines is monitored by our accreditation body, the Higher Learning Commission. Code of Federal Regulations, Title 34, §668.8

Academic Honesty. Students are responsible for understanding the policies and procedures in the OWU Student Handbook, especially those related to academic honesty. Ignorance of these policies will not be accepted as an excuse for academic dishonesty so students are encouraged to carefully review the definitions provided in the handbook, which include cheating, fabricating, facilitating, and plagiarizing. Students should consult their professor, academic advisor, or Dean of Academic Affairs if they are uncertain about any section of the academic honesty policy.

If the professor believes that a student has violated one or more academic honesty policies, the student may be penalized through a reduction in course grade. If a penalty is delivered to the student, the professor will send a report of the alleged violation with supporting evidence and a description of any penalty to the Dean of Academic Affairs. Multiple violations may result in a permanent record of academic dishonesty added to the student's official OWU transcript.

Equal Opportunity in Education. Your professor is committed to equal opportunity in education for all students, including those with documented physical or mental disabilities. The professor will meet with students individually or with other university staff to ensure that students receive the appropriate accommodations.