

Statistical Methods
18:820:581:02, Fall 2024

Syllabus Contents

Syllabus Contents 1

Time, Place, & Instructor..... 2

Course Description..... 2

 Goal & Objectives..... 2

 Discipline-Specific Knowledge (DSK)..... 2

 School Psychology Profession-Wide Competency (SP-PWC) Elements..... 2

Textbook & Software..... 3

 Primary Text 3

 Supplemental Texts..... 3

Assignments, Exams, & Grading..... 4

 Overview of Assignments & Exams..... 4

 Determination of Course Grades 4

Policies..... 5

 Course Evaluation..... 5

 Disability Accommodation 5

 Attendance 5

 Statement on Academic Integrity..... 5

 Names and Pronouns..... 5

 Respect for Diversity 6

Class Schedule, Readings, and Assignment Due Dates..... 7

Time, Place, & Instructor

Mondays, 2:00pm to 4:45pm

Room: GSAPP A340 (Section 1 Lekwa) and GSAPP A317 (Section 2 Riley)

Canvas website: <https://rutgers.instructure.com/courses/297727>

Instructor (Section 1): Adam Lekwa, PhD, NCSP

Email: al928@gsapp.rutgers.edu; Office Phone: 848-445-5730

Office Location: GSAPP, Room A353

Office Hours: Tuesdays 12:00pm to 1:00pm and by appointment.

Instructor (Section 2): Kristen Riley, PhD

Email: Kristen.Riley@Rutgers.edu; Office Phone: 848-445-5730; Cell Phone: 484-459-2004

Office Location: GSAPP, Room A237

Office Hours: Mondays 12:00-1:00pm and by appointment

Course Description

Goal & Objectives

The primary goal of this course is to help students gain foundational knowledge in the use and application of quantitative methods in psychological research. Students will gain skill and experience with a variety of methods for describing and analyzing trends in data, including analyses of variance, correlational methods (including linear regression), selected non-parametric techniques, and key concepts in statistical power and effect size. We will prioritize on hands-on learning and application of core concepts.

Discipline-Specific Knowledge (DSK)

Statistical Analysis, including topics such as quantitative, mathematical modeling and analysis of psychological data, statistical description and inference, univariate and multivariate analysis, null-hypothesis testing and its alternatives, power, and estimation. [School Psychology Discipline Specific Knowledge]

Psychometrics, including topics such as theory and techniques of psychological measurement, scale and inventory construction, reliability, validity, evaluation of measurement quality, classical and contemporary measurement theory, and standardization. [School Psychology Discipline Specific Knowledge]

School Psychology Profession-Wide Competency (SP-PWC) Elements

Demonstrates skills in producing, comprehending, and integrating oral, nonverbal, and written communications that are informative and well-integrated across a range of situations, populations, and systems. [School Psychology Profession-Wide Competency Element 5.2]

Textbook & Software

Assigned readings for statistics classes can be different from those you encounter in other classes. I recommend briefly reviewing each assigned reading prior to class, but would recommend that you also consult the reading *after* class while working through exercises or as you prepare for exams.

Readings assigned for each week will be from the primary textbook (listed below) or posted as PDF files under the “Resources” section of our Canvas website. See the course calendar for a detailed list of assigned readings. Please keep in mind that lecture topics and assigned readings might change throughout the semester based on students’ needs and class progress.

Primary Text

Online Statistics Education: A Multimedia Course of Study (<http://onlinestatbook.com/>). Project Leader: [David M. Lane](#), Rice University.

An online version of this book can be accessed for free at this URL:
<https://onlinestatbook.com/2/index.html>

Students can also download a PDF version of this book at this URL:
https://onlinestatbook.com/Online_Statistics_Education.pdf

Supplemental Texts

Students are not required to purchase these texts, and readings have not been assigned from them. However, the instructor has one copy of each that can be shared (or students can locate their own copies either online or from the library); both have been excellent resources for those interested in learning quantitative methods in the social sciences.

Howell, D. C. (2010). *Statistical methods for psychology, 7th Edition*. Cengage Learning.

Hatcher, L. (2013). *Statistics in Research: Reading, Understanding, and Writing up Data Analysis Results*. Shadow Finch Media, LLC

Assignments, Exams, & Grading

Overview of Assignments & Exams

Practice Exercises (32 points total, or 4 points each). There will be a total of 8 practice exercises assigned throughout the semester. These are intended as a way for students to engage in independent practice of procedures and concepts presented in readings and lectures, and as an additional opportunity for feedback from the instructor. As such, these exercises will not be graded on accuracy (e.g., number of questions answered correctly), but will instead be graded on completion. We will often review your questions and responses to these assignments together in class; answer keys will be provided for your review on our Canvas site.

Exam. #1 (30 points). This exam will include content covered up through Week #7. This exam will be taken in person on October 28th, 2024. It will be open-book, and open-notes; there will be a 2.5-hour time limit. Please contact me with requests for specific accommodations.

Group Project (8 points). Students will work together to plan, execute, and write the results of a statistical analysis of data provided by the instructor. Final reports will include written descriptions of the purpose of the study, specific questions addressed, analytic strategies used (and verification of necessary assumptions), detailed statistical results (figures, tables), and a written interpretation of results. I will provide an example of a completed project for your review.

Exam. #2 (30 points). This exam will include content covered up through Week #14 (as well as information from Weeks #1 through #7). This exam will be completed in person on December 16th. As before, it will be open-book and open-notes; there will be a 2.5-hour time limit. Please contact me with requests for specific accommodations.

Determination of Course Grades

Grades will be based on a set of practice exercises, two exams, one group project, and overall course participation. Letter grades in this course will follow Rutgers' criteria: 100-90 A; 89-85 B+; 84-80 B; 79-75 C+; 74-70 C; 69-60 D; 59-0 F

Policies

Course Evaluation

Rutgers University issues a survey that evaluates both the course and instructor. Students will complete this survey toward the end of the semester, and students' identities cannot be connected to their responses. The aggregated numerical results are public, and the numerical results and comments are shared with the instructor, and GSAPP. This survey will also be used by GSAPP to conduct a mid-point evaluation, the results of which are confidential to the instructor and school.

Disability Accommodation

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the [Registration form](https://webapps.rutgers.edu/student-ods/forms/registration) (<https://webapps.rutgers.edu/student-ods/forms/registration>).

Attendance

Attendance is required. Students are responsible for making arrangements with the instructor (as far in advance as possible) to make up absences.

Statement on Academic Integrity

The University's academic integrity policy, to which this class will adhere, can be reviewed at: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers/>

Names and Pronouns

Class rosters are provided to the instructor. I will gladly honor your request to address you by an alternate name as well as your gender pronoun preference. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. You can learn more about the university Chosen Name Initiative here: <https://diversity.rutgers.edu/chosen-name>

Respect for Diversity

It is our intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, that the diversity that the students bring to this class be viewed as a resource, strength and benefit, and that all diversity of our clients and research reviewed be discussed and addressed with thoughtfulness and compassion. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. I have implicit biases and blind spots, and while it should not be your job to correct these, your feedback and suggestions about how to make this class more compassionate and accessible are encouraged and appreciated, and can be provided during office hours, via email, anonymously via note under my office door or via this Qualtrics survey: https://rutgers.ca1.qualtrics.com/jfe/form/SV_eA3g52KvbZt81rT . SIRS feedback will also be collected and incorporated at midway and the end of the semester.

This is a living syllabus document subject to change throughout the semester based on pertinent public health topics and student feedback.

Class Schedule, Readings, and Assignment Due Dates

Week	Topics Covered	Readings	Due
1: Sept. 9	Introduction to course, describing data, & working with datasets	Lane, Ch. 1 - 3	
2: Sept. 16	Introduction to statistical hypothesis testing	Lane, Ch. 11 & 12	
3: Sept. 23	Analysis of Variance (ANOVA) and mitigating error in statistical decision making	Lane, Ch. 15	Exercise 1
4: Sept. 30	Effect size & statistical power	Lane, Ch. 13 & 19; Ferguson, 2009	Exercise 2
5: Oct. 7	Factorial ANOVA	Lane, Ch. 15	Exercise 3
6: Oct. 14	Correlation & regression	Lane, Ch. 4 & 14	Exercise 4
7: Oct. 21	Simple linear regression and standardized coefficients	Lane, Ch. 14	
8: Oct. 28	Exam 1		Exam 1
9: Nov. 4	ANOVA, Regression, & General Linear Model	Lane, Ch. 14	
10: Nov. 11	Introduction to multiple linear regression	Lane, Ch. 14	Exercise 5
11: Nov. 18	Chi Squared	Lane, Ch. 17	Exercise 6
12: Nov. 25	Introduction to Qualitative Research (Data Collection & Analysis)		Exercise 7
13: Dec.2	Measuring psychological constructs: Intro to psychometrics	Readings on Canvas	Exercise 8; Group Project
14: Dec. 9	Intro to psychometrics, cont.	Readings on Canvas	
15: Dec. 16	Wrapping up, & Final Exam		Exam 2