

**Quantitative Methods in Psychology Course Syllabus**  
**830:200**  
**Spring 2021**  
**Rutgers University**

In-class session location: Videos posted on Canvas

In-class session time: Asynchronous.

Recitation time: Teaching Assistants will hold office hours for answering questions and help with assignments. See times below.

Instructor: Dr. Gandalf Nicolas

Instructor's Office Location: Tillett Hall 607

Instructor's Office Hours: By appointment

Instructor's Email: [gandalf.nicolas@rutgers.edu](mailto:gandalf.nicolas@rutgers.edu)

Teaching Assistants:

***Svetlana Bryant*** (section 20) – Office hours:

Tuesday, 10:00-11:00 am; Wednesday, 9:00-10:00 am

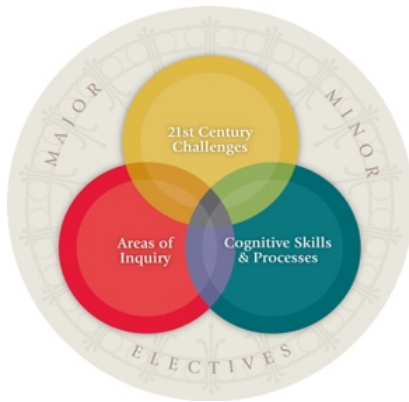
***Qing Yin*** (sections 10 & 12) – Office hours:

Tuesday, 5:00-6:00 pm; Thursday 4:00-5:00 pm; Friday 11:00am-12:00 pm

***Joselyn Rodriguez*** (sections 11 & 13) – Office hours:

Monday, 6:00-7:00 pm; Wednesday, 7:00-8:00 pm; Friday 2:00 – 3:00 pm

## Goals



This course aims to teach you statistics as a tool that can be broadly used to applications both professional and personal. You will learn basic probability and statistical logic, as needed, but a large focus will be placed on practical skills and critical statistical thinking. You will learn a little bit of coding, a skill that is in increasing demand across professional fields (most code will be provided to you). You will learn statistical methods that can be applied to problems relevant to your goals. And, perhaps most importantly, you will learn to consume statistical information with a critical eye.

In this course you will not need to use math any more advanced than what you already know from high school education. We will be using computers to aid us in computations, and the math will be introduced incrementally and as needed to understand the concepts and techniques. We will use simulation and visualization as a complement to the math to help you achieve an intuitive understanding of the concepts. And of course, if you do not understand something, please ask, during office hours, your TAs and I are happy to help you understand the material!

In addition, this course has been certified as satisfying both Quantitative and Formal Reasoning Learning Outcome Goals (QQ and QR) of the SAS Core Curriculum. Specifically, students will be able to:

1. Formulate, evaluate, and communicate conclusions and inferences from quantitative information (QQ)
2. Apply effective and efficient mathematical or other formal processes to reason and to solve problems (QR)

### Course Format

Several lecture videos will be posted at the beginning of each week. You should have watched the videos BEFORE working on your assignment for the week and attending office hours. Lecture videos will ask you to complete mini-quizzes/classwork, in which you answer questions relevant to the content being discussed.

Instead of recitations, all TAs will hold office hours during several times of the week. You are strongly encouraged to go to the office hours for the TA assigned to your section unless you cannot make that time. If you are attending office hours please be there early, that way more students can ask questions and have the option to hear answers to others' questions. Questions about the assignments have priority, if you have questions about lecture content please wait until no one else has assignment questions and reach out to the TA or Professor over email.

*Please keep an eye on your email and CANVAS for announcements!*

### **Textbooks**

We will be using various free resources throughout the semester, including the following free book:

Learning statistics with R: A tutorial for psychology students and other beginners. *Danielle Navarro* (bookdown translation: *Emily Kothe*). Available at: <https://learningstatisticswithr.com/book/>

### **Requirements**

For this class you will need access to a computer. You will need to install R & Rstudio following the instructions provided in CANVAS (*recommended*) **or** have access to a browser to use Rstudio Cloud (<https://rstudio.cloud/plans/free>). If using **Rstudio Cloud, please close the webpage if you are not using it, as it has a limit on how much time you can use it per month. If you run out of time you will need to install R and Rstudio in your computer.** If you have technical difficulties getting the software to work after exhausting resources on CANVAS and GOOGLE, you may ask for help during office hours or the first recitation.

Baseline technical skills include basic computer and web-browsing skills and navigating Canvas Technology.

### **Assessment**

Exam 1	15%
Exam 2	15%
Final Comprehensive Exam	25%
Assignments	30%
Lecture Quizzes	10%

**Grading:** Final grades will be assigned according to the following scale:

A: 90.0 -100.0%  
B+: 85.0-89.99%  
B: 80.0-84.99%  
C+: 75-79.99%  
C: 70-74.99%  
D: 60.0 - 69.99%  
F: 0.0 - 59.99%

***THIS GRADING RUBRIC APPLIES TO ALL STUDENTS IN THIS CLASS. NO EXCEPTIONS WILL BE MADE FOR ANY REASON.***

Exams. These exams will be completed during prespecified times and should be completed *individually*. The exams will include both conceptual (no calculations, multiple-choice objective questions) and computational questions for which you will need to show *reproducible* code (in other words, I should be able to rerun your code and get the same results). While the first two exams will only cover material specific to the first two thirds of the semester, respectively, the final exam's 25 points will include 20

points covering material from the final third of the semester, and 5 points covering the most important material from the previous two exams.

**Anything covered in lecture, lecture quizzes, or assignments may be in the exams!**

Assignments. These will consist mostly of code showing your simulations or analyses of data. Code will be uploaded onto CANVAS. For these assignments, for each problem, you will receive no credit if you leave it blank, half credit if you make an honest effort, and full credit if your code is **reproducible** and correct.

Lecture Quizzes. These will be multiple-choice quizzes that you will ask questions relevant to the lecture video. The deadline to complete these quizzes is the same as the assignment deadline.

**Make-up exams and assignments:** In order to qualify for a make-up for exams you must notify me *in advance* by email *and* provide documentation (i.e., a doctor's note, etc.). If you do not meet all of these criteria, you will not be permitted to take a make-up exam (some extra flexibility will be afforded during the pandemic). **There are no makeups for the assignments.**

*Academic Integrity:*

*Rutgers University takes academic dishonesty very seriously. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):*

- *Cheating*
- *Plagiarism*
- *Aiding others in committing a violation or allowing others to use your work*
- *Failure to cite sources correctly*
- *Fabrication*
- *Using another person's ideas or words without attribution—re-using a previous assignment*
- *Unauthorized collaboration*
- *Sabotaging another student's work in doubt, please consult the instructor*

*Please review the Academic Integrity Policy (See <http://nbacademicintegrity.rutgers.edu/home-2/academic-integrity-policy> for specifics, and <http://nbacademicintegrity.rutgers.edu/home-2/for-students/> for additional resources).*

**Honor pledge:**

**All students will need to sign the Rutgers Honor Pledge on every major exam, assignment, or other assessment as follows:**

*On my honor, I have neither received nor given any unauthorized assistance on this examination (assignment, paper, quiz, etc.).*

## Schedule

Date	Readings	Topic/Event	Other
Week 0- Jan 19- 24		Orientation and review of syllabus and resources available	
Week 1- Jan 25 -29	See Canvas for suggested readings.	Types of measurement – nominal, ordinal, interval, ratio. Measures of central tendency – mean, median, mode. Graphing frequency distributions Measure of variability – range, variance, and standard deviation. Kurtosis and skew.	<i>Assignment 1</i> Posted: Jan 23 Due: Jan 30 (11:59 pm est)
Week 2- February 1-5	See Canvas for suggested readings.	Distributions z-scores Sampling distribution Central Limit Theorem	<i>Assignment 2</i> Posted: Jan 30 Due: Feb 6 (11:59 pm est)
Week 3- February 8-12	See Canvas for suggested readings.	Statistical tests	<i>Assignment 3</i> Posted: Feb 6 Due: Feb 13 (11:59 pm est)
Week 4 February 15-19	See Canvas for suggested readings.	Independent vs. dependent variables. T-tests - Testing for mean differences. Single-sample t-test. Inferences about populations from samples.  The Sampling Distribution of the Difference and the independent samples t-test. The use of 1- vs. 2-tailed t-tables.	<i>Assignment 4</i> Posted: Feb 13 Due: Feb 20 (11:59 pm est)
Week 5 February 22-26	See Canvas for suggested readings.	Review	Review
Week 6- March 1-5	Exam 1	Exam 1	Exam 1

Week 7- March 8-12	See Canvas for suggested readings.	Repeated-measures (within-subjects) t-tests.  The Correlation Coefficient: Pearson's r	<i>Assignment 5</i> Posted: Mar 6 Due: Mar 13 (11:59 pm est)
March 13 - 21	Spring Recess	Spring Recess	Spring Recess
Week 8- March 22-26	See Canvas for suggested readings.	Nominal data and the chi-square test	<i>Assignment 6</i> Posted: Mar 20 Due: Mar 27 (11:59 pm est)
Week 9- March 29 – April 2	See Canvas for suggested readings.	The 1-way Analysis of Variance – Testing for mean differences among more than 2 groups. Post-hoc testing (Tukey test).	<i>Assignment 7</i> Posted: Mar 27 Due: Apr 3 (11:59 pm est)
Week 10 – April 5-9	Exam 2	Exam 2	Exam 2
Week 11- April 12-16	See Canvas for suggested readings.	Multiple regression (no interactions)	<i>Assignment 8</i> Posted: Apr 10 Due: Apr 17 (11:59 pm est)
Week 12- April 19-23	See Canvas for suggested readings.	Multiple regression (interactions; Factorial ANOVA)	<i>Assignment 9</i> Posted: Apr 17 Due: Apr 24 (11:59 pm est)
Week 13 – April 26-30	Review	Review	Review
Thursday, May 5 To Wednesday, May 11	Comprehensive Exam	Comprehensive Exam	Comprehensive Exam

Other resources (**All of these services are being provided remotely during Spring 2021.**)

**Counseling, ADAP & Psychiatric Services (CAPS)**

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ <http://health.rutgers.edu/medical-counseling-services/counseling/>

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professionals within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community, and consultation and collaboration with campus partners.

**Crisis Intervention** : <http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/>

**Report a Concern**: <http://health.rutgers.edu/do-something-to-help/>

**Violence Prevention & Victim Assistance (VPVA)**

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / [www.vpva.rutgers.edu/](http://www.vpva.rutgers.edu/)

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

**Disability Services**

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

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 on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.