

Research Methods

Spring 2020 Course Syllabus

Department of Public Policy and Administration
Course # 56:831:535

INSTRUCTOR INFORMATION

Instructor: Michael S. Hayes, PhD
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Office Hours: By appointment
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COURSE DESCRIPTION

This course prepares graduate students to conduct their own research projects by teaching them how to develop a research question; conduct a literature review; form a testable hypothesis; identify a potential data source/methodology to test their hypothesis; and write a research proposal. Additionally, this course is designed to teach graduate students to be proficient in basic statistical concepts and techniques. The specific learning outcomes and skills taught can be found below. By the end of this course, students will be able to...

<u>Learning Outcome(s)</u>	<u>Specific Skill Taught</u>
1. Distinguish between good and bad research questions	1. Develop a research question
2. Identify ways to describe and interpret data	2. Calculate, graph, and interpret descriptive statistics
3. Form and test hypotheses	3. Form a testable hypothesis 4. Create and interpret confidence intervals 5. Conduct various forms of hypothesis tests 6. Create a scatterplot 7. Run and interpret a regression
4. Develop a research project	9. Write a research proposal

PREREQUISITE KNOWLEDGE

You should have basic proficiency in high school-level algebra, as well as, a basic experience with excel spreadsheets. For additional algebra resources, please see <https://www.khanacademy.org/math/algebra-home>.

COURSE FORMAT

Canvas is the central location for all course content. Please check Canvas regularly to ensure that you are on task with the assigned course materials and tasks. I will email important announcements through Canvas to the email account that is linked to you on Canvas. Please check that email account regularly for updates and progress reports! It is your responsibility to check your Rutgers e-mail.

Each in-person class meeting will involve a combination of lecture, class discussion, and data work. For each lecture, I will post a set of study questions on Canvas that will assist you in thinking about the key takeaways from the lecture and in preparing for the assignments and quizzes.

Students are strongly encouraged to participate in class discussions and to ask questions. Everyone in class brings a unique perspective, and I believe these perspectives are a valuable addition to the course. Please come to class prepared and ready to participate.

REQUIRED TEXTBOOK

Wheelan, Charles. 2014. *Naked Statistics: Stripping the Dread from the Data*, 1st Edition, W.W. Norton & Company, Inc. ISBN: 978-0-393-34777-7. The textbook is available at the university bookstore. You can also buy a paperback version of this textbook on Amazon.

All other readings will be posted on Canvas.

COURSE REQUIREMENTS

Your final grade will be made up of the following four components: class participation, ungraded problem sets, quizzes, and a research proposal. See below for more details:

1. Class participation – 10%

Your attendance is critical for success in this course. We have a *significant amount* of material to cover in the course, and we will be moving quickly. Missing class will put you behind and it will be very difficult to catch up. It is expected that all students will read the assigned readings prior to class and be prepared to be called on to answer questions and engage in class discussions. The assigned readings are indicated in the course schedule.

2. Ungraded problem sets – 20% (4 points each)

Students will complete 5 ungraded assignments designed to allow students to practice the specific skill(s) taught during lectures. See the course schedule on Canvas for more information and due dates. Credit will be assigned on a check (100%) or check-minus (50%) scale. The problem sets are called “ungraded” because points are rewarded based on effort. If you **complete all problems** and **put a “good faith” effort** into the assignment, you will receive a check. If you

do not answer all of the problems, or I believe you did not put a “good faith” effort into the assignment, you will receive a check-minus. You will receive zero points if you fail to turn in your assignment. **Late ungraded assignments will not be accepted.**

3. Quizzes – 40% (20 points each)

Students will complete two quizzes throughout the semester. Students will be advised of the nature of the quiz in advance. **Make-up quizzes will not be given.**

4. Research Proposal – 30%

Students will also be responsible for preparing a research proposal. This is **due on May 2, 2020** via Canvas. More details about this assignment will be provided in the coming weeks.

Your final grade will be assigned as follows: Letter grades will determine based on the overall course average, rounded to the nearest whole number. Only certain letter grades are available for graduate course work at Rutgers-Camden. The translation of a numeric grade to a letter grade will be done as follows:

A	92-100
B+	87-91
B	80-86
C+	76-79
C	70-74
F	0-69

GENERAL COMMUNICATION GUIDELINES

1. Check your email/Canvas at least once a week, more often if possible.
2. Be respectful, courteous, and clear in your communication. Avoid using all caps.
3. Use proper spelling and grammar in all communications.

OTHER COURSE POLICIES

Technology

This is a course about concepts, not software. Nevertheless, we will use Microsoft Excel at times to reduce computation burden. Therefore, **I expect everyone to bring a laptop or tablet to class in order to practice using Excel.**

Communication with instructor

Email (michael.hayes012@gmail.com) is the fastest way to reach me. I will usually respond to emails within 48 hours of receipt. If I do not respond within 48 hours, please try emailing me again. In addition to office hours, private appointments are also available upon request. These

can be conducted via phone, Skype, or in person. Check your Rutgers email for announcements, assignments, and solutions. It is your responsibility to check your Rutgers email. I acknowledge every email that I receive.

Make-up Assignments & Quizzes

I **do not** accept late ungraded assignments. **Please also submit your completed quizzes on their respective due dates.** If you are unable to do so, you may petition to take a make-up quiz, but this is granted only in exceptional circumstances. I reserve the right to require documentation before giving a make-up quiz. Please let me know as soon as you see a problem developing so that we can consider the best means of addressing it. *I am unlikely to allow a make-up test if you do not get in touch with me prior to the date of the quiz.*

Students with Disabilities

If you have or believe you have a disability that may impede your learning, please contact the Disability Services Office. I will make every effort to accommodate you in accordance with Rutgers University's policy, procedures and College Coordinator recommendations. Additional information can be found at <http://studentaffairs.camden.rutgers.edu/disability.html>.

Attendance

Attendance is entirely optional. However, you are responsible for everything covered in this class whether it was covered in the readings or not. For most students, attendance is necessary condition for learning the material. The PowerPoint slides are not a substitute for attending the class, because the slides are not self-contained – they are props to give structure to my lectures and our class discussions. If you need to miss a class, be sure to get notes and a recap from a classmate.

Academic Honesty

Violations of academic integrity include cheating on quizzes or handing in assignments that do not reflect your own work and/or the work of a study group in which you *actively* participated. *I have a policy of zero tolerance for cheating.* Violations will be referred to the appropriate university authorities.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

More information on the Rutgers University Academic Integrity Policy can be found at <http://academicintegrity.rutgers.edu/>.

COURSE SCHEDULE

- **January 18th [Online]**
 - *Topic/Assignment:* Developing a Research Question; Problem Set #1
- **January 25th [In-Person]**
 - *Topic/Assignment:* Descriptive Statistics
- **February 1st [Online]**
 - *Topic/Assignment:* Problem Set #2 and Conducting a Literature Review
- **February 8th [In-Person]**
 - *Topic/Assignment:* Descriptive Statistics II
- **February 15th [Online]**
 - *Topic/Assignment:* Problem Set #3
- **February 22nd [In-Person]**
 - *Topic/Assignment:* Hypothesis Testing I
- **February 29th – No Class for Spring Break**
 - *Topic/Assignment:*
- **March 7th [Online Session]**
 - *Topic/Assignment:* Problem Set #4
- **March 14th [In-Person]**
 - *Topic/Assignment:* Hypothesis Testing II
- **March 21st [Online]**
 - *Topic/Assignment:* Quiz #1
- **March 28th [In-Person]**
 - *Topic/Assignment:* Regression Analysis I
- **April 4th [Online]**
 - *Topic/Assignment:* Problem Set #5
- **April 11th – No Classes for Easter/Passover Break**
 - *Topic/Assignment:* Work on Research Proposal
- **April 18th [In-Person]**
 - *Topic/Assignment:* Regression Analysis II
- **April 25th [Online]**
 - *Topic/Assignment:* Quiz #2
- **May 2nd [In-Person]**
 - *Topic/Assignment:* Research Proposal Presentations