

# Applied Research Methods

POL 306  
Spring 2021

Harrison Hall 304  
Thur 11:40 am – 1:00 pm

Instructor: Dr. Kevin Reuning (ROY-ning)  
Email: [reunink@miamioh.edu](mailto:reunink@miamioh.edu)  
Course Website: Canvas  
Office: Harrison Hall 222  
Office Hours: 1 - 3pm Mon & Tues  
Schedule appointments:  
<https://calendly.com/reuning>

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## Course Description

In this course we will learn how quantitative analysis can be used to test social science theories and analyze public policy. This will require covering both theoretical questions as well as directly applying what we learn using R, a common statistical software. By the end of the term students will be able to understand quantitative analysis done by others as well as implement their own.

## Student Learning Objectives

1. Students will be able to define and explain statistical concepts used in the analysis of political phenomenon.
2. Students will demonstrate skill in evidence-based reasoning by identifying the appropriate research design and data for a given research question.
3. Students will be able to identify and apply the appropriate statistical methodology and analysis for a given problem and understand the limitations of their research choices.
4. Students will be able to apply statistical methodologies to contemporary political issues and problems and be able to identify and evaluate alternative political science-based solutions.
5. Students will be able to evaluate the possibilities for positive change in democratic society as engaged researchers.

## Recommended Book

In the first half of the semester the readings will be from online sources. The second half will be based off of *Real Stats*. The book is not cheap, but there is a copy available through course reserves in King Library.

Bailey, Michael A. 2016. *Real Stats: Using Econometrics for Political Science and Public Policy*.

**Masks are mandatory for any in-person meeting.**

## Course Policies

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### Hybrid Course

I will be posting weekly videos and a short canvas activity on Mondays. You will be expected to watch these videos and complete the activity before coming to class on Thursday. On Thursday the class will be divided in half, with half of the class attending from 11:40 to 12:15, and the second set attending from 12:25 to 1:00. During this time period there will be a short lecture, and then we will have in-class work and discussions.

### Respect

In this course we will learning how to test social scientific theories and evaluate public policy. At times this will require discussing issues that touch many of us personally. In these discussions our aim is to understand what the evidence implies about the world. In these discussions we will treat everyone with respect.

### Preparation

This course builds on itself and so students need to come to class everyday ready and willing to learn. In the second half of the semester we will be working through an R tutorial and so you are expected to bring a laptop and be prepared to actively engage in the assignment during class.

### Technology

In the class you are expected to be focused on what is going on within the class. Laptops will be required on some days. On those days that laptops are not required you may bring one to take notes, etc. If the laptop becomes a distraction to those around you we will look at reevaluating this policy.

### Email Policy

I will check email between 8am and 6pm, and will try to always respond to any contact within 24 hours. Although I do not expect formality in email communications, I do expect you to respect that emails are not a costless act. In addition, just as I am responsive to email you must be responsive to email as well. Email is how the world runs.

## Grade Distribution and Assignments

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Item	Percentage
Weekly Activities and Attendance	15%
Assignments	25%
Midterm	30%
Final	30%

### Weekly Activities and Attendance

There will be short Canvas activities every week that will be graded on a 5 point scale based on completion. You will get full credit if you make a full attempt at answering all questions. You will not get full credit if you have copied and pasted answers from the slides, readings the internet, or each other. These assignments will be due by Thursday at 11:40am.

In addition to the activities there will be weekly in-person meetings on Thursday. You will be expected to attend your assigned in-person class time and will also receive 5 points for that. If for whatever reason you do not attend them you must email me that week with at least 1 question you have about that week's content. This will serve as

a check in. If you consistently miss them then we will figure out an alternative system. You will have two weeks from the missed class to email me, after that you cannot receive credit.

If, for whatever reason, you cannot attend class for 2 or more weeks in a row you will be expected to contact me to work out a schedule. If you do not contact me within the first 2 weeks you miss class, you will not be able to receive any credit on the assignments you missed.

### **Assignments**

Throughout the semester I will assign out of class work. This will be graded on accuracy. You will have at least a week to complete it.

### **Midterm**

The midterm will take place on Thursday March 11th. It will be online and we will discuss the format of the midterm as we approach it.

### **Final**

The final will take place on May 11th. It will be online and we will discuss the format of the midterm as we approach it. You will be able to complete the midterm during the assigned time block (12:45 to 2:45)

### **Extra Credit**

I will provide extra credit opportunities throughout the semester.

### **Late work policy**

In order to receive a deadline extension you should contact me more than 24 hours before the deadline. If an assignment is turned in late without an extension but within 24 hours of the due date, your grade will decrease by 5 percentage points (a 95% would become a 90%). For every additional 24 hours after this it loses another 5%.

### **R Tutorial Work**

In order to learn R in a hands on fashion, starting in the second half of the semester each week we will have a tutorial in R. This work is NOT graded, it is solely designed to help you with the homework that will be due at the next class session.

### **Letter Grade Distribution**

$\geq 93.00$	A	73.00 - 76.99	C
90.00 - 92.99	A-	70.00 - 72.99	C-
87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	B	63.00 - 67.99	D
80.00 - 82.99	B-	60.00 - 62.99	D-
77.00 - 79.99	C+	$<59.99$	F

## Academic Integrity

Miami University is a scholarly community whose members believe that excellence in education is grounded in qualities of character as well as of intellect. We respect the dignity of other persons, the rights and property of others, and the right of others to hold and express disparate beliefs. We believe in honesty, integrity, and the importance of moral conduct. We defend the freedom of inquiry that is the heart of learning and combine that freedom with the exercise of judgment and the acceptance of personal responsibility.

Miami demands the highest standards of professional conduct from its students, faculty, and staff. As a community of scholars, our fundamental purpose is the pursuit of knowledge. Integrity in research and creative activities and in academic study is based on sound disciplinary practices and expectations, as well as a commitment to the values of honesty and integrity.

Any student caught committing academic dishonesty will, at a minimum, receive a 0 for the assignment at hand. For more information on academic dishonesty and potential punishments visit <http://MiamiOH.edu/integrity>.

## Disability Services

If you are a student with a physical, learning, medical and/or psychiatric disability and feel that you may need a reasonable accommodation to fulfill the essential functions of the course that are listed in this syllabus, you are encouraged to contact the Office of Student Disability Services at 529-1541 (V/TTY), located in the Shriver Center, Room 304.

## Course Outline

### January 26 & 28 Theories and Hypothesis

*How does research start?*

<http://www.socialresearchmethods.net/kb/resques.php>

<http://www.socialresearchmethods.net/kb/relation.php>

### February 2 & 4 What are we researching and how?

*Who or what are we researching?*

<http://www.socialresearchmethods.net/kb/unitanal.php>

<http://www.socialresearchmethods.net/kb/sampterm.php>

<http://www.socialresearchmethods.net/kb/external.php>

### February 9 & 11 Variables

*How are we quantifying the world?*

<http://www.socialresearchmethods.net/kb/variable.php>

<http://www.socialresearchmethods.net/kb/measlevl.php>

### February 16 & 18 Causality

*How do we define if something is causal?*

<http://www.socialresearchmethods.net/kb/intval.php>

<http://www.socialresearchmethods.net/kb/causeeff.php>

**February 23 & 25 Describing Univariate Data**

*How do we describe a phenomenon*

No Readings

**March 2 & 4 Univariate and Scatter Plots and Review**

No readings

**March 9 & March 11 Midterm**

**March 9: Wellness Day NO CLASS**

March 11: Online Midterm

**March 16 & 18 Simple Regression 1**

Chapter 3 Sections 1 through 4

**March 23 & 25 Simple Regression 2**

**March 25: Wellness Day NO CLASS**

Chapter 3 Sections 1 through 4

**March 30 & April 1 Hypothesis Testing**

Chapter 4

**April 6 & 8 Confidence Intervals**

Chapter 4

**April 13 & 15 Multiple Variable Regression**

Chapter 5

**April 20 & 22 Dummy Variables**

Chapter 6 Sections 1 to 3

**April 27 & 29 Interactions and Transformations**

Chapter 6 Section 4 and Chapter 7 Sections 1 to 2

**May 4 & 6 Review and Limits of Quantitative Analysis**

Read: Obermeyer, Ziad, Brian Powers, Christine Vogeli, and Sendhil Mullainathan. 2019 "Dissecting racial bias in an algorithm used to manage the health of populations." *Science* 366(6464): 447-453.

**May 11 Final Week**

– Online Final 12:45 - 2:45

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## **Additional Resources**

- Howe Writing Center: <http://miamioh.edu/hcwe>
- Students also may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to call Student Counseling Service (513-529-4634). For emergencies outside of business hours, the Community and Counseling and Crisis Center (844-427-4747) has a 24-hour hotline.
- Students come to Miami from a variety of economic backgrounds. If you are having financial trouble I urge you to make use of the services available through Miami Cares Resources: <https://www.miamioh.edu/emss/offices/student-success-center/miami-cares/index.html>