

Research Methods & Statistics – Spring 2023
PS 5002, Section 101
MW 4:00p.m. – 5:15p.m.
ED 215

Contact Information

Instructor: Dr. William D. Hicks
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Office Hours: 10:00-11:00, MWF
Make appointment here: [Google Calendar](#)
Meet here: [Zoom Link](#)

Course Objectives and Learning Outcomes

We examine the application of quantitative methods to political science research, in this course. I hope to achieve three separate goals by the end of the semester. First, I want to prepare students to pursue their own research projects using statistics as a means to test hypotheses. Second, I hope to provide students with a sufficient foundation in quantitative methods to prepare them to learn more advanced statistical techniques should they be so inclined. Third, I hope to equip students with the tools necessary to evaluate the merits of existing research using statistical techniques. I split our weekly meetings in this class, spending Mondays in the classroom and Wednesdays in the lab. By doing so, I aim to provide students with weekly examples of how to analyze “real-world” data on their own.

Required Texts and Materials

Pollock , Phillip H. and Barry C. Edwards. 2019. The Essentials of Political Analysis. **Sixth Edition**. Sage/CQ Press: Washington, DC.

We will use [R](#) and [RStudio](#) to complete problem sets for this course. We can access and use these resources for free. I encourage download both to your personal computers. To download R, you

will need to select a “CRAN mirror.” My advice is to select “0-Cloud” as your mirror. Download R [here](#) and RStudio [here](#).

Exams & Graded Activities

Participation: Students are expected to attend all classes, read all assigned materials, and contribute to class discussions. Each student’s participation grade will be based on his or her fulfillment of these tasks.

Problem Sets: Students are obligated to complete a problem set roughly each week. Each problem set is worth 5 total points. Students lose points for (1) no answering all of the questions, (2) answering the questions with incorrect information, (3) poor writing and grammar, and (4) poor presentation of the results in tables and figures.

Final Exam: This course will conclude with a **take home**, comprehensive exam.

Course Grades

<i>Grading Scale</i>			<i>Grade Requirements</i>		
A	93-100	C	73-76	Participation	10 %
A-	90-92	C-	70-72	Assignments	60 %
B+	87-89	D+	67-69	Final Exam	30 %
B	83-86	D	63-66		
B-	80-82	D-	60-62		
C+	77-79	F	0-59		

Absence Policies

Given the prevalence of Covid-19 in our broader community, it is irresponsible to require attendance. Many of you may encounter situations where attending class puts others at risk. I ask seriously if any of you have any symptoms related to Covid-19 or more generally of a cold or flu, e.g., fever, cough, sneezing, fatigue, chest tightness, etc., or you have been in close contact with someone who has, please **do not attend**. I have designed this course so that all graded assignments, quizzes, discussions will be available online.

Appalachian State Face Covering Policy

Appalachian State University Policy 302.8 requires that all students wear face coverings at all times that social distancing is not feasible. Even if social distancing is feasible face coverings shall be worn at all times in classrooms, conference rooms, meeting rooms, elevators, research laboratory spaces, and any other instructional areas, unless an approved modification has been

provided pursuant to the policy. Appropriate face coverings include cloth face coverings and other reusable University-approved face coverings that cover the nose and mouth of the individual. Failure to comply with this policy may result in dismissal from the current class session and charges under the Code of Student Conduct.

COVID-19 Statement

We are in the midst of a global pandemic, and we must all do our best to prevent the spread of COVID-19 and work to protect each other. Appalachian State has put in place a number of measures aimed at preventing the spread of this disease. Please be aware of the following:

- Face coverings are required for students, faculty, and staff when on campus, including in all classrooms. If you do not have a face covering on, you will not be allowed to attend class. (See policy below)
 - Keep in mind: Because COVID-19 is spread through droplets when an infected person speaks, coughs, or sneezes, one of the most important tools we have in this fight are face coverings.
 - Students who seek an exception to this policy because they are unable to wear a face covering due to a medical condition should contact the [Office of Disability Resources](#).
- The symptoms of COVID-19 include the following:
 - Fever
 - Cough
 - Shortness of breath or difficulty breathing
 - Chills
 - Repeated shaking with chills
 - Muscle pain
 - Headache
 - Sore throat
 - Loss of taste or smell
- If you are experiencing symptoms of COVID-19, please call Student Health Service at **828-262-3100** or AppHealthCare at **828-264-4995**.
 - Here is a list of testing locations in [Watauga County](#)
- If you feel sick, **stay home**
 - If you have had a fever, do not return to class until you have been fever-free for a minimum of **48 hours** without the use of fever-reducing medication.
 - If you have a two or more COVID-19 symptoms, do not return to class until you are symptom-free for a minimum of **72 hours** without fever-reducing medication.

- If you have been tested for COVID-19, do not return to class until you have received a **negative test result**.
- If you test positive for COVID-19, do not return to class until you have **self-quarantined for 10 days**.
- If someone you have close contact with tests positive for COVID-19, do not return to class until you have **self-quarantined for 10 days**.
- If you have recently attended a large social event where people were unmasked, do not return to class until you have **self-quarantined for 10 days**.

Student Conduct

As a community of learners at Appalachian State University, we must create an atmosphere of honesty, fairness, and responsibility, without which we cannot earn the trust and respect of each other. Furthermore, we recognize that academic dishonesty detracts from the value of an Appalachian degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form and will oppose any instance of academic dishonesty. This course will follow the provisions of the Academic Integrity Code, which can be found on the Office of Student Conduct Web Site:

www.studentconduct.appstate.edu

Statement on Student Engagement with Courses

In its mission statement, Appalachian State University aims at “providing undergraduate students a rigorous liberal education that emphasizes transferable skills and preparation for professional careers” as well as “maintaining a faculty whose members serve as excellent teachers and scholarly mentors for their students.” Such rigor means that the foremost activity of Appalachian students is an intense engagement with their courses. In practical terms, students should expect to spend two to three hours of studying for every hour of class time. Hence, a fifteen-hour academic load might reasonably require between 30 and 45 hours per week of out-of-class work.

Disability Support Services

Appalachian State University is committed to making reasonable accommodations for individuals with documented qualifying disabilities in accordance with the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Those seeking accommodations based on a substantially limiting disability must contact and register with The Office of Disability Services (ODS) at <http://www.ods.appstate.edu/> or 828-262-3056. Once registration is complete, individuals will meet with ODS staff to discuss eligibility and appropriate accommodations.

Religious Observances Policy

Faculty members are required to make reasonable accommodations for students requesting to miss class due to the observance of religious holidays. All ASU students are allowed a minimum of two absences per year for religious observances. Up to two absences for such observances will be excused, without penalty to the student, provided that the student has informed the instructor in the manner specified in the syllabus. Notice must be given by the student to the instructor before the absence occurs and no later than three weeks after the start of the semester in which the absence(s) will occur. Arrangements will be made to make up work missed by these religious observances, without penalty to the student. For the purposes of this policy, ASU defines the term “religious observance” to include religious holidays, holy days, or similar observances associated with a student’s faith that require absence from class. Faculty, at their discretion, may include class attendance as a criterion in determining a student’s final grade in the course. On the first day of class, faculty must inform students of their class attendance policy and the effect of that policy on their final grade; both policies must be clearly stated in the class syllabus.

Syllabus Change Policy

This syllabus is only a guide for the course and is subject to change with advanced notice.

Course Schedule

Week 1. January 18

Course Introduction

Week 2. January 23 & 25

Research Design, Causality, & Statistics
– Read: Pollock & Edwards, Chs. 3 & 4
– Topics: Research Design; Causality; R

Week 3. January 30 & February 1

Variables, Measuring ‘Average,’ and Measuring Dispersion
– Read: Pollock & Edwards, Chs. 1 & 2
– Topics: types of variables and coding schemes; distributions; measures of average & dispersion
– Problem set #1 due Monday, February 6

Week 4. February 6 & 8

Probability and Statistical Inference

- Read: Pollock & Edwards, Ch. 6
- Topics: probability & odds; confidence interval for $\hat{\pi}$
- Problem set #2 due Monday, February 13

Week 5. February 13 & 15

Probability and Statistical Inference II

- Read: Pollock & Edwards, Chs. 5, 6, 7
- Topics: sampling, distributions, & standard error; confidence interval for $\hat{\mu}$
- Problem set #3 due Monday, February 20

Week 6. February 20 & 22

Null Hypothesis Testing

- Read: Pollock & Edwards, Chs. 5, 6, 7
- Topics: cross-tabs, odds ratios & χ^2 ; mean differences & t-tests
- Problem set #4 due Monday, February 27

Week 7. February 27 & March 1

Regression I. Bivariate Models

- Read: Pollock & Edwards, Chs. 8
- Topics: correlation; scatterplots; OLS
- Problem set #5 due Monday, March 6

Week 8. March 6 & 8

Regression II. Adding More Variables to the Right Hand Side

- Read: McClendon, Ch. 3
- Topics: multiple regression
- Problem set #6 due Monday, March 13

Week 9. March 13 & 15

[No Class March 13 & 15]

Week 10. March 20 & 22

Regression III. Using Dummy Variables

- Read: McClendon, Ch. 5
- Read: Pollock & Edwards, p. 149-154
- Topics: making and using dummies with OLS
- Problem set #7 due Monday, March 27

Week 11. March 27 & 29

Regression IV. Non-Additive Effects

- Read: McClendon, Ch. 7
- Read: Pollock & Edwards, p. 154-160
- Topics: interaction effects
- Problem set #8 due Monday, April 3

Week 12. April 3 & 5

Regression V. Nonlinear Effects

- Read: McClendon, Ch. 6
- Topics: advanced polynomials
- Problem set #9 due Monday, April 10

Week 13. April 10 & 12

Regression VI. Assumptions & Diagnostics

- Read: Berry, Understanding Regression Assumptions
- Topics: OLS assumptions
- Problem set #10 due Monday, April 17

Week 14. April 17 & 19

Binary Choice Dependent Variables I

- Read: Long, Ch. 3
- Pollock, Ch. 9
- Topics: Logit and probit

Week 15. April 24 & 26

Binary Choice Dependent Variables II

- Read: Long & Freese, Chs. 5 & 6
- Topics: Logit and probit

Week 16. May 1 & 3

Review

Final Exams. May 5–11