

INAF 320: Quantitative Methods for International Affairs
Summer 2021

Professor Information

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Office Hours: by appointment

Class will meet on Mondays - Thursdays from 1 pm to 3 pm EST

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The goal of this course is to train students to perform and analyze quantitative research in International Relations and Comparative Politics. By the end of this course, students should be able to read and understand the quantitative research found in reports and articles. Students should also be able to formulate hypotheses, design a research project, and use the correct statistical method(s) to test their hypotheses. All students will work with real data using a statistical package (Stata) and learn to manage, graph, display, and analyze different types of data.

This course is divided into three parts: 1.) definition of key terms, 2.) descriptive statistics, and 3.) inferential statistics. The first week will focus on defining and discussing important terms that will allow students to understand how to plan and conduct a research project. The remaining weeks will involve understanding different statistical tools that are used for analyzing important and interesting research questions. Unlike other classes, this class will focus on quantitative methodology, which means that over 95% of this course involves math and correctly interpreting numbers. At the end of the semester, students should be able to:

1. Articulate an appreciation for the diverse application of statistics and its relevance to the field of political science and international politics.

2. Demonstrate conceptual understanding of fundamental statistical ideas such as variability, distribution, association, causation, confidence, and significance.
3. Show introductory level practical ability to choose, generate, and properly interpret appropriate descriptive and inferential methods.
4. Exhibit critical thinking about statistics (e.g., demonstrate the ability to assess the ‘validity’ of statistical arguments in the popular press and scholarly publications).
5. Demonstrate the ability to effectively communicate statistical ideas (and thus be able to knowledgeably participate in social debates).
6. Demonstrate introductory level experience by using Stata, a statistical software widely used in the social sciences, to perform data analysis.

Recommended Text

There is not a required text for this course, however, the following text is **recommended** for those students who would like extra problems or more detail on the materials covered in lecture.

- Agresti, Alan and Barbara Finlay 2008. *Statistical Methods for the Social Sciences, 4th Edition* Pearson

In addition to this recommended text, I have also included recommended policy readings that cover each of the topics we cover in class. These readings can be found under the Readings page within Canvas.

Required Materials:

The following materials are required for this course. Students are expected to bring the following to every class:

- Scientific Calculator. Students **MUST** bring their calculators to every lecture and to exams. The use of a calculator on your phone and/or tablet is unacceptable.
- A Course Packet, available for download. I understand that some students may not have a printer. This is fine. You can just use a plain notebook and just refer to the course packet for the examples we do in class. Others can annotate the electronic copy using their laptop or tablet. I prefer that students write out their notes since it is proven that students learn better when they actually take notes.

Stata

In this course, we will be using a statistical software called Stata. Stata is now available to ALL students. Students must use **Stata 16 IC**.

1. Students can download the software online by visiting the following website:
<https://georgetown.onthehub.com>.
2. Please sign in using your netid and password
3. Click on Stats and STEM and look for Stata 16
4. Follow the directions to download Stata 16 (If you have a Mac, click on Windows and choose Mac from the pull down menu)
5. Once you download it you will be asked to choose a version of Stata 16, **choose Stata IC**
6. Once download is complete, open up Stata. You will be asked for registration code, authorization code, etc. You can find this information if you go back to the georgetown.onthehub.com website, sign in, and click on my orders. From here if you click details under the Stata 16 order, you will see all the information you need.

Academic Integrity

Students should familiarize themselves with the following University policies:

- Georgetown's honor system <http://bulletin.georgetown.edu/regulations6.html>
- Students may not post externally or share any materials in course packet or on Canvas without permission from Professor Patel. More information about intellectual property and copyright can be found here: <https://www.library.georgetown.edu/copyright>
- Plagiarism policy <http://gervaseprograms.georgetown.edu/honor/system/53519.html>

Grades

The final course grade will be evaluated on quizzes, a midterm, class participation/attendance, lab exercises, and a final exam. The grade breakup is as follows:

- Quizzes–20%
- Midterm–20%
- Lab Exercises–25%
- Final Exam–30%
- Class Activities and Online Modules–5%

Final grades will be distributed as follows:

- 95 and above – A
- 90-94 – A-
- 87-89 – B+
- 83-86 – B
- 80-82 – B-
- 77-79 – C+
- 73-76 – C
- 70-72 – C-
- 60-69 – D
- below 60 – F

Note: Due to many opportunities I give throughout the semester (including extra credit), I do not round the numerical final grade. A grade of 94.99 will be an A-, while a grade of 95 will be an A.

All assignments **MUST** be submitted **BEFORE** July 7. Any grade dispute **MUST** be brought to my attention approximately 48 hours after the grading has been completed for each assignment and well before the final exam (July 9). Grades are not up for negotiation.

Lectures

All lectures will be live (unless announced otherwise) on Mondays-Thursdays from 1-3 pm. I understand that some of you are international students, so I will also record these lectures and upload recorded lectures on Canvas (under the panopto section). It is best if students can attend the lectures live so they can ask questions, but I understand if this is not possible given the time differences.

Quizzes:

There are 10 quizzes throughout the semester. Each quiz consists of 10 questions (each worth 1 point). All of the quizzes are on Canvas under Assignments. Students **MUST** submit their answers online by Sunday at 11:59 p.m. The due dates of the quizzes will be updated once we have completed the topic. Late quizzes **WILL NOT** be accepted unless you provide us with proper documentation (a letter from a medical professional or a dean) **BEFORE** the deadline passes. Those that are granted an extension have two days past the due date to complete the quiz. Completion after the one week period will result in a grade of 0. Emailing for an extension after the deadline passes is not acceptable (and the student will receive a 0 for that quiz). These quizzes are designed to help students prepare for the midterm and final exam. Students will

be able to check their answers and review each quiz after the deadline has passed. Note that students must show their work for all quizzes (NO WORK, NO CREDIT). Quizzes are worth 20% of your total grade.

1. Quiz 1–Introduction to Key Terms
2. Quiz 2–Descriptive Statistics
3. Quiz 3–Descriptives and Probability
4. Quiz 4–Normal Curve and Confidence Interval
5. Quiz 5–Chi Square
6. Quiz 6–T Test and Proportions Test
7. Quiz 7–ANOVA
8. Quiz 8–Bivariate Regression
9. Quiz 9–Multiple Regression
10. Quiz 10–Multiple Regression with Interactions

Lab Exercises:

There are 8 lab exercises throughout the semester. Each exercise will cover a particular topic that we discussed in lecture and is meant to help students prepare for exams and also gain familiarity with the statistical package we will be using throughout the semester. The due dates for the lab exercises will be the Sunday after we discuss the topic. You must ask for an extension before the deadline passes. Full credit will be given to late lab exercises only with valid documentation such as a doctor's note or a letter from your dean. Late lab exercises will be penalized without such documentation. The penalty for late lab exercises is 5 points for EACH DAY the lab is turned in late. All lab exercises will be submitted via Canvas. The due dates of the lab exercises are located on Canvas and will be updated if we are running behind. Lab exercises will be worth 25% of your total grade.

1. Lab 1–Gapminder–
2. Lab 2–Recoding Variables–
3. Lab 3–Chi Square–
4. Lab 4–T Test–
5. Lab 5–Proportions Test–
6. Lab 6–ANOVA–
7. Lab 7–Multiple Regression–
8. Lab 8–Multiple Regression with Interactions– (no late labs accepted)

In Class Activities and Online Modules

The readings are in the form of online modules. These online modules will be due the Sunday after we discuss the topic in lecture. Students are expected to complete these readings by the due date to get credit. The class activities will be due on different days (I will send out an email and let students know when they are due. The purpose of the class activities are to test out the technology that will be used for the midterm and final exam. This is to ensure that there are no issues for the students leading up to the exams and if there are issues they are resolved before students sit for the exam. Students should focus on the material that they will be tested on on the days of the exam rather than the technological issues. The online modules and the class activities collectively are worth 5% of your total grade.

Midterm:

The midterm exam will cover material from lecture, lab, and the readings. Students will be allowed to bring a calculator to the exam administered during lecture. The midterm will be worth 20% of your total grade. The tentative date of the midterm will be June 17th.

Final Exam:

The final exam is cumulative, but will mostly focus on the materials and topics covered after the midterm. The final will be on July 9. Students will be allowed to bring one page of notes (front and back) and a calculator. The final exam is worth 30% of of your total grade. The date of the final exam will be the last day of class, July 9.

Class Schedule

Instead of laying out the topics that we will cover in each class, I'm going to just list the different topics we will cover throughout the semester and the order in which we will cover them. After each topic, I will list the assignments that you can complete after each topic. The due dates of assignments will be on Sunday. Whichever topics we complete the assignments will be due the Sunday after the topic was covered. The last due date of assignments is going to be July 7 (two days before the final exam). We will one class devoted to a final exam review (and maybe one class for the midterm exam if we have time).

1. Introduction and Definition of Key Terms (Quiz 1 and Lab 1 after this lecture)
2. Descriptive Statistics (Quiz 2 and Online Module 1-3 after this lecture)
3. Probability and Normal Curve (Quiz 3 after this lecture)
4. Recoding Variables (Lab Exercise 2 after this lecture)
5. Confidence Interval (Quiz 4 and Online Module 4-5 after this lecture)
6. Midterm
7. Chi Square (Quiz 5, Online Module 6, Lab Exercise 3 after this lecture)

8. T Test and Proportions Test (Online Modules 7-8, Quiz 6, Labs 4 and 5 after this lecture)
9. ANOVA (Quiz 7, Lab 6 after this lecture)
10. Correlation and Bivariate Regression (Quiz 8 after this lecture)
11. Multivariate Regression
12. Multivariate Regression with Dummy IVs (Quiz 9 and Lab 7 after this lecture)
13. Multivariate Regression with interactions (Quiz 10 and Lab 8 after this lecture)
14. Final Review
15. Final Exam

Canvas

Everything you need for this class will be on the Canvas Course site. This section will go over the different course content on Canvas.

- Home and Syllabus—Both these sections include the syllabus and important information about the course.
- Assignments—You will find under this section, all of the quizzes, lab exercises, class activities, exams, etc. The due dates for assignments right now is left blank (see below). I will update the due dates as we progress through the course.
- Panopto—This section will include the recorded lectures. I will try (if technology cooperates and there are no issues) to record all lectures and post them on panopto. If you don't see the lecture posted after the evening of the lecture, send me an email.
- Pages—This section includes all the documents you will need including handouts for each lecture, statistical tables, etc.
- Modules—This section includes the link to access the online modules.
- Announcements—I will use this section to post any important announcements. Please make sure that you change the settings so that you get an email once a new announcement is posted or that you check this section frequently.
- Discussion—If anyone has any questions that require further explanation via a video, I will post the question and the answer here.
- Zoom Conferencing—Here you will find the links to the lectures as well as Office Hours link. I'll post one link for the lectures (let's just use that link for lecture for the entire semester) and one link for office hours. Please do not share or post the link in order to avoid zoom bombings.

Uploading work on Canvas

In the Quizzes and Lab Exercises, you will be asked to upload either your work or supporting documents to prove that you have completed the assignment without outside help (or the answers from another student). For quizzes, use the Show Your Work for Quizzes option to upload your document. For the Lab Exercises, use the Embed a Picture and/or Upload a File question at the end of each lab. The following is to help you figure out how to use all three options.

1. Show Your Work for Quiz _____. Use this assignment to submit the work you did for that quiz. You must submit your work for each quiz in order to get credit. The purpose of submitting your work is to ensure that students independently completed the quizzes.
 - (a) Click on Show Your Work-Quiz _____ assignment in assignments.
 - (b) Click on “Submit Assignment” or “Re-submit Assignment” if you made a mistake and would like to add more submissions.
 - (c) Choose a File and “Submit Assignment”
 - (d) Please do this for every quiz.
2. Embed a Picture (png or jpeg file) for lab assignments. Use this option if you take a screenshot of your work. If you have multiple files or want to upload a non-jpeg or non-png file, please see the next option.
 - (a) Click on Embed Image (you can find it on top of the text box that you input your answer-it is under background color, and looks like a picture of a mountain, and next to the square root x button).
 - (b) Click on the Canvas Tag
 - (c) Go to My Files → My Files → Upload My files
 - (d) Select the screenshot or picture you want to upload and click on upload file
 - (e) The picture should show up in the text box
3. Upload a file. You might want to do this for a lab assignment where your work includes any non jpeg, png files, pdf files, do files, or word documents.
 - (a) First save the file on your computer.
 - (b) Find the file on your computer and upload it here. If you have multiple files, I would say put them all in a folder, compress the folder, and then upload the compressed folder with the files. Or create one pdf of all the files and upload that pdf file here. If you don't know how to zip a file or create a pdf of all your documents, please google how to do this.