INTA 2010 Empirical Research Methods Syllabus

Spring 2024

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Course Meetings: TR 3:30-4:45pm Guggenheim Aerospace 244
Office: Habersham G-15
Office Hours: Thursday 2:00-3:00pm

Introduction

Empirical research methods is a broadly encompassing topic covering research design and methodology. The past several years has seen an exponential growth in the use of data analytics in numerous fields, social science included. In this course, we will become familiar with these quantitative methods and use them to explore questions and expand knowledge of the field. We will look at topics from statistics, computer programming, and philosophy of research design.

The general format of the course will be to introduce a concept, apply the concept in a hands on computer lab, and finally explore the use of that concept within the field. Throughout the semester, students will have the opportunity to apply these methods in various ways and to design a research project of their own.

Learning Objectives

1. Students will be able to apply basic statistical skills to include quantitative and qualitative methodologies in academic and professional contexts within the field of international affairs.

2. By the end of this course, you will be able to critically evaluate the appropriateness of the research methods employed by journals representative of the field.

3. Students will learn how to import data, produce summary statistics, create visualizations, and run linear regression in the R programming language.

4. Students will create a research proposal that will be in the style of the field and will utilize one of the methodologies covered in the course.

Text and Resources

There is no required textbook for the course, however, there are a couple supplementary texts I recommend.

- Imai, Kosuke., Williams, Nora Webb. *Quantitative Social Science: An Introduction in Tidyverse*. United States: Princeton University Press, (n.d.).
- Angrist, Joshua D., Pischke, Jörn-Steffen. *Mostly Harmless Econometrics: An Empiricist's Companion*. United Kingdom: Princeton University Press, 2008.
- Jenkins-Smith, Hank C.. *Quantitative Research Methods for Political Science, Public Policy and Public Administration (With Applications in R): 3rd Edition*. N.P.: University of Oklahoma, 2017. https://shareok.org/bitstream/handle/11244/52244/Quantitative%20Research%20Methods%20For%20Political%20Science%2C%20Public%20Policy%20and%20Public%20Administration%2C%20With%20Applications%20in%20R.pdf?sequence=15&isAllowed=y
- Wooldridge, Jeffrey M.. *Introductory Econometrics: A Modern Approach*. United States: South-Western Cengage Learning, 2013. https://economics.ut.ac.ir/documents/3030266/14100645/Jeffrey_M._Wooldridge_Introductory_Econometrics_A_Modern_Approach__2012.pdf

During the lab components of this course, we will use the open-source statistical software "**R**" (http://www.r-project.org) and its accompanying interface, RStudio (http://www.rstudio.com). A main benefit to **R** is that it is free and open source. This is part of why it is so ubiquitous within the field. However, it can be a little difficult to learn how to use. We will spend plenty of time throughout the semester discussing basics of computer programming and working with **R**, but there are also some free resources I recommend:

- https://r4ds.had.co.nz
- https://www.youtube.com/user/TheLearnR/videos
- https://www.coursera.org/collections/learn-r
- https://stackoverflow.com/

Grading and Requirements

The course will consist of the following assignments:

- 3 Homework Assignments (30%)
- Data Presentation (10%)
- Research Proposal (40%)
- Participation (20%)

More information about these assignments will be provided throughout the semester, but a general description is provided below. Per university policy, I use the following grading scale: "A" = [100-90], "B" = (90-80], etc.

Homework Assignments: The course is broken into 3 main themes. First is an introduction to quantitative social social, second is basic statistics and data visualization, and third is linear regression. There will be a homework assignment for each of these segments worth 10% each. I will release the homework assignment two weeks before the due date to ensure that you have plenty of time to complete it. All assignments are to be submitted electronically through the Canvas course portal, and assignments using **R** will be in an R Markdown file (we'll go over what that means).

Data Presentation: Students will complete a data presentation. The purpose of this presentation is to gain experience finding data that interests you, organizing the data, and presenting initial findings. The presentation will include information about the data, summary statistics, two visualizations, and conclusions or interesting findings.

Research Proposal: Rather than a midterm and final, students will complete a detailed research proposal throughout the semester. The proposal will be due in three parts: a one page summary of the research question (5%), a 2-3 page literature review (10%), and the final proposal (25%). More detailed instructions will be given about each assignment as the semester progresses. This is an opportunity to explore a topic you are interested in and to have a research proposal that could be used for a senior capstone or writing samples when applying to jobs or graduate school.

Participation: Throughout the semester, we will have a number of class discussions. Students are expected to have completed the readings **prior** to class. Preparedness and level of engagement are both factors of the participation grade. I reserve the right to call on individuals or administer reading quizzes, though I prefer not to. Additionally, attendance is part of the participation grade. You are allowed 3 unexcused absences. After this, failure to attend may negatively impact your participation grade.

Late Assignment Policy

Late assignments will be accepted with a 5 point reduction for each day that it is late, up to one week. Presentations will be handled on a case by case basis. If you are sick or have extenuating circumstances, I am happy to work with you, just please let me know ahead of time if we need to work something out.

Diversity and Inclusivity Statement

The Institute does not discriminate against individuals on the basis of race, color, religion, sex, national origin, age, disability, sexual orientation, gender identity, or veteran status in the administration of admissions policies, educational policies, employment policies, or any other Institute governed programs and activities. The Institute‘s equal opportunity and non-discrimination policy applies to every member of the Institute community. The Institute‘s affirmative action program, Title IX program, and related policies are developed in compliance with applicable law. Pursuant to

Title IX, the Institute does not discriminate on the basis of sex in its education programs and activities. As such, the Institute does not tolerate any kind of gender-based discrimination or harassment, which includes sexual violence, sexual harassment, and gender-based harassment. Inquiries concerning the Institute's application of or compliance with Title IX may be directed to the Title IX Coordinator, Burns Newsome, burnsnewsome@gatech.edu, 404-385-5151.

Accomodation for Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Office of Disability Services at Suite 123, Smithgall Student Services Building, 353 Ferst Drive, 404-894-2563 (Voice); 404-894-1664 (TDD). For more information on Georgia Tech's policy on working with students with disabilities, please see review the Office of Disability Service's web page at http://disabilityservices.gatech.edu/. The Office of Disability Services collaborates with students, faculty, and staff to create a campus environment that is usable, equitable, sustainable and inclusive of all members of the Georgia Tech community. Disability as an aspect of diversity that is integral to society and Georgia Tech. If students encounter academic, physical, technological, or other barriers on campus, the Disability Services team is available to collaboratively find creative solutions and implement reasonable accommodations.

Academic Integrity

Academic dishonesty in the form of cheating or plagiarism will not be tolerated. In brief, plagiarism is defined, for the purposes of this class, as: copying, borrowing, or appropriating another person's work and presenting it as your own in a paper or oral presentation, deliberately or by accident. Acts of plagiarism will be reported in accordance with the Honor Code. In order to avoid being charged with plagiarism, if you use the words, ideas, phrasing, charts, graphs, or data of another person or from published material, then you must either: 1) use quotation marks around the words and cite the source, or 2) paraphrase or summarize acceptably using your own words and cite the source. The plagiarism policy is not restricted to books, but also applies to video and audio content, websites, blogs, wiki's, and podcasts. Plagiarism includes putting your name on a group project to which you have minimally contributed. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/. Any student suspected of cheating or plagiarizing on a assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations. The student will also receive a grade of zero on the assignment at the professor's discretion.

INTA 2010 Empirical Research Methods Course Outline

Spring 2024

Week	Tuesday	Thursday
#1 Introduction (1/8-1/12)	Syllabus and Introductions	Introduction to QSS and **R**
Part I: Philosophy of Social Science Research		
#2 Research Questions and Theory Building (1/15-1/19)	Questions and Theories	Logical and Mathematical Operators, If Statements, and Loops
#3 Causal Inference (1/22-1/26)	Causal Inference	Research Topic Discussion **Research Topic Due @ 3:30pm**
#4 Data Types and Measurement (1/29-2/2)	Data Types and Measurement Errors	Vectors and Matrices **Homework #1 Due Friday @ 11:59pm**
Part II: Introduction to Statistical Methods		
#5 Basic Statistics (2/5-2/9)	Basic Statistics	Data Frames Pt. I
#6 Data Visualization (2/12-2/16)	Charts, Tables, and Graphs	Introduction to GGPlot
#7 Sampling and Populations (2/19-2/23)	Sampling and Confidence Intervals	Data Frames Pt. II
#8 Hypothesis Testing (2/26-3/1)	T-Test and ANOVA	Hypothesis Testing in **R** **Data Visualization RMD Due Friday @ 11:59pm**

#9 Data Presentations (3/4-3/8)	Data Presentations	Data Presentations **Homework #2 Due Friday @ 11:59pm**
Part III: Research Design and Regression Analysis		
#10 Qualitative Methods (3/11-3/15)	Comparative Case Studies	Paper Construction
#11 **Spring Break** (3/18-3/22)	**No Class**	**No Class**
#12 Bivariate Linear Regression (3/25-3/29)	OLS Logic and Assumptions	OLS, Stargazer, and Interpreting Results
#13 Multivariate Regression (4/1-4/5)	Multivariate Logic and Extensions	Multivariate Regression and Literature Review Discussion **Literature Review Due @ 3:30pm**
#14 Panel Data (4/8-4/12)	Panel Models	Panel in **R** and Wrap-up **Homework #3 Due Friday @ 11:59**
#15 Wrapping Up (4/22-4/26)	Project Help Session	**No Class**
Research Proposal Due April 30th @ 5:30pm		