Course Description
This course explores statistical methods as applied to international relations, with reference to similar applications in comparative politics and other fields. We will discuss statistical approaches to analyzing various types of data used by IR scholars. We will read both methodological and applied work, familiarizing students with an array of models and critically analyzing their strengths and weaknesses. It is not intended as a substitute for Quantitative Methods I, II, III, and IV, but as a complementary course. The goal of the course is to expose students to the range of quantitative models applied in international relations scholarship, assess the strengths and weaknesses of particular modeling choices, and to develop the ability to design empirical research projects of their own.

Prerequisites
I strongly recommend that students take Quantitative Methods I (or equivalent) prior to this course. Having Quant II and III would be very helpful, but you’re welcome if don’t have these. It will be more challenging, but you’ll learn a lot and we’ll work together to make it manageable.

Expectations
- Please treat each other with respect, listen attentively when others are speaking, and avoid personal attacks. At the same time, everyone should feel comfortable expressing their opinions, political or otherwise, as long as they do so in an appropriate manner.
- Laptops, phones, and other electronic devices should be turned off and put away during class unless I ask you to take them out. This requirement may seem old-fashioned, but in my experience, it is the best way to foster discussion and mutual engagement. If you need electronics, please come talk to me outside of class. I suggest taking notes on the papers as you read them and bringing those notes in class in lieu of skimming the pdfs on your laptop.
- I do not tolerate plagiarism. You should never take credit for words or ideas that are not your own, and you should give your readers enough information to evaluate the source and quality of your evidence. Self-plagiarism (reusing material you have written in another context) is also prohibited unless you receive prior permission from the instructor. For more information on academic integrity, consult http://integrity.mit.edu/.

Goals
- Gain exposure to a variety of quantitative methods used in International Relations research. We will cover too many methods for you to master each one. My goal is to give
you the intuition of each method so that you know where to turn if you need it in your own research.

- **Master the details of a several methods that interest you** well enough to use them in your own research now and teach them to others.
- **Learn to teach** by developing tutorials on particular methods and teaching them to the class.
- **Find inspiration for new research** that could serve as the basis for a 2nd year paper and/or publication.
- **Learn to give an APSA-style presentation** if you take the term paper option.

**Grades:** You should worry more about learning the material than about your grade, but I am required to give grades. Graduate school grades tend to be higher than what you may be used to. An A+/A/A- means “excellent/very good/ good” and a B+/B/B- means “adequate/fair/poor.” If I give you a C or lower, we need to talk.

**Assignments**

**Two in-class tutorials (20%):** Each of you will select or be assigned two weeks from the syllabus. You will prepare a 30-minute tutorial on the key method or issue covered in that week. You will present this tutorial to the class for the first 30 minutes of class. This should be an interactive lecture, as if you were teaching a department workshop on the topic (a common feature in many departments). Please send me any slides, notes, data, and code for your tutorial so I can post it to the class website for people to use. You should send it no more than 24 hours after your presentation. You may revise in light of what happens in class.

If you want people to be able to run code during your tutorial, then circulate the code and data beforehand. The easiest way is to send it all to me, cc’ing Eliza Riley (e_riley@mit.edu) in a zipped directory. One of us will post it, but this requires at least a few hours of lead time.

I will try to dole out weeks on the syllabus according to your interests. I will collect your preferences after the first class session. However, be aware that you may not get your top choices and I may assign you to a week you don’t want. This is part of learning to teach – we all have to teach things we don’t exactly want to.

Matching up the number of weeks in the class with the number of students is going to require some flexibility. I may double up or skip some as needed.

**Class participation and feedback on in class tutorials (5%):** I’ve heard from graduate students (and I remember from my own grad school days) that “reading” 200 pages per week for each of four classes makes it impossible to understand anything deeply. I’m trying something new. I’ve radically redesigned the course to cut the reading load to 50 pages of reading per week, on
average. In exchange for cutting more than half the syllabus, I expect you to read and re-read until you understand the material.

Please come to class with at least one question or issue related to the week’s reading that you would like to discuss.

You will provide quick written feedback on each in class tutorial that is not your own.

**Final written assignment (60%)**
There are two options:

1) **Term Paper:** A final research paper (25-40 pages) on international relations or comparative politics with a large quantitative component. The parameters are left intentionally broad so that students can tailor the paper to their own research interests, but the topic should be agreed upon in consultation with the instructor. The research paper is due via the class website on **Tuesday May 21, 2019 by 5pm.** I will not accept late papers. *You should seek my feedback throughout the semester as you develop this paper.*

2) **4 Tutorials:** In lieu of a final paper, students may opt to prepare materials for four tutorials on four different empirical methods relevant to IR scholars. At least one of these must cover a model, method, or approach not included in the required readings on this syllabus. The remaining three may be models, methods, or approaches from the required readings, though they need not be. I encourage you to develop your in-class tutorials into final assignment tutorials. When selecting methods not on the syllabus, please confirm with me that the topic is appropriate.

The standard for these tutorial materials is higher than for the two in-class tutorials. These tutorials should include a conceptual overview of what the method is good for, mathematical details, intuition for the mathematical details, and a worked example (with annotations) in R. The materials should be detailed enough that you could teach a 50-minute lecture/tutorial from the materials. They should also be detailed enough that I can read them and understand the method – I will not see you present most of them. They are due as well-organized zipped directories via the class website (or some other means if the file size is too large) on **Tuesday May 21, 2019 by 5pm.** I will not accept late assignments. *You should run at least some the tutorials by me before turning them in to make sure they are of sufficient quality.*

**Final Presentation (15%)**

Final presentations happen on the last two class sessions, depending on the number of students. If you are writing a term paper, you will give a 15 minute APSA-style presentation of the paper followed by a 15 minute Q&A. If you are doing 4 tutorials, you will give a half hour tutorial on a method or topic not covered in class. Expect clarifying questions throughout.
Semester Overview
February 11  What is an empirical model?
February 19 [Tues]:  Measurement: Text as Data
February 25  Measurement: Images, Video, Audio
March 4  Measurement: Latent Variables
March 11  Measurement: Ideal Point Estimation
March 18  Measurement: Missing Data
March 25 – MIT Spring Break
April 1  No class (I am out of town)
April 8  Causal Inference: Matching and Selection Models
April 15 – MIT holiday (Patriots’ Day)
April 22  Interdependence: TSCS data
April 29  Interdependence: Networks
May 6  Student presentations
May 13  Student presentations or no class

Readings
All readings should be available through MIT’s electronic resources or through the course’s Stellar website (http://stellar.mit.edu/S/course/17/sp19/17.426/)

1 February 11: What is an empirical model?
No required reading.

Additional Resources

2 February 19 [Tuesday]: Measurement – Text as Data

Required Reading (55 pages)


Additional Resources
Methods


Applications


3 February 25: Measurement – Images, Video, Audio

Required Reading (61 pages)

Torres, Michelle. “Give me the full picture: Using computer vision to understand visual frames and political communication” Working Paper: https://www.dropbox.com/s/o9hqecmhwnhcck2/MT_Polmeth_VisualFraming.pdf?dl=0 Video (optional, but possibly helpful): https://www.youtube.com/watch?v=rWQbK63B6PI


4 March 4: Measurement – Latent Variables

Required Reading (38 pages)


**Additional Resources**


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5 March 11: Measurement – Ideal Point Estimation

**Required Reading (38 pages)**


**Additional Resources**


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6 March 18: Measurement – Missing Data

**Required Reading (51 pages)**


Additional Resources


7 March 25: MIT Spring Break

8 April 1: No class (I am out of town)

9 April 8: Causal Inference – Matching and Selection Models

Required Reading(57 pages)


Additional Resources

Matching


Selection Models


Further Reading:


**10 April 15: MIT holiday – Patriots’ Day**

**11 April 22: Interdependence – TSCS data**

**Required Reading (84 pages)**


**Additional Resources**


Esarey, Justin. POLS 509: The Linear Model - Lecture 9 - Panel Data https://www.youtube.com/watch?v=6uL3Rh05U-g


Williams, Laron K. "Temporal Dependence and the Sensitivity of Quantities of Interest: A Solution for a Common Problem." International Studies Quarterly


12 April 29: Interdependence – Networks

Tutorial presenter(s):
Required Reading (25 pages)


13 May 6: Student presentations

14 May 13: Student presentations

Topics not covered in the syllabus for final project tutorials (not exhaustive)

**Interaction terms – interpretation and pitfalls**


Esarey, Justin, and Jane Lawrence Sumner. "Marginal effects in interaction models: Determining and controlling the false positive rate." *Comparative Political Studies* (2017): 0010414017730080.

**Experiments in IR**


*Further Reading*

**Duration/Event History Models**
Alt, James, Gary King, and Curtis Signorino. 2001. “Aggregation Among Binary, Count, and Duration Models: Estimating the Same Quantities from Different Levels of Data” *Political Analysis* 9(1).


**Strategic Models**


**Web-scraping**


Nielsen, Richard A. and Beth A. Simmons. 2015. Rewards for Ratification: Payoffs for Participating in the International Human Rights Regime?” *International Studies Quarterly*. Focus on measurement of “intangible rewards” from EU and US.

**Variables Truncated at Zero/Too Many Zeroes**


**Instrumental Variables**


