

Empirical Methods

INTA 2010A

Spring 2016

T,Th 1:35-2:55

Howey (Physics) S104

Peter Brecke

phone: 404-894-6599

email: peter.brecke@inta.gatech.edu

Office: Habersham 215

Visitation: Th 12:00-1:15, or by appt.

The purpose of this class is to introduce you to the methods of social science research for the early 21st century and to give you an understanding of how to use empirical research methods to support an argument or position. Learning this is of benefit to you because application of scientific methods to social phenomena imposes logical rigor—and a lot of common sense—to your efforts to understand those phenomena. This discipline makes you much more certain of precisely what you know and don't know, guides you in terms of what to do next so that you know more, and makes what you have done more transparent and compelling to others. The acquisition of technical skills to help you make inferences from multiple and voluminous information sources makes you valuable. While some believe that success in political argumentation is dominated by timing and presentation—and in the short term there is a lot of truth to that—in the long run the argument supported by evidence usually wins out. And even in the short run, a position that is well articulated and supported by evidence is formidable.

I believe that social scientific methods complement more history-oriented analyses, and the two approaches should not be viewed as being mutually exclusive. This class focuses on the scientific method because I believe it is for most individuals not immediately intuitive what needs to be done to execute the method properly with respect to social processes. On the other hand, the common sense that underlies so much of scientific research will be useful to you even if you never do a social scientific study after this class. What comprises a sound logical argument supported by evidence will probably never be the same for you.

This class will attempt to give you a familiarity with a broad subset of the range of techniques or methodologies used by those who study international affairs. Some of the methods are common to almost any study one may wish to conduct. Others are determined by the kind of question one wishes to answer. For that second set of methods we will look at what are appropriate techniques for particular questions.

So that these methods are more than abstractions, an emphasis of this class is hands-on experience with a number of techniques. For example, we will go through computer analyses of data using the computer and a projection system in the classroom. My intent is to use the virtual computer lab (mycloud.gatech.edu) such that we can “walk through” the steps of actually defining and then evaluating a social network, for instance, using computer software. I want you to be able to know enough to at least be able to cogently evaluate others' findings emerging from these techniques and, ideally, eager to use these techniques in subsequent classes and later in your careers learn

more. I hope you find at least one of them sufficiently interesting and illuminating such that after you complete the class you will wish to learn more and become expert at it.

To make the topics of the class even more concrete, you will execute one of two types of empirical research projects through the 16 weeks of the course. The first alternative is to execute your own project, possibly with one other student. For this alternative I want you to research a topic that is amenable to being addressed using information from many examples. For example, do wars that concern the creation of a new state from an existing state typically last longer than other wars? The second alternative is to participate in a group attempt to determine the answer to a larger question. For example, is there a strong relationship between a country's GNP per capita or level of industrialization and the likelihood it can build and sustain a democracy? During the class we will periodically discuss your progress and the problems and challenges that emerge to confront you. There is nothing like actual execution of a task to teach you what it is about. You should immediately give serious thought about the topic of your project or what aspect of the group project you would like.

I expect adherence to the Georgia Tech Code of Conduct. Note also that to get an A with respect to class participation, you must do more than simply attend regularly. You need to ask questions or make relevant comments. A reasonable (but not perfect) rule of thumb for discerning whether you are doing A-level participation is whether I know your name when I call upon you.

Make use of the library. More information and knowledge can be gleaned making use of the library than simply doing a Google/Bing/etc search using your browser.

Please bring a laptop to class.

I expect integrity in your work. The scientific method falls apart when it is not there.

The objectives of this class are:

1. Students understanding scientific analysis of international politics.
2. Students will be proficient in various techniques of the scientific method applied to international affairs phenomena.
3. Students will be able to demonstrate appreciation of the relative strengths and weaknesses of quantitative versus qualitative methods, and an understanding of the appropriateness of each to a particular research question.
4. Students will be proficient in the fundamentals of statistical analysis, including the ability to choose and use appropriate techniques.

Texts

Johnson and Reynolds, Political Science Research Methods (optional)

Peter Bernstein, Against the Gods

I will make other documents available online. These will include my Powerpoint slides and parts of papers I have written that are directly relevant. My slides and lectures will

include references to other documents available on the web. Note that I do not teach directly from a textbook. You may wish to get the Johnson and Reynolds book so that you have a complementary source of information about the topics covered.

Schedule for Week of:

- Jan. 12, 14 Introduction and Structure of Class; Mapping using Google Earth
Read: Johnson and Reynolds, Chapter 1
- Jan. 19, 22 Telling a Story with Google Earth; Foundations of Political Science
Read: Johnson and Reynolds, Chapters 1, 2
P. Bernstein, Introduction through Chapter 2
- Jan. 26, 28 Types of Social Models; Developing Models Using Stella
Read: Computational Modeling Foundations (on T-square)
Jan. 28: Google Earth Assignment due
- Feb. 2, 4 Building Dynamic Computational Models
Read: Johnson and Reynolds, Chapters 3 & 5
Bernstein, Chapter 3 through Chapter 5
Feb. 4: FIRST MIDTERM EXAM
- Feb. 9, 11 Building Blocks of Social Science
Read: Johnson and Reynolds, Chapters 4 & 6
Bernstein, Chapter 6 through Chapter 11
Feb. 17 Stella Modeling Assignment due
- Feb. 16, 18 Types of Research and Making Inferences using JMP
Read: Johnson and Reynolds, Chapters 7 & 8
Bernstein, Chapter 12 through Chapter 15
Due on Feb. 18: 1000-word paper describing individual research project (problem, background, model, and evidence needed)
- Feb. 23, 25 Observations and Evidence; Sampling and Survey Methods
Read: Johnson and Reynolds, Chapters 9 & 10
- Mar. 1, 3 Introduction to Probability and Statistics
Read: Bernstein, Chapter 16 through Chapter 19
- Mar. 8, 10 Different Types of Statistical Analysis
Due on Mar. 10: First Statistical Analysis Assignment
- Mar. 15, 17 Theory and Evidence/Representation of Theories
Read: Johnson and Reynolds, Chapter 11
Mar. 17: SECOND MIDTERM EXAM

Mar. 29, 31 Building Networks using Gephi
Read: Johnson and Reynolds, Chapter 12
Due on Mar. 31: Second Statistical Analysis Assignment

Apr. 5, 7 Analyzing Networks
Read: Johnson and Reynolds, Chapter 13

Apr. 12, 14 Data Visualization
Read: Johnson and Reynolds, Chapter 14
Due on Apr. 14: Social Network Analysis Assignment

Apr. 19, 21 Presentation of Research Projects

Apr. 26 Presentation of Research Projects

Final paper describing the research project will be due 5 pm on Monday, May 2.

The Final Exam will be Tuesday, May 3 from 6:00-8:50 pm.

Determination of Final Grade

class participation (which is more than attendance)	20%
first midterm exam	10%
second midterm exam	10%
5 exercises/assignments	5% each
presentation/paper of research project	25%
final exam	10%