Master of Science in Political Analytics

POAN K5020: Strategic Thinking
Scheduled Meeting Times: TBD
Credits: 2
Core course: Online

Instructor:

Office Hours:
Response Policy:

Facilitator/Teaching Assistant, if applicable: TBD
Office Hours: TBD
Response Policy: TBD

Course Overview

Politics involves a complex interaction of competing interests. For practitioners, it is crucial to understand how efforts are met with responses, and predicting those responses is critical to designing successful strategies. Game theory is the formal mathematical analysis of strategic interaction across the social sciences. This course provides a general theoretical language to the theory of games, examining the intentional thought process of rational actors in strategic environments. Students will acquire tools for understanding the dynamics that lead to the success of a political campaign or policy-making effort. Course topics include two-person games, dynamic games, bargaining, and signaling. Students will also examine a variety of cases.

Class sessions will be primarily lecture-based. In addition to presentation of theoretical material, class sessions will include interactive exercises and discussion of applications focused on the design of political strategies and the prediction of outcomes.

This is a required core course for the MS program in Political Analytics. POAN students are given priority for enrollment. Students must have familiarity with some foundational mathematics for the social sciences, including probability, differentiation, and optimization.

Learning Objectives
After completing this course, you will be able to:

- L1 Analyze political behavior and strategy by applying systematic and theoretical approaches
- L2 Apply basic tools and terminology of game theory
- L3 Solve basic games and predict behavior
- L4 Apply abstract theoretical concepts to real-life political situations
- L5 Analyze strategies for achieving political goals

Readings

Due to the composition of the Political Analytics student cohort, and the specific mix of quantitative rigor and real-life applications that this class aims at offering, the lecture slides will be an integral part of the learning material. Slides will be distributed on Canvas the night before each session.

We will additionally use the following textbook to supplement the slides. The text will provide an extra perspective on almost all of the material from the course. Some assignment questions will be drawn directly from this book. Students are expected to familiarize themselves with the chapters associated with each module before lecture.

Osborne, Martin J. 2004. *An Introduction to Game Theory*. New York: Oxford University Press.

Each week will also feature supplemental journal articles or book chapters. These readings will apply course concepts and provide empirical evidence in various political settings. Typically, these articles will use techniques that go beyond what is presented in class. Students are therefore expected to skim each before the associated lecture, but are not expected to understand them in detail. Articles will be available online through Columbia Libraries and links will be provided on Canvas. The complete list of articles follows.

Aldrich, J. H. (1993). Rational Choice and Turnout. *American Journal of Political Science*, *37*(1), 246-278.

https://doi.org/10.2307/2111531

Ansolabehere, S., Snyder, J. P., & Ting, M. M. (2003). Bargaining in Bicameral Legislatures: When and Why Does Malapportionment Matter? *American Political Science Review*, *97*(03), 471–481.

https://doi.org/10.1017/s0003055403000819

Baron, D., & Ferejohn, J. (1989). Bargaining in Legislatures. *American Political Science Review*, *83*(4), 1181–1206. https://doi.org/10.2307/1961664

Burden, B. C. (2005). Minor parties and strategic voting in recent U.S. presidential elections. *Electoral Studies*, *24*(4), 603–618. https://doi.org/10.1016/j.electstud.2005.02.004

De Janvry, A., Finan, F., & Sadoulet, E. (2011). Local Electoral Incentives and Decentralized Program Performance. *The Review of Economics and Statistics*, *94*(3), 672–685.

https://doi.org/10.1162/rest_a_00182

Kreps, D. M. (1990c). Corporate culture and economic theory. In *Cambridge University Press eBooks* (pp. 90–143). https://doi.org/10.1017/cbo9780511571657.006

Levine, D. K., & Palfrey, T. R. (2007). The Paradox of Voter Participation? A Laboratory Study. *American Political Science Review*, *101*(1), 143–158. https://doi.org/10.1017/s0003055407070013

Romer, T., & Rosenthal, H. (1978). Political resource allocation, controlled agendas, and the status quo.

Public Choice, *33*(4), 27–43. https://doi.org/10.1007/bf03187594

Snyder, J. P., & Ting, M. M. (2002). An Informational Rationale for Political Parties. *American Journal of*

Political Science, *46*(1), 90–110. https://doi.org/10.2307/3088416

Spence, M. (1973). Job Market Signaling. *Quarterly Journal of Economics*, *87*(3), 355–374.

https://doi.org/10.2307/1882010

Finally, we will use some news articles and commentary pieces to illustrate applications to current political events. These will be posted on Canvas in advance of each class session.

There are many possible recommended readings, so please ask the instructor about any topic that provokes your interest. The following is a good overview article that covers many of the topics that we will encounter in this course.

Gibbons, R. D. (1997). An Introduction to Applicable Game Theory. *Journal of Economic Perspectives*,

11(1), 127–149. https://doi.org/10.1257/jep.11.1.127

Assignments and Assessments

Participation: (L2, L3) Students are required to attend weekly lecture sessions. For each session, they should prepare by reading the assigned chapter(s) from Osborne and the journal articles for that week. For the journal articles, it is generally sufficient to read the introductions. The overall goal of pre-class reading is not to understand the material thoroughly, but to anticipate the general direction of the session. Students should also read any news articles posted on Canvas in the days before the session. Participation will require students to answer questions about the readings and ask questions about applications. Class sessions will additionally feature individual and small group exercises that will help students to think through game theoretic exercises.

Homework Assignments: (L1, L2, L3, L4, L5) There will be six individual assignments, corresponding to each lecture after the first. The problems in each assignment are designed to give you an opportunity to demonstrate your mastery of the topics covered in the course, and the learning objectives of the course. Students are required to submit homework through Canvas by 11:59pm one week after the assignment date. Successive problem sets will increase in importance for the overall course grade, as each will build upon previously acquired knowledge. The initial problem sets will focus on elementary concepts and will generally involve working out mathematical exercises. Later problem sets will additionally ask students to apply ideas from the course to political settings, and may include essay-style questions. Student evaluation will be assessed based on the accuracy of their answers to each individual problem set.

The course associate will hold an online session each week at a time noted in the course site. These sessions are optional and will reinforce material relevant to upcoming problem sets.

Grading

The final grade will be calculated as described below:

FINAL GRADING SCALE

Grade	Percentage
A+	98–100 %
A	93–97.9 %
A-	90–92.9 %
B+	87–89.9 %
B	83–86.9 %
B-	80–82.9 %
C+	77–79.9 %
C	73–76.9 %
C-	70–72.9 %
D	60–69.9 %
F	59.9% and below

Assignment/Assessment	% Weight	Individual or Group/Team Grade
Problem Set 1	10%	Individual
Problem Set 2	15%	Individual
Problem Set 3	15%	Individual
Problem Set 4	15%	Individual
Problem Set 5	15%	Individual
Problem Set 6	20%	Individual
Participation	10%	Individual

Course Schedule

Module/Week			
Module/Week & Topic with specific dates	Topic	Readings	Activities/Assignments for this module

Module 1 September x	Course introductions Rationality and Games	Osborne, Ch. 1, 2 (pp. 1-53, pg. total 53) Supplemental: Burden	
Module 2 September x	Normal Form Games	Osborne, Ch. 3, 4 (pp. 55-150, pg. total 95) Supplemental: Aldrich, Levine-Palfrey	Problem set 1 due September x
Module 3 September x	Extensive Form Games 1	Osborne, Ch. 5 (pp. 153-179, pg. total 26) Supplemental: Romer-Rosenthal	Problem set 2 due September x
Module 4 September x	Extensive Form Games 2	Osborne, Ch. 6, 7 (pp. 181-236, pg. total 55) Supplemental: de Janvry *et al.*	Problem set 3 due September x
Module 5 October x	Information	Osborne, Ch. 9, 10 (pp. 273-357, pg. total 84) Supplemental: Snyder-Ting, Spence	Problem set 4 due October x
Module 6 October x	Repetition	Osborne, Ch. 14, 15 (pp. 419-463, pg. total 44) Supplemental: Kreps	Problem set 5 due October x
Module 7 October x	Bargaining	Osborne, Ch. 16 (pp. 465-491, pg. total 26) Supplemental: Baron-Ferejohn, Ansolabehere *et al.*	Problem set 6 due October x

Course Policies

Participation and Attendance
You are expected to complete all assigned readings and attend all class sessions. While I will not take attendance, your participation score will depend on engagement with in-class exercises and contributions to class discussions.

Late work
Work that is not submitted on the due date noted in the course syllabus without advance notice and permission from the instructor will receive a score deduction of five points for each day after the due date.

School and University Policies and Resources

Copyright Policy

Please note—Due to copyright restrictions, online access to this material is limited to instructors and students currently registered for this course. Please be advised that by clicking the link to the electronic materials in this course, you have read and accept the following:

> The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

Academic Integrity

Columbia University expects its students to act with honesty and propriety at all times and to respect the rights of others. It is fundamental University policy that academic dishonesty in any guise or personal conduct of any sort that disrupts the life of the University or denigrates or endangers members of the University community is unacceptable and will be dealt with severely. It is essential to the academic integrity and vitality of this community that individuals do their own work and properly acknowledge the circumstances, ideas, sources, and assistance upon which that work is based. Academic honesty in class assignments and exams is expected of all students at all times.

SPS holds each member of its community responsible for understanding and abiding by the SPS Academic Integrity and Community Standards posted at https://sps.columbia.edu/students/student-support/academic-integrity-community-standards. You are required to read these standards within the first few days of class. Ignorance of the School's policy concerning academic dishonesty shall not be a defense in any disciplinary proceedings.

Diversity Statement

It is our intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is our intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture.

Accessibility

Columbia is committed to providing equal access to qualified students with documented disabilities. A student's disability status and reasonable accommodations are individually determined based upon disability documentation and related information gathered through the intake process. For more information regarding this service, please visit the University's Health Services website: https://health.columbia.edu/services/ods/support.

Class Recordings

All or portions of the class may be recorded at the discretion of the Instructor to support your learning. At any point, the Instructor has the right to discontinue the recording if it is deemed obstructive to the learning process.

If the recording is posted, it is confidential and it is prohibited to share the recording outside of the class.

SPS Academic Resources

The Office of Student Affairs provides students with academic counseling and support services such as online tutoring and career coaching: https://sps.columbia.edu/students/student-support/student-support-resources.

Columbia University Information Technology
[Columbia University Information Technology](#) (CUIT) provides Columbia University students, faculty and staff with central computing and communications services. Students, faculty and staff may access [University-provided and discounted software downloads](#).

Columbia University Library
[Columbia's extensive library system](#) ranks in the top five academic libraries in the nation, with many of its services and resources available online.

The Writing Center
The Writing Center provides writing support to undergraduate and graduate students through one-on-one consultations and workshops. They provide support at every stage of your writing, from brainstorming to final drafts. If you would like writing support, please visit the following site to learn about services offered and steps for scheduling an appointment. This resource is open to Columbia graduate students at no additional charge. Visit http://www.college.columbia.edu/core/uwp/writing-center.

Career Design Lab
The Career Design Lab supports current students and alumni with individualized career coaching including career assessment, resume & cover letter writing, agile internship job search strategy, personal branding, interview skills, career transitions, salary negotiations, and much more. Wherever you are in your career journey, the Career Design Lab team is here to support you. Link to https://careerdesignlab.sps.columbia.edu/

Netiquette
Online sessions in this course will be offered through Zoom, accessible through Canvas. A reliable Internet connection and functioning webcam and microphone are required. It is your responsibility to resolve any known technical issues prior to class. Your webcam should remain turned on for the duration of each class, and you should expect to be present the entire time. Avoid distractions and maintain professional etiquette.

Please note: Instructors may use Canvas or Zoom analytics in evaluating your online participation.

More guidance can be found at https://jolt.merlot.org/vol6no1/mintu-wimsatt_0310.htm

Netiquette is a way of defining professionalism for collaborations and communication that take place in online environments. Here are some Student Guidelines for this class:

- Avoid using offensive language or language that is not appropriate for a professional setting.
- Do not criticize or mock someone's abilities or skills.
- Communicate in a way that is clear, accurate and easy for others to understand.
- Balance collegiality with academic honesty.
- Keep an open-mind and be willing to express your opinion.
- Reflect on your statements and how they might impact others.
- Do not hesitate to ask for feedback.
- When in doubt, always check with your instructor for clarification.