

Master of Science in Political Analytics

POAN 5900 - Capstone in Political Analytics

Summer 2024: TBD

3 Credits, Required, In-Person

Instructor:

Office Hours:

Response Policy:

Course Overview

The capstone course is the culminating experience for students in the Political Analytics program. Students will have the opportunity to tackle a complex, real-world political analytics challenge for a sponsoring organization. The capstone provides students with analytics experience in a “live” setting and is intended to expose students to the problems, timelines, and communications needs of actual political decision-makers.

Working individually or in small teams while being mentored by a program faculty member, students will apply core knowledge, concepts, and frameworks acquired during the program and practice the hands-on skills they have developed in their classes. Throughout the semester, student project teams will interact with the sponsoring organizations as virtual consultants, scoping the problem, acquiring the data, conducting analyses, and ultimately presenting their findings and recommendations to the project sponsor.

The capstone course is a required course in the Political Analytics program. Students from other programs may not enroll. Students should have taken all required courses prior to taking the capstone course to ensure that they have the skills to provide useful advice to a real-world political organization.

Learning Objectives

Upon successful completion of this course, students should be able to:

- L1: Recognize the challenges faced by a political organization and identify the corresponding analytics problems.
- L2: Identify analytical tools and methods that are appropriate to address different types of political problems.
- L3: Source, store, and prepare the data needed to answer key analytical questions.
- L4: Apply analytical methods that are relevant to the key problems identified.
- L5: Deliver a professional project presentation appropriate for technical and non-technical audiences that includes key findings, a methodological overview, analysis results, and recommendations.

Readings

[Note: Some additional readings will be assigned depending on the projects that the students end up working on, which are not yet known. The instructor will provide relevant readings once projects are finalized.]

Books

Required:

- Powner, Leanne C. *Empirical research and writing: A political science student's practical guide*. CQ Press, 2014. [Available online through CU Libraries]
- Therriault, Andrew. *Data and democracy: How political data science is shaping the 2016 elections*. O'Reilly Media, Inc., 2016. [<https://dataspace.princeton.edu/handle/88435/dsp01rv042w54s>]

Other Required Readings:

Grimmer, Justin. "We are all social scientists now: How big data, machine learning, and causal inference work together." *PS: Political Science & Politics* 48, no. 1 (2015): 80–83. (4 pages)

Issenberg, Sasha. "How Obama's Team Used Big Data to Rally Voters." *MIT Technology Review*, December 2012. <https://www.technologyreview.com/2012/12/19/114510/how-obamas-team-used-big-data-to-rally-voters/> (8 pages)

Nagler, Jonathan, and Joshua A. Tucker. "Drawing inferences and testing theories with big data." *PS: Political Science & Politics* 48, no. 1 (2015): 84–88. (5 pages)

Nickerson, David W., and Todd Rogers. "Political campaigns and big data." *Journal of Economic Perspectives* 28, no. 2 (2014): 51–74. (24 pages)

Rose, Jeremy, and Oskar MacGregor. "The Architecture of Algorithm-Driven Persuasion." *Journal of Information Architecture* 6, no. 1 (2021): 7–40. (36 pages)

Therriault, Andrew. "Finding a Place in Political Data Science." *PS: Political Science & Politics* 49, no. 3 (2016): 531–534.

Supplemental Materials

The following books may be helpful to refer to explanations of statistical and modeling topics:

- Kuhn, Max, and Kjell Johnson. *Applied Predictive Modeling*. Springer, 2013.
- James, Gareth, Daniela Witten, Trevor Hastie, and Robert Tibshirani. *An Introduction to Statistical Learning with Applications in R*. Springer, 2023. [available online for free: https://hastie.su.domains/ISLR2/ISLRv2_corrected_June_2023.pdf.download.html]
- Imai, Kosuke and Nora Webb Williams. *Quantitative Social Science: An Introduction in tidyverse*. Princeton University Press, 2022.
- Stock, James H., and Mark W. Watson. *Introduction to Econometrics*, 2nd ed. Pearson Education, 2007.
- Wickham, Hadley, and Garrett Grolemund. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. O'Reilly Media, Inc., 2016

Assignments and Assessments

Class Participation (10%) [L1, L2, L3, L4, L5] Students are expected to attend all class sessions, come to class on time, complete all assigned readings, and engage in class discussions. Relevant, respectful dialogue, thoughtful comments and active listening are all required as important elements of learning in a graduate environment. If students need to miss a class for any reason, please discuss the absence with the instructor in advance.

Project Proposal (5%) [L1, L2, L3, L4] Students must produce a 2-3 page proposal explaining the research question, hypotheses, available data, and their research design. The proposal should take into account instructor, peer, and (if possible) client feedback about the project. The instructor must approve the proposal before students can begin their analysis.

Analysis Presentation (10%) [L1, L2, L3, L4] As an interim step, students must produce and give a presentation about their initial analysis results for instructor and peer feedback. This should include no more than 10-12 slides showing the analytic output and initial visualizations for the project.

Draft Presentation Rehearsal (10%) [L1, L2, L3, L4, L5] Students must produce a near final draft of their project presentation to present to the class a week before their client presentation. This will give students an opportunity to practice their presentations and allow for feedback about final changes before clients see the presentation.

Client Presentation (30%) [L1, L2, L3, L4, L5] Students will give a professional presentation to the client about their research project. Students should act and dress professionally, and be fully prepared to present and answer client questions in detail. This final presentation to the client should be in the form of a slide deck and take 20-30 minutes to present (approximately 15-20 slides long, not including appendices), leaving time for questions and discussion at the end.

Final Report and Additional Deliverables (30%) [L1, L2, L3, L4] Students must produce a final written report about their project that explains in more detail than the presentation the analytical and methodological steps they took to answer the research question. The report can also discuss the results and recommendations in more detail and with more nuance. The final report should be approximately 12-15 pages, not including tables, graphs, reference, and appendices. This report will be submitted to the client for their records along with any additional deliverables owed to the client, such as data sets, documentation, etc.

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

Note: Project-related assignments will be assessed at the individual or group level depending on whether there is one or more than one student on a client project.

Assignment/Assessment	% Weight	Individual or Group/Team Grade
Class Participation and Attendance	10%	Individual
Project Proposal	10%	Individual or Group
Analysis Presentation	10%	Individual or Group
Draft Presentation Rehearsal	10%	Individual or Group
Client Presentation	30%	Individual or Group
Final Report and Additional Deliverables	30%	Individual or Group

Course Schedule/Course Calendar

Module/Week	Topics	Readings	Activities/Assignments for this module
Week 1 5/20 - 5/26	Course overview and Capstone projects overview	Therriault, Andrew. "Finding a Place in Political Data Science." <i>PS: Political Science & Politics</i> 49, no. 3 (2016): 531-534. (4 pages) Grimmer, Justin. "We are all social scientists now: How big data, machine learning, and causal inference work together." <i>PS: Political Science & Politics</i> 48, no. 1 (2015): 80–83. (4 pages)	Getting Acquainted Initial Project Discussions
Week 2 5/27 - 6/2	Understanding your project sponsor and	Powner (2014). "Chapter 1. From Research Topic to Research Question." (23 pages)	Question: What is your project's research question and potential hypotheses?

	their research needs	Therriault (2016). "Chapter 2. Data Management for Political Campaigns" (7 pages)	Come ready to discuss in detail your client's research question and your initial thoughts about answering it.
Week 3 6/3 - 6/9	The data and the research design	Powner (2014). "Chapter 4. Choosing a Design That Fits Your Question." (34 pages)	Question: What data is available for you to work with and what research design is appropriate?
Week 4 6/10 - 6/16	The proposal	Nickerson, David W., and Todd Rogers. "Political campaigns and big data." <i>Journal of Economic Perspectives</i> 28, no. 2 (2014): 51-74. (24 pages)	Assignment: Project proposal. Come ready to present and discuss your full project proposal for the client.
Week 5 6/17 - 6/23	Analysis I	Powner (2014). "Chapter 7. Quantitative Data Collection and Management." (28 pages) Therriault (2016). "Chapter 1. Essentials of Modeling and Microtargeting" (7 pages)	Come ready to present and discuss your analysis so far. Get peer and instructor feedback.
Week 6 6/24 - 6/30	Analysis II	Powner (2014). "Chapter 8. Preparing Quantitative Data for Analysis." (32 pages) Therriault (2016). "Chapter 3. How Technology Is Changing the Polling Industry" (8 pages)	Come ready to present and discuss your analysis so far. Get peer and instructor feedback.
Week 7 7/1 - 7/7	Analysis III - Wrap	Rose, Jeremy, and Oskar MacGregor. "The Architecture of Algorithm-Driven Persuasion." <i>Journal of Information Architecture</i> 6, no. 1 (2021): 7-40. (36 pages)	Assignment: Analysis presentation. Present your analysis output and main visualizations for instructor and peer feedback. Need instructor signoff to proceed.
Week 8 7/8 - 7/14	Presentation, Write up, & Analysis Iteration I	Therriault (2016). "Chapters 4, 5, 6. Media Optimization, Money in Politics, & Digital Advertising" (21 pages) Issenberg, Sasha. "How Obama's Team Used Big Data to Rally Voters." <i>MIT Technology Review</i> , December 2012. (8 pages)	Come prepared to discuss any iterations required in your analysis and your client presentation and write up.
Week 9 7/15 - 7/21	Presentation, Write up, & Analysis Iteration	Powner (2014). "Chapter 9. Writing Up Your Research." (18 pages)	Come prepared to discuss any iterations required in your analysis and your client

	II	Therriault (2016). "Chapter 7 & Epilogue. Election Forecasting." (8 pages)	presentation and write up.
Week 10 7/22 - 7/28	Presentation rehearsal	Powner (2014). "Chapter 11. Posters, Presentations, and Publishing." (28 pages) Nagler, Jonathan, and Joshua A. Tucker. "Drawing inferences and testing theories with big data." <i>PS: Political Science & Politics</i> 48, no. 1 (2015): 84-88. (5 pages)	Assignment: Draft presentation rehearsal We will conduct a full run-through of your presentation for content, timing, and transitions.
Week 11 7/29 - 8/4	Client Presentations		Assignment: Client presentation You will present your findings and recommendations to your client in person or over Zoom.
Week 12 8/5 - 8/11	Course Wrap-up Complete final report and other deliverables.		Assignment: Final report and any other deliverables (e.g., data sets, documentation, etc.). We will review your final presentation (and discuss any client feedback), the project as a whole, and cover lessons learned and best practices. We will also ensure all deliverables are given to the client.

Course Policies

Participation and Attendance

I expect you to come to class on time and thoroughly prepared. I will keep track of attendance and look forward to an interesting, lively and confidential discussion. If you miss an experience in class, you miss an important learning moment and the class misses your contribution. More than one absence will affect your grade, lowering your class grade by 1/3 of a grade for every additional absence after the first (e.g., from a B+ to a B).

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 be graded down 1/3 of a grade for every day it is late (e.g., from a B+ to a B).

Citation & Submission

All written assignments must use standard citation format (e.g., MLA) and cite sources. All assignments must be submitted to the course website (not via email).

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/content/disability-services>.

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 to be 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 Division 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

[Only applies to courses using online platforms]

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.

SAMPLE