



Big Data for Public Good

Fall 2023 – Online, Asynchronous

“Data is to this century what oil was to the last one: a driver of growth and change. Flows of data have created new infrastructure, new businesses, new monopolies, new politics and – crucially – new economics.” (The Economist, May 6, 2017)

Public and nonprofit agencies are beginning to unlock the potential of large-scale data to improve service delivery and inform policy. Computational tools capable of making productive use of big data have proliferated in recent years, drastically decreasing the barriers to entry for these applications. This course explores the practice of using big data to improve decision-making and evaluation, including techniques for data collection, analysis, and behavior change. You will learn about the opportunities and challenges of big data and devise a plan to apply them to areas of personal interest within the public sector.

Course Goal & Objectives

By the end of this course you should be able to:

1. Define big data and describe its characteristics;
2. Discuss how public agencies harness large-scale data to inform policy design, increase stakeholder engagement, and improve service delivery.
3. Recognize situations when it’s possible to collect data to inform evidenced-based policy decision-making;
4. Intelligently consider the social, political, and ethical considerations of using big data and its analytical techniques for public uses.

Cynthia S. Searcy

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Class day/time: Online, asynchronous

Office Hrs: By appointment; please email me to set up a time to meet.

Performance & Evaluation



Online Discussions &
Peer Participation

(8 discussions)

30%



Labs

(4 labs)

20%



Data Certification

(5 tutorials and reflections)

20%



Big Data Project
Proposal

(1 paper)

30%

Plus/Minus Grading Policy

This course uses a plus/minus grading scale. The points scale and grades are:

93 - 100	A	77 - 79.99	C+
90 - 92.99	A-	73 - 76.99	C
87 - 89.99	B+	70 - 72.99	C-
83 - 86.99	B	60 - 69.99	D
80 - 82.99	B -	Below 60	F



Helpful Notes

✓ Think

As a graduate class, I expect you to add value to the intellectual discussions of this subject. Although the course content may be new to you, as a developing scholar you have ideas and opinions worth sharing. You'll be expected to reflect on the values and dilemmas of big data throughout the course via online discussions, so make time to rigorously study and evaluate what you're learning and be prepared to share your thoughts. In addition to your own work, you're expected to be a constructive critic of other students' discussions and project proposals throughout the semester. Put on your graduate level thinking caps!

✓ Be Curious

This course serves multiple disciplines and has near limitless applications. I encourage you to go down rabbit holes of topics that interest you given the breadth of internet resources about big data. When you find something clever and cool, please share it with me and your peers. If you find a resource that you think is missing from this course, share that too. Your contributions benefit future students and me!

✓ Time Management is Critical

This course involves a lot of reading in a relatively short time frame, and many of these readings are essential for understanding how to proceed with each segment of the course. Map out early when you will make time to complete the work of the class to participate fully and meet deadlines. **No late submission will be accepted in this course.**

✓ Know How to Ask for Help

Although we won't meet in-person for this course, it's still important to build a relationship with me and ask for help when necessary. Write me an email or call when necessary. Also you may visit me in-person with an appointment. I don't hold regular office hours because you'll likely have a conflict with them. Write me an email to set up a time to meet in-person or via Webex.

Required Books

All required reading and other learning materials will be available on iCollege.

Helpful Websites

- Data Science for Public Service - <https://ds4ps.org/>
- GSU Data Services - <https://library.gsu.edu/services-and-spaces/research-services/data-services/>
- Linked in Learning - <https://technology.gsu.edu/technology-services/it-services/training-and-learning-resources/linkedin-learning/>
- O'Reilly for Higher Education - <https://research.library.gsu.edu/c.php?g=115640&p=7463735>

Class Format

This is an online, asynchronous with all learning materials and assignments managed through iCollege. **Please make sure that you understand how to navigate the course site** to access readings and weekly announcements. All instructions for assignments and their due dates appear in their respective submodules of the course site and are hyperlinked in the text for easy access. You are responsible for knowing how to submit all assignments by their due dates and time, so if you have questions about how to navigate the course please reach out to me in the first two weeks of class for a tutorial.

Assignments for this course will be due on **Sundays and Thursdays by 11:59pm**. Due dates appear in the course calendar and in submodules. Please activate notifications in your iCollege profile to get email and/or text reminders about due dates and announcements.

Academic Honesty

I expect students to abide by the academic rules and regulations established by Georgia State University. Standards of academic conduct are set forth in the Georgia State University Graduate Catalog. By registering for this course, you acknowledge your awareness of the Student Code of Conduct. You must become familiar with your rights and responsibilities as defined by the code.

You are not allowed to use generative AI tools like ChatGPT for any work in this course, except when permitted in instructions for an assignment. Prohibited AI usage includes idea or text generation, development of media assets, or data analysis and presentation.

Any violation of the University's academic honesty policy may result in an F for the course.

Course Schedule & Assignments

Unless indicated otherwise, all assignments are due by 11:59pm on the due dates listed in the course schedule. Deviations from this schedule may be necessary. **See iCollege for changes.**

Module & Section	What to Do	Due Dates
Course Introduction (1 week)		
Welcome & Orientation to the Course	<ul style="list-style-type: none"> Read the Course Intro module Download and read the Syllabus Read Assignments & Policies - note expectations for course assignments Complete Class Introduction Activity Complete Pre-survey Read Engler, What all policy analysts need to know about data science. 	8/24
Module 1 – Introduction to Big Data (3 weeks)		
1.2 The Value of Big Data	<ul style="list-style-type: none"> Read and watch assigned learning content Post to discussion board 	Discussion Post 8/27
1.3 Big Data and You	<ul style="list-style-type: none"> Read and watch assigned learning content Develop data certification plan 	Data Cert Plan 9/3
1.4 The Challenges of Big Data	<ul style="list-style-type: none"> Read and watch assigned learning content Post to discussion board and respond to peers 	Discussion Post 9/10 Peer Response 9/14
Module 2 – Types of Big Data (2 weeks)		
2.2 Social Data	<ul style="list-style-type: none"> Read and watch assigned learning content Complete Lab 1: Models of Neighborhood Change 	Lab 1 9/21
2.3 Eyes in the Skies & Remote Sensing	<ul style="list-style-type: none"> Read and watch assigned learning content Post to discussion board 	Discussion Post 9/24
Module 3 – Discovery & Insights (3 weeks)		
3.2 Open Data & Discovery	<ul style="list-style-type: none"> Read and watch assigned learning content Complete Lab 2: Feature Selection 	Lab 2 9/28

Module & Section	What to Do	Due Dates
3.3 Machine Learning & Prediction	<ul style="list-style-type: none"> • Read and watch assigned learning content • Post to discussion board and respond to peers • Complete Lab 3: Feature Engineering 	Discussion Post 10/1 Peer Response 10/5 Lab 3 10/8
Module 4 – Bias in Big Data (3 weeks)		
4.2 Data Quality	<ul style="list-style-type: none"> • Read and watch assigned learning content • Post to discussion board 	Discussion Post 10/15
4.3 Bias in Manipulation & Modeling	<ul style="list-style-type: none"> • Read and watch assigned learning content • Post to discussion board and respond to peers • Complete Lab 4: Bias in Modeling 	Discussion Post 10/22 Peer Response 10/26 Lab 4 11/2
Module 5 – Data Privacy & Stewardship (2 weeks)		
5.2 Data Privacy	<ul style="list-style-type: none"> • Read and watch assigned learning content • Post to discussion board and respond to peers 	Discussion Post 11/5 Peer Response 11/9
5.3 Data Stewardship	<ul style="list-style-type: none"> • Read and watch assigned learning content • Post to discussion board and respond to peers 	Discussion Post 11/12 Peer Response 11/16
THANKSGIVING BREAK		11/19-11/25

Module & Section	What to Do	Due Dates
Module 6 – Course Conclusion (2 weeks)		
6.2 Data Certification	• Complete Data Certification & Reflections	11/30
6.3 Big Data Project	• Complete Big Data Project Proposal	12/7

Support Statements

Inclusivity Statement

We understand that students in our programs come from a variety of backgrounds and perspectives. AYSPS is committed to providing a learning environment that respects diversity. To build this community we ask all members to:

- Share their unique experiences, values and beliefs
- Be open to the views of others
- Honor the uniqueness of their colleagues
- Appreciate the opportunity that we have to learn from each other in this community
- Value each other's opinions and communicate in a respectful manner
- Keep confidential discussions that the community has of a personal (or professional) nature

Students with Disabilities

Students who wish to request accommodation for a disability may do so by registering with the GSU Access & Accommodations Center (AACE). Students may only be accommodated upon issuance of a signed Accommodation Plan by AAACE. Students are responsible for providing a copy of that plan to instructors of all classes in which an accommodation is sought.

To register for accommodations please follow this link <https://access.gsu.edu/how-to-connect/how-to-register/>

For more information, contact AACE located at Student Center East, Suite 205, 55 Gilmer Street, Atlanta, GA 30303. Phone: 404-413-1560 Email: access@gsu.edu

Remote Academic Coaching

The Office of Disability Services also offers free remote academic coaching. To learn more about these services go to disability.gsu.edu/services or watch a [Coaching Video](#).

Veterans & Serving Military

Georgia State honors its military and veteran men and women returning to pursue their education. Students who are veterans, serving in the military, and their dependents are encouraged to avail themselves of a full range of college services and activities through the Military Outreach Center (MOC).

For assistance or guidance while attending GSU on campus or online, contact the Atlanta Campus Military Student Advocate, Randy Barrone at 404-413-2331. Also, please be sure and let me

know ASAP if or when there is any possibility of you being activated and deployed. Thank You For Your Service!

For more information contact the GSU Military Outreach Center

Phone: (404) 413-2331, Website: military.gsu.edu

Address: Dahlberg Hall, 30 Courtland Street, Suite 217, Atlanta, GA 30303

Personal and Mental Health

Maintaining your physical and mental health is an important element of success in graduate school. Staying healthy requires minimizing risky behaviors and stressors that can result in illness and an inability to attend class and/or complete coursework.

The best way to stay healthy while COVID-19 still poses risks to our community is to get vaccinated and wear a mask when exposed or experiencing symptoms. If you test positive for COVID-19 during the semester, you should [submit documentation to the Dean of Students Office](#) **only if you need to be excused or accommodated for course deliverables while ill.**

Stay up to date on the best way to protect yourself from COVID-19 by frequently visiting the [Centers for Disease Control and Prevention's website](#).

In any time (not just a pandemic), graduate school can be a stressful time of life. GSU has wellness resources that you should take advantage of while they're "free." Find out more about the Counseling Center's programming here: <https://counselingcenter.gsu.edu/>.

Online Course Evaluations – Student Surveys

Your constructive assessment of this course plays an indispensable role in shaping improvements of all courses within this program and your educational experiences at Georgia State. Please take time to fill out the online course evaluations. We appreciate honest and open feedback.