**\*\*SAMPLE SYLLABUS\*\***

**POL 22900-002: DATA SCIENCE AND PUBLIC POLICY**

**MWF 9:30 – 10:20 a.m. UNIV 203**

**CRN: 22649**

**Fall 2019**

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| **PROF. ROSALEE CLAWSON** | **OFFICE HOURS** |
| E-MAIL: clawsonr@purdue.edu | MWF 10:30 a.m. - 11:30 a.m. |
| OFFICE: BRNG 2222 | W 3:30 p.m. - 4:30 p.m. |
| PHONE: 494-4185 | And by appointment |

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| **TA: JASMINE JACKSON** | **OFFICE HOURS** |
| E-MAIL: jacks604@purdue.edu |  T 8:00 a.m.- 10:00 a.m. |
| OFFICE: BRNG 2216J | And TR by appointment |

**COURSE DESCRIPTION**

Welcome to Data Science and Public Policy! This course is an introduction to the politics and policies of data science and “big data.” Students will gain an understanding of how public policy is made, including the role of data in policymaking. Also, we will discuss whether and what policies govern the use of data in various applications (such as cameras on campus, autonomous vehicles, scooters, and ownership of health care data, etc.). Students will learn about the ethical, legal, and social implications of data science and big data, including issues such as privacy, informed consent, security, safety, liability, bias, and workforce impacts. Students will learn how to write a policy brief to make recommendations regarding the use of social or political data. The course will be broken up into four sections: (1) An Introduction to the Policy Process; (2) The Ethical, Legal, and Social Implications of Data;(3) Case Studies; and (4) Preparing a Policy Brief.

**COURSE LEARNING OUTCOMES**

By the end of the semester, students will be able to:

* Analyze the public policymaking process.
* Define and apply data science and public policy concepts.
* Consider the ethical, legal, and social implications of big data and data science.
* Prepare a policy brief to make recommendations about the use of social or political data.

**COURSE MATERIALS**

Required – Please buy this book:

Eubanks, Virginia. 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. St. Martin’s Press.

These materials will be available on Blackboard Learn:

Select chapters from: Birkland, Thomas A. 2015. *An Introduction to the Policy Process: Theories, Concepts, and Models of Public Policy Making*. 4th ed. New York: Routledge.

Select chapters from: Schutt, Rachel, and Cathy O’Neil. 2014. *Doing Data Science: Straight Talk From the Frontline*. Sebastopol, CA: O’Reilly Media, Inc.

“Case Study PDFs.” *Princeton Dialogues on AI and Ethics*, <https://aiethics.princeton.edu/case-studies/case-study-pdfs/>.

Additional readings will be added based on student interests and current events.

**COURSE REQUIREMENTS**

Attendance. You will learn so much if you attend class every day, and I expect you to do so. If you miss a class, you are responsible for the material covered, or announcements made that day. This class will have significant student discussion and interaction; thus, attendance is critical to have meaningful and thoughtful discussions.

Class Participation (25%). Students are expected to come to class prepared to discuss the day’s readings. When reading, you should make thoughtful and careful assessments of the texts. Informed and knowledgeable participation will make the class time productive and enjoyable. In some cases, there is not a single “right” answer; rather, there are better and worse arguments. Thus, I value a range of perspectives and arguments. I will challenge you and ask that you support your arguments with evidence. Students should bring the day’s readings and careful notes to class with them. Let me add one more point: active class participation also entails active listening. Class discussion does not work well if one or two students try to dominate the discussion or if students do not listen respectfully to their peers’ comments. Students will be asked to participate in group work and in-class exercises and complete homework assignments. Students will also be asked to attend data science and public policy-related events on campus.

Pop Quizzes (10%). The quizzes will test student understanding of course readings. Students should engage in active reading, which means that you are reading with the goal of understanding and engaging with the texts to help you retain the information. If a student has not yet developed this skill, I would be happy to make suggestions on how to master it. If students are struggling with a reading, they should see Jasmine or me *before* class to work through the material. Quiz questions will be along the lines of "What was the author's main argument in the reading for today?" or "Explain the key differences between Concept A and Concept B." (Students will be allowed to drop one quiz score.)

Policy Brief (20%). Scholars write policy briefs so that their research and knowledge can influence policymaking. A policy brief introduces the ideas or major findings from a book, article or research paper, or introduces a topic and the background information about the particular topic in a way the general public can understand. Students will prepare a policy brief that highlights an issue associated with data science and big data. You will be provided with a handout with additional information on writing a policy brief. You will submit a draft of the policy brief and receive feedback before submitting the final draft.

Short Paper (10%). Students will write a short position paper on the ethical, legal, and social implications of a particular data science issue. You will be provided with a handout with additional information on writing the paper. You will submit a draft of the paper and receive feedback before submitting the final paper.

Exam 1 (15%). The exam will consist of multiple-choice and open-ended questions. The exam will test students’ mastery of theories, concepts, and research findings.

Final Exam (20%). The final will consist of multiple-choice and open-ended questions. This cumulative exam will test students’ mastery of theories, concepts, and research findings covered throughout the entire term.

**GRADING SCALE**

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| A 93-100A- 90-92B+ 87-89B 83-86 | B- 80-82%C+ 77-79C 73-76C- 70-72 | D+ 67-69%D 63-66D- 60-62F 0-59 |

**LATE POLICY**

I will not accept late assignments or reschedule exams unless there are extenuating circumstances. In those instances, please contact me as soon as you know there is a problem. In some cases, you will be required to provide documentation of an emergency.

**GRIEF ABSENCE POLICY FOR STUDENTS**

Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments in the event of the death of a member of the student’s family. In cases of bereavement, the student or the student’s representative should contact the Office of the Dean of Students (765-494-1747).

**DISABILITY**

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are encouraged to contact the Disability Resource Center at: drc@purdue.eduor by phone: 765-494-1247.

**OPTIMAL LEARNING ENVIRONMENT**

Our goal is to create an optimal learning environment for all students. Therefore, please be sure all electronic devices are turned off and put away before class starts *unless we are using them for class-related purposes*. If there are extenuating circumstances where you need to have your phone out, please let me know before class begins. Also, please be conscious that even minor whispering or other distracting behaviors can be very disruptive in a classroom. Note that students' participation scores will be negatively affected if they disrupt the learning environment. Thank you in advance for helping me sustain an ideal learning environment.

We are committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages individuals to strive to reach their own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue’s nondiscrimination policy can be found at <http://www.purdue.edu/purdue/ea_eou_statement.html>.

**ACADEMIC HONESTY**

Academic honesty and professional ethics are the foundations of university life. We take these issues very seriously and expect our students to uphold the highest standards of integrity. Purdue’s policy is “the commitment of the acts of cheating, lying, and deceit in any of their diverse forms (such as the use of ghost-written papers, the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest” (University Senate Document 2-18, December 15, 1972). If you have any questions about what constitutes plagiarism, please consult the Purdue University Online Writing Lab (OWL): OWL Avoiding Plagiarism, <http://owl.english.purdue.edu/owl/resource/589/01/>.

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| The Purdue Honor Pledge is: As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.  |

**OFFICE HOURS**

We expect to see you during office hours. We are here to help you get the most out of this class. Don’t wait until after an exam or until the end of the semester to ask questions or seek assistance.

**COURSE CAVEAT**

We will do our best to stick with the plan outlined in this syllabus, but the schedule in this course is subject to change in the event of extenuating circumstances. For example, in the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. If a campus emergency arises, please consult the course website for information.

**COURSE OUTLINE AND READINGS**

**INTRODUCTION**

Week 1

Mon, Aug 19 Expectations and Introduction

Wed, Aug 21 Overview: What is Public Policy? What is Data Science?

Birkland, Chapter 1, pp. 1-13

 <https://datascience.berkeley.edu/about/what-is-data-science/>

Fri, Aug 23 What are the Elements of the Policy Process?

Birkland, Chapter 2, pp. 27-54

Week 2

 Mon, Aug 26 Elements of the Policy Process Continued

Birkland, Chapter 2, pp. 54-64

Wed, Aug 28 Big Data in the News

**ASSIGNMENT:** Bring a news story on the use (or misuse) of political or social data to class to discuss.

Fri, Aug 30 **ATTEND:** “Dreaming, Automated: Deep Learning, Data Sets, and Decay”

 Ringel Gallery, Stewart Center

<https://www.purdue.edu/newsroom/releases/2019/Q3/ai-artist-featured-in-purdues-ringel-gallery.html>

Week 3

 Mon, Sept 2 LABOR DAY: NO CLASS

Wed, Sept 4 Who are the Official Actors in the Policy Process?

Birkland, Chapter 4, pp. 108-121

Fri, Sept 6 Official Actors in the Policy Process, Continued

Birkland, Chapter 4, pp. 124-144

Week 4

Mon, Sept 9 Who are the Unofficial Actors in the Policy Process?

Birkland, Chapter 5, pp. 153-170

Wed, Sept 11 The Unofficial Actors in the Policy Process, continued

Birkland, Chapter 5, pp. 171-192

 Fri, Sept 13 What is an Agenda? How are Agenda’s Set?

Birkland, Chapter 6, pp. 199-205 and 229-232

Week 5

 Mon, Sept 16 How are Policies Categorized? What are the Different Policy Types?

Birkland, Chapter 7, pp. 241-247 and 257-260 and 265-267

Wed, Sept 18 Policy Types, Continued

Fri, Sept 20 How is Policy Designed?

Birkland, Chapter 9 pp. 299-317

Week 6

 Mon, Sept 23 Policy Design, Continued

Birkland, Chapter 9 pp. 317-327

Wed, Sept 25 Catch up and Review for Exam 1

Fri, Sept 27 **EXAM 1**

**ETHICAL, LEGAL, AND SOCIAL IMPLICATIONS OF DATA: WHAT EFFECT DOES DATA SCIENCE AND BIG DATA HAVE ON OUR SOCIETY?**

Week 7

Mon, Sept 30 *Automating Inequality*, Introduction, Chapters 1 and 2

Wed, Oct. 2 *Automating Inequality*, Chapter 3

Fri, Oct 4 *Automating Inequality,* Chapter 3 and Discuss Topics for Policy Brief

Week 8

Mon, Oct 7 FALL BREAK: NO CLASS

 Wed, Oct. 9 *Automating Inequality*, Chapter 4

Fri, Oct. 11 *Automating Inequality*, Chapter 4, continued

Week 9

 Mon, Oct. 14 *Automating Inequality*, Chapter 5 and Conclusion

 Wed, Oct. 16 *Automating Inequality*, Chapter 5 and Conclusion, continued

 Fri, Oct. 18 Bring TWO copies of a good draft of your short paper to class.

Week 10

Mon, Oct. 21 Watch “Coded Bias” on Netflix (on your own)

 Wed, Oct. 23 Watch “Coded Bias” on Netflix (on your own)

 Fri, Oct. 25 Discuss “Coded Bias”

 **ASSIGNMENT:** Submit short paper in class.

**DATA SCIENCE AND PUBLIC POLICY CASE STUDIES: WHAT POLICIES (SHOULD) GOVERN THE USE OF DATA IN VARIOUS APPLICATIONS?**

Week 11

Mon, Oct. 28 How to Write a Policy Brief and Choosing Your Policy Brief Topic

 **ASSIGNMENT:** Research policy brief topic during weeks 11 and 12

Wed, Oct. 30 Automated Healthcare App

<https://aiethics.princeton.edu/wp-content/uploads/sites/587/2018/10/Princeton-AI-Ethics-Case-Study-1.pdf>

Fri, Nov. 1 Automated Healthcare App, continued

Week 12

 Mon, Nov. 4 Autonomous Vehicles: Human Takeover and Safety; Workforce Impacts

 Wed, Nov. 6 Autonomous Vehicles: Cybersecurity, Privacy, and Infrastructure

 “Why Questions about Automated Vehicles Must Be Addressed Now”

<https://scholars.org/contribution/why-questions-about-automated-vehicles-must-be-addressed-now>

 Fri, Nov. 8 Autonomous Vehicles: Ethics in Algorithms

 “The Moral Machine Experiment”

<https://www.nature.com/articles/s41586-018-0637-6.pdf>

**ASSIGNMENT:** Play the Moral Machine game by clicking on “Start Judging” <http://moralmachine.mit.edu/>. Bring your results to class (either electronically or hard copy).

**POLICY ANALYSIS AND PREPARING A POLICY BRIEF**

Week 13

 Mon, Nov. 11 Work on policy brief – individual meetings

 Wed, Nov. 13 Work on policy brief – individual meetings

 Fri, Nov. 15 Work on policy brief – individual meetings

Week 14

Mon, Nov. 18 Work on policy brief

 Wed, Nov. 20 Bring TWO good copies of your policy brief to class.

 Fri, Nov. 22 Work on policy brief

Week 15

 Mon, Nov 25 Work on policy brief

 **ASSIGNMENT:** Submit policy brief via e-mail by midnight.

Wed, Nov 27 THANKSGIVING BREAK: NO CLASS

Fri, Nov 29 THANKSGIVING BREAK: NO CLASS

Week 16

 Mon, Dec 2 Discuss policy briefs

Wed, Dec 4 Discuss policy briefs

Fri, Dec 6 Discuss policy briefs

Week 17

Tues, Dec 10 **8:00 – 10:00 a.m.** **FINAL EXAM**

 **UNIV 203**