

PHIL 580: Ethics of Data Science

Course Description

Data science is powerful, but with this power comes a host of responsibilities that professionals in this field need to be aware of, and to negotiate in an ethical manner. As “big data” gets bigger and bigger, and applications of data science permeate a wider and wider range of different aspects of our lives, new and important ethical issues are arising all the time. Facebook can influence how we vote, what we buy, and what kinds of images children see. Target’s marketing department can determine that a woman is pregnant even before her own family members can. Algorithms used in the criminal justice system can reflect and amplify racial biases. Yet reasoning clearly about the ethical implications of these new powers isn’t easy. We’re entering uncharted territory, where few precedents exist.

This course addresses these issues by providing a conceptual framework for ethical reasoning in the professional setting, as well as a procedure for case-study analysis that gives students practice in employing this conceptual framework. Together, these two components advance students’ development as ethical professionals and responsible global citizens. After applying the case-study procedure to a range of important, real-world cases, the course culminates in a final essay assignment in which students identify, research, and analyze a case of their own.

The course is divided into eight modules. Module 1 provides an introduction to ethics, with a focus on the role it plays in the lives of professionals working in data sciences. Module 2 provides an introduction to the procedure for case-study analysis. Modules 3-7 focus on specific cases that are apt for analysis, and provide ethical principles to be used in formulating ethical arguments. It is important to work through the modules in the order in which they are numbered. In this compressed 5-week format, 4 days are allotted for the completion of each module, and all assignments for each module are due at the end (midnight) of the fourth day. The schedule of due dates for each module is listed below. Late assignments will be penalized 7 points per day.

Prerequisites

There are no prerequisites for this course.

Learning Outcomes

At the end of *Ethics of Data Science*, students will be able to:

1. identify ethical issues associated with applications of data science in a variety of professional settings
2. apply general ethical principles to the specific, concrete actions of individuals, corporations, governments and other organizations
3. formulate sound, well-reasoned arguments, and communicate them clearly in writing

Required Texts

Readings will be supplied online, via the Blackboard website.

In addition, students' original research will require consultation of various news sources, academic articles, books, etc.

Course Requirements

For each module, students are required to do the assigned reading, watch the assigned lecture, and complete the associated quizzes and writing exercises.

Quizzes will make up 10% of the final grade, and 20% more will be based on the quality of posts on the discussion board. In three modules, students will submit a case study analysis in the form of an essay. The first essay, in Module 4, will be shortest (800-1,200 words), and worth 10% of the final grade. The second essay, in Module 6, will be longer (1,000-1,500 words), and worth 20% of the final grade. The third essay, in Module 8, will be longest (2,500-3,000 words), and worth 40% of the final grade.

For the final essay, students will be responsible for researching and analyzing a case of their choosing. After first providing a narrative synopsis of the relevant facts and events, the essay will provide an ethical analysis, following the procedure described in Module 2. At least three *reputable* sources must be used. Wikipedia is not itself a reputable source, although it may not be a bad place to start learning about a new topic. Typically, blogs also are not reputable sources, though in some cases they may

be. You may use and refer to blogs if they are credible, but no more than one of your three required sources may be a blog.

All essays must use 12-point font, APA style. Late submissions will be penalized 7 points per day.

Any student who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me as soon as possible, so we can discuss any accommodations necessary, and ensure full participation.

Class Schedule

<u>Module 1: Introduction and Overview</u>	Due: Friday, July 12
What is ethics? Why ethics for data scientists?	
The difference between ethics and law	
<u>Module 2: Working with Cases</u>	Due: Tuesday, July 16
Why study cases?	
Procedure for analyzing cases	
<u>Module 3: Facebook's Woes Over Content Review</u>	Due: Saturday, July 20
Ethics of autonomy	
Professional role responsibilities	
Corporate responsibility	
Formal codes of ethics	
<u>Module 4: Facebook & Cambridge Analytica</u>	Due: Wednesday, July 24
Big data and privacy	
<u>Module 5: Target® and Marketing Algorithms</u>	Due: Sunday, July 28
Ethics of privacy	
Obligations for organizations vs. individuals	
<u>Module 6: Fairness in Algorithms</u>	Due: Thursday, August 1
Justice and discrimination	
<u>Module 7: The "It Gets Better" Project</u>	Due: Monday, August 5
Professional role responsibilities	
Justice and racial/ethnic bias	
Ethics of harm	
<u>Module 8: Final Essay</u>	Due: Friday, August 9
Students identify, research and analyze their own cases	

Policies

General Course Policies

Please foster a learning atmosphere by respecting classmates and the instructor. Discussion board comments should often be critical—the point is to uncover the truth, not to make friends, and disagreement and criticism are essential features of the learning process. Nevertheless, there is no reason why criticism and disagreement should ever be disrespectful. To disagree with a person's *claim* is never to criticize the person him or herself, as an individual.

Students may e-mail the instructor at any time, and the instructor will try to respond within 24 hours, whenever possible.

Grading

Participation on discussion boards:	20%
Module 4 Essay:	10%
Module 6 Essay:	20%
Module 8 Essay:	40%
Quizzes:	10%

Letter grades will be assigned as follows:

Final average	Course grade	Final average	Course grade
98% and above	A+	77% and above	C+
93% and above	A	73% and above	C
90% and above	A-	70% and above	C-
87% and above	B+	60% and above	D
83% and above	B	59.9 and below	F
80% and above	B-		

Academic Dishonesty

The Purdue guidelines on academic integrity state:

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, Student Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as 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 72-18, December 15, 1972]

Students should refer to [Purdue's student guide for academic integrity](#) for further clarification on the University policies: <https://www.purdue.edu/odos/academic-integrity/>

Use of Copyrighted Materials

All work handed in for this class must be your own. The inclusion of any data, words, or ideas from any other source must be acknowledged, and properly cited (following APA format). Failure to do so will be considered plagiarism. For this course, plagiarism is defined as:

- a) The use of any passage of **three words or longer** from another source without proper attribution. Use of any phrase of three words or more must be enclosed in quotation marks ("example, example, example"). The source of the material must be identified in the text, by a parenthetical reference, footnote, or endnote.
- b) Use of material from an un-cited source, making very minor changes (like word order or verb tense) simply to avoid the three-word rule.
- c) Inclusion of **facts, data, ideas, or theories** originally thought of by someone else, without giving that person (organization, etc.) credit. You must identify the source, whether in an endnote, footnote, parenthetical reference, or in the text.
- d) **Paraphrasing** ideas or theories (writing them in your own words) without giving the original thinker proper credit.
- e) Allowing another person to make extensive changes to your paper. This is considered "unauthorized aid." (Allowing a friend to check your work for typos or grammar is fine.)

Please note that **even partially plagiarized assignments will receive a failing grade**, so it is in your best interest to do your work on your own. Even assignments that you have struggled with will probably result in a grade higher than that of plagiarized work. If you have any questions about what constitutes or how to avoid plagiarism, do not hesitate to ask.

Further, the University Regulations on these policies state:

Students are expected, within the context of the Regulations Governing Student Conduct and other applicable University policies, to act responsibly and ethically by applying the appropriate exception under the Copyright Act to the use of copyrighted works in their activities and studies. The University does not assume legal responsibility for violations of copyright law by students who are not employees of the University.

A Copyrightable Work created by any person subject to this policy primarily to express and preserve scholarship as evidence of academic advancement or academic accomplishment. Such works may include, but are not limited to, scholarly publications, journal articles, research bulletins, monographs, books, plays, poems,

musical compositions and other works of artistic imagination, and works of students created in the course of their education, such as exams, projects, theses or dissertations, papers and articles.

Students should refer to the [University Regulations on the Use of Copyrighted Materials](#) at:
<http://www.purdue.edu/policies/academic-research-affairs/ia3.html>

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 through the Grief Absence Policy for Students (GAPS). GAPS Policy: 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 or assessments in the event of the death of a member of the student's family.

See the [University's website](#) for additional information:
http://www.purdue.edu/studentregulations/regulations_procedures/classes.html

Emergencies

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 beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

Purdue's Emergency Procedures Guide and other important [emergency planning information](#) are available online at:
https://www.purdue.edu/ehps/emergency_preparedness/

Accessibility and Accommodations

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 also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Nondiscrimination

Purdue University is 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 each

individual to strive to reach his or her 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 University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Purdue's Equal Opportunity, Equal Access and Affirmative Action policy which provides specific contractual rights and remedies. Additionally, the University promotes the full realization of equal employment opportunity for women, minorities, persons with disabilities and veterans through its affirmative action program.

Any question of interpretation regarding this Nondiscrimination Policy Statement shall be referred to the **Vice President for Ethics and Compliance** for final determination.

You may want to refer students to [Purdue's nondiscrimination statement:](http://www.purdue.edu/purdue/ea_eou_statement.html) http://www.purdue.edu/purdue/ea_eou_statement.html

Disclaimer

This syllabus is subject to change.