PHIL 207: Ethics for Technology, Engineering and Design

Lecture Room Location

BRNG 2290

Instructor

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Teaching Assistant

Course Overview

This course focuses on the ethical considerations and obligations of engineers and designers in areas of technology, business, transit & infrastructure, policing & justice systems, warfare, medicine, and the environment. The goal of the course is to apply general conceptual ethical principles, values, and frameworks to specific facts of new and unique situations. Special attention will be given to current events and emerging technology, preparing students for what they may potentially face in their future careers. For course culminates in researching and ethically evaluating a recent case study.

Required Text

Ethics in Engineering, 5th edition, by Qin Zhu, Mike Martin & Roland Schinzinger, McGraw-Hill Publishing, 2022.

Other required readings will be posted on Brightspace.

General Course Structure: The course will combine in-class discussion and exercises with out-of-class reading, research and writing. During lecture and recitation, the focus will be on discussing the assigned readings and completing exercises based on the case studies that appear in the textbook readings. Thus, in order to follow and contribute to the class discussion, it is important that you do the assigned readings before class. You should complete the reading assigned for that day *before* coming to class. Grading for the course is composed of a midterm exam, a case study assignment, and a longer, final case study project.

Honors Credit: Students who are taking the honors version of this course must not only complete the requirements of PHIL 207, but also two additional requirements, which will be built into your final assignment: (1) Your final case study assignment will include not only a written essay but also an oral class presentation. (2) You will also be required to submit a reflection paper which connects your final case study paper with your own current or future engineering research (such as research you are or will be undertaking in your Senior Design Project). Because of this, students taking the course for honors credit should select a case that raises similarities to what they have already experienced or might expect to face during their future research or careers.

Course Schedule

Date	Subject	Readings
Mon, 8/21	Introduction	
Wed, 8/23	What is Ethics?	
Wed, 8/23	*Recitation Section*	
Mon, 8/28	Ethical Dilemmas	*EIE*, pp. 34-43
Wed, 8/30	Professional Codes; Ethical Relativism	*EIE*, pp. 46-54 (begin at Section 2.3)
Wed, 8/30	*Recitation Section*	
Mon, 9/4	**No Class (Labor Day)**	
Wed, 96	Ethical Relativism (cont.)	"The Challenge of Cultural Relativism"
Wed, 9/6	*Recitation Section*	
Mon, 9/11	Ethical Values & Frameworks	*EIE*, pp. 55-68
Wed, 9/13	Ethical Values & Frameworks	*EIE*, pp. 68-91 **Assignment 1 Assigned**
Wed, 9/13	*Recitation Section*	
Mon, 9/18	Good Ethical Judgment & Reasoning	Videos: • https://ethicsunwrapped.utexas.edu/glossary/confirmation-bias • https://ethicsunwrapped.utexas.edu/glossary/groupthink • https://ethicsunwrapped.utexas.edu/glossary/fundamental-attribution-error The 'Golden Mean': Aristotle's Guide to Living Excellently: • https://philosophybreak.com/articles/the-golden-mean-aristotle-guide-to-living-excellently/ "Reasoning is for Arguing" – pp. 246-53
Wed, 9/20	Engineering as Social Experimentation	*EIE*, pp. 92-110 (stop at "4.3. Challenger") **Assignment 1 Due**
Wed, 9/20	*Recitation Section*	
Mon, 9/25	Risk & Safety	*EIE*, pp. 122-129 (Section 5.1 only)
Wed, 9/27	Risk & Safety	*EIE*, pp. 129-150 (Section 5.2 → end of Ch. 5)

Date	Subject	Readings
		"New Report: U.S. Radiation Protect Regulations…" *Watch video (*Meltdown at Three Mile Island* Documentary; 33:15—47:50): https://youtu.be/D8W5hq5dsZ4?t=1994
Wed, 9/27	*Recitation Section*	
Mon, 10/2	Review/Catch-up Day	
Wed, 10/4	Exam 1	
Wed, 10/4	*No Recitation Section*	
Mon, 10/9	**No Class – Fall Break**	
Wed, 10/11	Ethics in Design; Algorithms & Bias Healthcare	"What are 'Ethics in Design'"? "Addressing bias in big data and AI for health care" **Assignment 2 Assigned**
Wed, 10/11	*Recitation Section*	
Mon, 10/16	Algorithms & Bias	"Algorithms, Correcting Biases"
Wed, 10/18	Predictive Policing	"The Ethics of Predictive Policing"
Wed, 10/18	*Recitation Section*	
Mon, 10/23	AI & Dating	"Are the Algorithms that Power Dating Apps Racially Biased?" *List to Podcast: The Surprising Case for AI Boyfriends: https://www.npr.org/2023/03/30/1167066462/the-surprising-case-for-ai-boyfriends **Assignment 2 Draft Due –** Submit draft to BrightSpace; email to classmate
Wed, 10/25	Autonomous Weapons	"The Ethics & Morality of Robotic Warfare" *Watch video on ethics autonomous weapons: https://www.youtube.com/watch?v=v-Ks6MbxzQ0
Wed, 10/25	*Recitation Section*	**Assignment 2 Peer Review Due** – *bring hard copy to Discussion Section*
Mon, 10/30	Autonomous Weapons: Could AI be a moral agent?: Can AI learn ethics?	"Moral Zombies: Why Algorithms are not Moral Agents" – sections 1-3, 4.7, 6

Date	Subject	Readings
Wed, 11/1	Weapons Development Involvement	*EIE*, pp. 169-171 (Section 6.3.1, stop at 'Right to Recognition') "Weapons Development and Peace" Watch Video: https://www.youtube.com/watch?v=kUZMjcmkj6o **Assignment 2 Final Draft Due**
Wed, 11/1	*Recitation Section*	
Mon, 11/6	Genetic Engineering	"Genetic Interventions and The Ethics of Enhancement of Human Beings" – pp 1-11 *Watch Video: https://www.youtube.com/watch?v=4qary81ymWk
Wed, 11/8	Genetic Engineering	"The Case Against Perfection" "The Discussions around Precision Genetic Engineering: Role of and Impact on Disabled People" – sections 1 & 2
Wed, 11/8	*Recitation Section*	
Mon, 11/13	Infrastructure & Roads	"A Thriving Neighborhood Before I-95, Now a Reminder that a Road Isn't Just a Road", Woods *Listen to: https://www.npr.org/2021/04/07/984784455/a-brief-history-of-how-racism-shaped-interstate-highways "What does Infrastructure have to do with Social Justice and Equity?", Shuster
Wed, 11/15	Climate Engineering	*EIE*, pp. 227-234 (stop at 8.1.3) "Solar Geoengineering and Obligations to the Global Poor", Horton & Keith *Watch video: https://geoengineering.environment.harvard.edu/
Wed, 11/15	*Recitation Section*	

Date	Subject	Readings
Mon, 11/20	Issues of Professionalism – Confidentiality, Conflicts of Interest, & Employee Rights	*EIE*, pp. 151-78 (stop at 6.4); skip pp. 169-171
Wed, 11/22	**No Class – Thanksgiving Break**	
Wed, 11/22	***No discussion section – Thanksgiving Break***	
Mon, 11/27	Issues of Professionalism - Truthfulness	*EIE*, pp. 178-195
Wed, 11/29	Global Ethical Issues *Speaker: Dr. Jacqueline Linnes (Associate Professor of Biomedical Engineering)*	No assigned readings
Wed, 11/29	*Recitation Section*	Honors Students Oral Presentations – Final Case Study Project
Mon, 12/4	Global Ethical Issues	"Global Justice" "When Some U.S. Firms Move Production Overseas…"
Wed, 12/6	Honors Students Oral Presentations – Final Case Study Project	
Wed, 12/6	*Recitation Section*	Honor Students Oral Presentations – Final Case Study Project
Wed, 12/13		**Final Paper Due**

Important Due Dates & Allocation of Course Points (Non-Honors)

Due Date	Item	Point Percentage
9/20	Assignment 1	10%
10/4	Midterm Exam	20%
10/27	Peer Review Comments for Assignment 1	5%
11/1	Assignment 2 Case Study Paper	15%
12/13	Final Case Study Assignment (Written Paper)	30%
Weekly	Weekly Recitation Participation (Attendance, Discussion, Quizzes)	20%

Important Due Dates & Allocation of Course Points (Honors)

Due Date	Item	Point Percentage	
9/20	Assignment 1	10%	
10/4	Midterm Exam	20%	
10/27	Peer Review Comments for Assignment 2	5%	
11/1	Assignment 2 Case Study Paper	15%	
12/1 or 12/6 or 12/8	Honors Presentation of Final Case Study Paper (Oral)	5%	30%
12/13	Final Case Study Paper (Written)	20%	
12/13	1 page Reflection Paper	5%	
Weekly	Weekly Recitation Participation (Attendance, Discussion, Quizzes)	20%	

Grades will be assigned according to this chart:

Final Average	Course Grade
97.5% and above	A+
92.5-97.4%	A
89.5-92.4%	A-
87.5-89.4%	B+
82.5-87.4%	B
79.5-82.4%	B-
77.5-79.4%	C+
72.5-77.4%	C
69.5-72.4%	C-
59.5-69.4%	D
59.4% and below	F

Academic Integrity

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 that source must be given proper credit. 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.) f) Using generative artificial intelligence (e.g. ChatGPT) to produce your paper, part of a paper, or other assignment responses. The instructor reserves the right to determine whether generative AI was used generative AI detectors (Hugging Face, GPTZero, etc.).

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, please do not hesitate to ask.

Classroom Environment & Policies

Please foster a learning atmosphere by respecting classmates and the instructor. Students are asked to turn off their cell phones when class begins. Use of laptops even for notetaking purposes is highly discouraged but permitted if deem it necessary for your learning. Anything on your laptop screen will distract your classmates seated behind you. I reserve the right to ban laptops if they become distracting.

Special Accommodations:

Any student who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible, so that we can discuss any accommodations necessary to ensure full participation. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Emergencies

In the event of a major campus emergency, course requirements, deadlines and even grading percentages are subject to change. Information about emergency changes in the course can be obtained by consulting the course website, or, if necessary, by contacting me via email or phone. Purdue's Emergency Procedures Handbook and other important emergency planning information are available online at:http://www.purdue.edu/emergency_preparedness/