

Fall 2019

PHIL 334-103: Engineering Ethics

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PHIL 334-103: ENGINEERING ETHICS

Fall 2019

Instructor: Adam See

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Office Hours: by appointment

Room Number: Kupfrian Hall 204

Time: 6pm – 9pm

Description: In this course we'll examine the ethical dimensions of professional engineering. What ethical challenges might engineers face as professional members of society? What considerations should inform the choices engineers make? What obligations constrain these choices? How do engineering projects reflect the values and prejudices of the broader communities in which they develop? This course will introduce several conceptual resources for thinking through the ethical challenges engineers face. Special emphasis is given to issues of integrity, automation, and whistleblowing. We'll apply these concepts to a variety of real world cases in order to understand how ethical conflicts arise, how they might be resolved, and how to understand our role as professionals in the process.

Text: No required books! All readings will be distributed on a weekly basis via email. Please ensure that you are receiving my emails, since your weekly quizzes and/or homework will involve those readings. Being a student is expensive. I get it.

Assignments:

There will be ONE IN-CLASS EXAM that will take place sometime around the final day of classes. **Students will vote on the format.** It will be **cumulative**, but I will tell you what to focus on and, conversely, what not to focus on.

EACH CLASS will have **either** a SHORT QUIZ **or** WRITTEN HOMEWORK due.

There will also be a GROUP PROJECT (to be graded as a group) in the form of a CLASS PRESENTATION or VISUAL ESSAY.

Due to the length of our sessions together, as well as the controversial nature of our class topics, this class is heavily DISCUSSION-BASED and will be graded accordingly.

Grade Distribution:

- 1) Participation - 30%
- 2) Weekly Quizzes / Written Homework (always one or other) - 25%
- 3) 10-15 Minute Group Presentation - 25%
- 4) In Class Final Exam (format will be voted on by the class) - 20%

These percentages are only approximate. I tend to give students the benefit of the doubt if their grades improve over the course of the semester—*i.e.*, I discount poor grades at the start of the semester. Bonus Assignments will also occasionally be assigned.

I will not be grading the class on a bell curve.

Information about Participation Grade: Students who are never absent or disruptive and who contribute comments frequently, will likely receive a perfect participation grade. Many of our classes will involve presentations by your classmates; you are expected to engage, applaud, and/or challenge their ideas. Actions that will result in a lower participation grade include: texting in class, being late for class, skipping class, being disruptive or rude, not contributing to discussions.

Information about Weekly Quizzes and Homework: At the beginning of many of our classes there will be a ten-minute quiz. The format of these quizzes will vary, but they are *not* designed to be difficult. Their sole purpose is to demonstrate that the student has completed the required readings and thought about them a little bit. That means that I will never try to trick you and I will never ask obscure questions. Quizzes will typically consist of true/false and multiple-choice questions, but may also involve short responses for full credit.

Occasionally, there will be homework assignments due electronically one hour before the beginning of class. If there is a homework assignment due, there will not be a quiz that week. Homework assignments will be *short* (varying from 200-500 words) and will largely serve the same purpose as the quizzes: I merely want to ensure that students are reading and thinking about our case studies and required reading material. Typically, homework assignments will involve summarizing main arguments from the readings, doing *short* research projects, and/or offering your own critical analysis of controversial issues under discussion.

Information about Group Presentations: Each group will conduct research into a current event relevant to engineering ethics based on the reading / topic of the week. They will then formulate and deliver an *argumentative* presentation of the following format. **Each presentation will be 15-20 minutes in length.**

First, students will present an overview of the event/issue itself, its causes and consequences, the people and organizations involved, and—*most importantly*—differing ethical perspectives that have been presented or that *could* be presented.

Second, students are asked to evaluate the same case from the perspective of readings and/or ideas discussed in the readings for that week **and/or** relevant readings from earlier classes.

Third, each group will **formulate** and **defend** a **thesis** that **puts forward a clear ethical position** related to the issue at stake, *e.g.*, “Engineers are in no way responsible for deaths or injuries incurred by the autopilot feature on Tesla’s new Model S car,” or, “Fracking technology should be banned in the United States,” or, “The engineering disaster involving the levees breaking during Hurricane Katrina was related to issues of race in America.” Each group will present their arguments for this position as well as raise and consider various counter-arguments *against* their position.

Finally, each group will conclude by raising two provocative questions for the class and engage in discussion for 5-10 minutes.

More detailed instructions are attached below, including a (tentative) grading rubric and information on bonus points, optional handouts, references, etc.

Note: Thesis construction can often be confusing for students outside the humanities. In order for me to help you receive a high grade on this assignment, **EACH GROUP IS REQUIRED TO RUN THEIR THESIS BY ME (in person or via email) at least four days before their presentation.** This way we can avoid any, “your presentation is lacking a thesis” comments during my evaluations.

For those who wish to choose an alternative topic: Although the presentation topics appear to be set in stone, this is not necessarily the case. If groups wish to present on an alternative issue—*though still related in some sense to the major topic of that week*—you are more than welcome to discuss that possibility with me. In short, you are encouraged to explore cases related directly to their interests and career path.

Course Expectations

Attendance: Students are expected to attend all lectures, complete all assigned readings, and be active participants in class discussions. As this is a philosophy class, a great deal of our time together will be interactive. Students who contribute frequently will receive a perfect participation score. Just as regular absences will weigh heavily on a student’s final grade, regular and/or provocative contributions to discussion will also be strongly considered as I tally grades at the end of the semester.

Missed Quiz/Homework Policy: Students who fail to hand in an assignment will receive a zero on the assignment. Students who fail to show up for a quiz will fail that quiz. Night-before or day-of excuses are almost never acceptable. The only excuses that I will accept are those accompanied by a doctor’s note.

Extra Credit: Assignments for extra credit will be granted at my discretion. Typically, students who contribute frequently to class discussions but who bomb an essay or exam are more likely to be given the opportunity to boost their grades.

Late Policy: Unless accompanied by a doctor's note, late work will be deducted a half letter grade each day, e.g., an A- will become a B+. The single writing assignment in this class will be relatively short and you will have plenty of time to complete it. My late policy is very strict, frankly because everything else in class is relatively easy. Doing well in class doesn't require much more than putting aside the time to do the work. Please stay on top of the assignment schedule. Failing to complete assignments on time is the easiest way to fail this class.

Eating in class Policy: Since this is a night class, I feel as if this needs to be said: do not eat your dinner in class. Non-smelly snacks are allowed, but no sandwiches or soups please.

Technology Policy: Laptops are not allowed in class. An overwhelming number of empirical studies suggest that laptops are distracting to students and have highly negative effect on class performance. E-Readers are allowed, but if you spend more time looking at your screen than the front of the class, I reserve the right to call you out on what you're looking at. **Cell phones cannot be visible during class. Texting will result in a reduction of your participation grade.** Wait until break to use your phones.

Plagiarism of any kind will not be tolerated. The MINIMUM penalty will be failure in this course. Suspected cases of plagiarism will be given zero credit for the assignment and reported to the Dean as a violation of the Student Code of Academic Integrity, which carries a maximum penalty of expulsion. Copying and pasting from the web is one form of plagiarism. Failing to provide adequate citations is also a form of plagiarism. Any work you use should be given adequate citation. If you use any resource in your research, (including dictionaries, encyclopedias, and translation tools!) even if you don't quote it directly, provide a citation. **Note:** the research project is a honeypot for cheaters, and typically results in multiple instances of plagiarism in each section.

Class, Reading, and Presentation Schedule:

Note: This schedule, including all dates and readings, is tentative. If any changes are made, you will always be made aware via email *and* during class weeks in advance.

EACH CLASS WILL HAVE A 15-20 MIN BREAK

1. September 5th — Introduction and Syllabus Overview

-Case Study: *Pet Cloning is becoming available for the wealthy, and perhaps soon for the general population. What are the moral considerations are at stake?*

Important: Sign up for presentations.

2. September 12th – Engineering Social Systems

- Martin & Schinzinger (Textbook) ch 4.1 4.24 (pg 88-100) ch 10 (pg 274-284)
- Langdon Winner, “Do Artifacts Have Politics?”

1. Presentation / Discussion: The 3D Printable Suicide Machine
2. Presentation / Discussion: DIY Neurohacking

3. September 20th [DATE CHANGE OCCURRED—11:30am—1:50pm on Friday] – Commodity Fetishism and the Scope of Moral Consideration

- Peter Singer, “Famine, Affluence, and Morality”
- Hudson & Hudson, “Removing the Veil: Commodity Fetishism, Technology, and the Environment”

Optional: Matthew Sparke’s *Introducing Globalization* (Ch. 1 [(2-10), Ch. 2 [28-53] and Ch. 3 [58-77, 83-93]).

1. Presentation / Discussion: What do we do about Conflict Minerals?

4. September 26th – Overpopulation as an Engineering Problem

- Joel Feinberg’s “Future Generations”
- Elizabeth Willott’s “Recent Population Trends”
- Garrett Hardin’s “Living on a Lifeboat”
- Clark Wolf’s “Population, Development and the Environment” [Recommended]
- Garrett Hardin’s “Tragedy of the Commons” [Recommended]

1. Presentation/Discussion: Population Control in the 21st Century
2. Presentation/Discussion: How to Feed the World

5. October 3rd – Whistleblowing: Tech Privacy and GMOs

- Dennis Gioia, Pinto Fires and Personal Ethics
- Martin & Schinzinger (textbook): ch 6.1.1 (pg 146-150), 106-115 (Challenger Case), and 6.4 (pg 172-180) on Whistleblowing.
- William Clifford, “The Ethics of Belief”
- Gary Comstock, “Ethics and Genetically Modified Foods”

Optional: Buiatti, Christou, and Pastore, “GMOs in Agriculture: two different scientific points of view”

Optional: 60 Minutes Special on Jeffery Wigand, Whistleblowing, and Big Tobacco (for an excellent fictionalized account, Michael Mann’s film *The Insider*)

1. Presentation / Discussion: Blowing the Whistle on the NSA (PRISM)
2. Presentation / Discussion: Blowing the Whistle on Monsanto (GMOs)

6. October 10th – Democracy and Automation

- John Dewey, “Democracy”
 - Martin & Schinzinger (textbook): Job Elimination (pg 258)
 - Frey and Osborne, “The Future of Employment”
- Video: “Humans need not apply”

1. Presentation / Discussion: New Era Windows: 21st century Workers Co-Ops
2. Presentation / Discussion: Automation at Wal-Mart

7. October 17th – Five Years of Flint: America’s Water Crisis

- Robert Glennon, “Unquenchable: America’s Water Crisis and What to Do About It”
- Smith, et al., “Flint’s Water Crisis Started Five Years Ago. It’s Not Over”
- David Groenfeldt, “Introduction to Water Ethics”
- Somini Sengupta, “A Quarter of Humanity Faces Looming Water Crises”

1. Presentation / Discussion: Beyond Flint: American Water Contamination
2. Presentation / Discussion: Water Wars and the Global Water Crisis

8. October 24th – Waste and Consumption as Engineering Problems

- Woldemar d’Ambrières’ “Plastics recycling worldwide: current overview and desirable changes”
- Lynn Scarlett, “Making Waste Management Pay”
- Ann Simmon’s “The world’s trash crisis, and why many Americans are oblivious”
- Jeff Spross’s “America has a recycling problem. Here’s how to solve it”

Optional: Michael Corkery’s “As Costs Skyrocket, Less US Cities Stop Recycling”

Optional: Tobas DanNielsen and Karl Holmberg’s “Need a bag? A review of public policies on plastic carrier bags – Where, how and to what effect?”

1. Presentation / Discussion: How Does Recycling Work in American Cities? How *Should* It?
2. Presentation / Discussion: Human Waste Disposal in American Cities

9. October 31st – Civil Engineering, Dispossession, and Eminent Domain

- Bugliarello, “The Social Function of Engineering: A Current Assessment”
- Jessica Wooliams, “Designing Cities and Buildings as if they were Ethical Choices”
- *Battle for Brooklyn* (documentary on eminent domain abuse & Barclay’s Center)
 - a. Discussion of eminent domain abuse and the controversial Supreme Court cases of *Kelo vs. New London* and *Berman vs. Parker*

1. Presentation / Discussion: Gentrification in Newark

10. November 7th – Military Weapons and Drones

- Martin & Schinzinger (textbook): Military weapons (pg 259) ch 9.3 (pg 266-271)
- Nova: Rise of the Drones
- US DOD Report: Preparing for war in the robotic age
- FLI: Open letter on autonomous weapons

1. Presentation / Discussion: Drones (military and commercial use)
2. Presentation / Discussion: Insects as Weapons

11. November 14th – Energy Production and the Environment

- Martin & Schinzinger (textbook): Ch. 8 (pg 219-225, 232-237)
- Garland Cox, “Energy”

1. Presentation / Discussion – What’s up with the “Green New Deal”?
2. Presentation / Discussion – Nuclear power in the 21st century?

12. November 21st – Engineering Animals and Biofabrication

- Peter Singer, “All Animals are Equal”
- Michael Moss, “U.S. Research Lab Lets Livestock Suffer in Quest for Profit”
- Watch Andras Forgacs’ TED talk, “Leather and Meat Without Killing Animals”

1. Presentation / Discussion – Biofabrication of Meat and Leather

13. November 28th [Holiday: date will change] – **Climate Change and Geoengineering**

- Rosen, “Engineering sustainability: A technical approach to sustainability”
- Svoboda, “Is Aerosol Engineering Ethically Preferable?”
- Gardner, “Is Arming the Future with Geo-engineering Really the Lesser Evil”

1. Presentation / Discussion – Negative Emissions / Geo-Engineering Technologies

14. December 5th — **Sustainability and Future Generations**

- Stephen Gardiner’s “A Perfect Moral Storm: Climate Change, Intergenerational Ethics, and Corruption”
- Brian Barry’s “Sustainability and Intergenerational Justice”
- Liao, “Human Engineering and Climate Change”

- No Presentations / Exam Review Day

FINAL EXAM – Date Pending (Format to be voted on)

GRADING RUBRIC FOR PRESENTATIONS:

Names: _____ Topic: _____

Title: _____

Thesis Statement:

	1	2	3	4	5
Organization Note: Please follow the general presentation structure outlined on the syllabus.	Presentation is poorly organized, lacking any cogent structure. The thesis is unclear or not stated at all. Background information is either vague, or, the entire presentation is <i>just</i> background information with no arguments, or, the course reading is very rarely related to the rest of presentation.	Organization is decent. The arguments are not explicitly tied to the thesis and are generally difficult to follow. Too much time is spent focusing on one particular aspect, e.g., course reading, background info, your own views, at the expense of others. Presentation contains unnecessary expository “padding” to add length.	Organization is satisfactory. The arguments are often tied to the thesis and are generally easy to follow. An even amount of time is spent focusing on each section, e.g., relationship to course reading, background info, your own views. Time is utilized well, but presentation may contain <i>some</i> unnecessary expository “padding” to add length.	Organization is good. The arguments are tied to the thesis, which is restated throughout to maintain clarity. In this sense, the path of argumentation is very easy to follow. An even amount of time is spent focusing on each section, e.g., relationship to course reading, background info, your own views. Presentation contains <i>no</i> unnecessary expository “padding.”	Presentation is expertly organized. The thesis is extremely clear, nuanced, and raised early on. The issue itself and all relevant background information is made clear. Differing perspectives are outlined and given consideration. The course reading is expertly used. All arguments neatly relate to the thesis, which is restated throughout to maintain clarity. Presentation contains <i>no</i> “padding.”
Content Knowledge: Course Reading	Presentation displays little to no understanding of the reading, and/or does not apply it to the issue or their arguments.	Presentation displays surface understanding of the reading, but does not delve any deeper and/or rarely applies it to the issue or their arguments.	Presentation displays satisfactory understanding of the reading, occasionally delving deeper and revealing interesting elements which are not immediately obvious. Presentation often applies the reading to the issue and their arguments.	Presentation displays substantial understanding of the reading, often delving deeper and revealing interesting elements which are not immediately obvious. Perhaps the reading itself is challenged, or numerous interpretations or modes of application are given. Presentation expertly applies readings to issues and arguments	Presentation demonstrates excellent understanding of the reading, <i>consistently</i> delving deep and applying it to the issue in <i>creative</i> and <i>thoughtful</i> ways to the thesis. Furthermore, numerous interpretations or modes of application to the issue are provided.
Content Knowledge: Issue at Stake	Presentation displays little to no understanding of the issue, and/or does not apply it to the course reading or their arguments.	Presentation displays surface understanding of the issue, but does not delve any deeper and/or rarely applies it to the course reading or their	Presentation displays satisfactory understanding of the issue, occasionally delving deeper and revealing interesting elements	Presentation displays substantial understanding of the issue, very often delving deeper and revealing interesting elements which are not immediately	Presentation demonstrates excellent grasp of the issue. Numerous interpretations are provided. Presentation <i>consistently</i> delves

		arguments.	which are not immediately obvious.	obvious. Numerous interpretations are provided.	deep and allows the issue to inform your arguments, thesis, and reading of the text in <i>creative</i> and <i>thoughtful</i> ways.
Argumentation and Counter-Argumentation	This is basically a research project that is entirely explication and offers no arguments of its own. Or, existing arguments are generally weak in form and feature very little textual support. Counter-arguments are not present, or, if present, are generally used to make the arguments of one's opponent out to appear weak. No attempt has been made to make opposing views appear formidable.	Essay could use much more argumentation. Arguments that exist are not clearly or systematically presented and are generally not supported with strong evidence from the text. Counter-arguments are used very sparingly. Arguments are present for which no attempt at counter-argumentation has been made. Counter-argumentation is vague and generally does not make opposing views appear strong. Little to no textual evidence is used.	Argumentation is satisfactory. Unnecessary explication is generally kept to a minimum. Arguments are presented in a clear and systematic way with supporting textual evidence that is generally quite strong. Essay contains a few decent counter-arguments, which make opposing views appear relatively formidable.	Argumentation is very good. It is strongly presented and defended with rich textual and evidential support. <i>An attempt at originality is made.</i> Research is limited to that which directly complements the arguments and is not used to "pad" the essay in any way. Essay contains good counter-arguments, which make opposing views appear respectable and formidable.	The argumentation here is excellent. The make-or-break difference here lies in having many provocative and detailed <i>counter-arguments</i> to your position. Your presentation engages in productive 'back-and-forth' exchanges with opposing views, whose arguments have been made to appear very strong and formidable. Textual evidence is used in counter-arguments.
Audience Engagement Note: Each presentation is to be formatted in a lecture-style, and must conclude with <i>at least</i> two questions to provoke audience discussion. Please feel free to email your questions to me if you would like my input. If you want to run your questions by me, please do so <i>at the latest</i> by 8pm the night before your presentation.	Presenters make little to no effort to engage the audience. Presentation is entirely read out-loud. Little to no eye-contact. Little to no voice-modulation. Little to no enthusiasm about the issue itself or their own position. Either no questions raised or questions appear as an after-thought.	Presenters make some effort to engage the audience, however the majority of the presentation is read out-loud. Very little eye-contact, enthusiasm, etc. Questions are raised, but are dry and not very stimulating.	Presenters make a satisfactory effort to engage the audience. The presenters demonstrate a <i>conversational</i> knowledge of the background info as well as their thesis. Presenters make eye-contact and are often enthusiastic about the issue and their opinions. Questions are raised, and they are well thought-out.	Presenters make a good effort to engage the audience. The presenters are, first and foremost, <i>confident</i> in their knowledge and thesis. Presenters are clearly enthusiastic about the issue and their opinions. Strong questions are raised, which are not only thought-out but <i>provocative</i> .	This presentation really stands out. Presenters make an excellent effort to engage the audience. They are not merely confident in their knowledge and thesis, but are willing to question their own views and—importantly— <i>encourage the audience to do the same</i> . Strong questions are raised, which are not only well thought-out but <i>provocative</i> .
References Note: If handout or presentation software is used, references <u>must</u> be explicitly cited in MLA or APA format. If you choose not to use those things, that's fine, but you <u>must</u> hand me a hard-copy of your bibliography.	No references are cited. Presentation relies almost exclusively on the work of others.	Some references are cited, but they are cited improperly. Presentation relies very heavily on the work of others.	All references are clearly and properly cited. Presentation is primarily anchored on the work of others, limiting the expression of the presenters.	All references are clearly and properly cited. Presentation does not rely heavily on the work of others, though occasionally uses it as a crutch, thereby somewhat limiting the expression of the presenters.	All references are clearly and properly cited. References are used exclusively to back up your explication of relevant issues and arguments. They are not relied upon too heavily, as the vast majority of the presentation is composed of <i>your own thoughts and argumentation</i> .

BONUS (Optional)	1	2	3
Visual Aid IMPORTANT: See my note on the use of PowerPoint below.	Visual aid appears to be an after-thought. If it's a PowerPoint, it is merely contains the text of the presentation. It is bloated, and continually read by the presenters, thus <i>detracting</i> from audience engagement, rather than promoting it. Photos and video, if used, are largely irrelevant to the content of the presentation.	Visual aid is effectively used. Photos and video are used sparingly. The use of text is clear, concise, contains minimal to no wording from the actual presentation (besides your thesis statement, statistics, tables, an outline of your argument, and relevant quotes from sources). It is rarely used as a crutch by presenters. It promotes audience engagement.	Visual aid is extremely clear, well thought-out, and utilized <i>very</i> effectively throughout the presentation. It is not in <i>any</i> way used as a crutch, but rather serves to (1) clarify issues for the audience, and (2) promote discussion. If used alongside a handout, there is <i>no</i> overlap.
Handout	Handout appears to be an after-thought. It merely contains the text of the presentation. It is bloated, and continually read by the presenters, thus <i>detracting</i> from audience engagement, rather than promoting it.	Handout is effectively used. It is clear, concise, contains minimal to no text from the actual presentation (besides relevant quotes from sources). It is rarely used as a crutch by presenters. It promotes audience engagement.	Handout is extremely clear, well thought-out, and utilized <i>very</i> effectively throughout the presentation. It is not in <i>any</i> way used as a crutch, but rather serves to (1) clarify issues for the audience, and (2) promote discussion. If used alongside visual aid, there is <i>no</i> overlap.

Final Grade: / 30

Note: If you have *any questions* about the grading rubric, please contact me. I will respond promptly.

Re: PowerPoint (PP): While PP *can* be used effectively, and you are permitted to use it, I discourage its use for two reasons: (1) it often leads to boring presentations lacking in audience engagement, and (2) presenters often just read from the screen. The best PP presentations have *minimal text* (thesis statement, basic argument outline, and relevant stats/quotes are fine) and are mainly used to introduce multi-media components. That said, just pulling pictures and video from the web can often be *just as* or *more* effective than designing a PP presentation. *If* you use a PowerPoint *and* a handout, ensure that there is no superfluous overlap. It can be very difficult to use both together effectively and doing so may detract from your final grade. In my view, there are two courses of action here: (1) choose between a handout *or* visual aid; (2) the best way to use a visual aid *and* a handout would be to think very carefully about the purpose each is supposed to serve, *i.e.*, show a short video or a few photos and limit text to a handout.

Regarding Your Use of Time: Your presentation must be roughly 15 minutes. That does not include any video you show. So, if you have give-or-take 4 minutes of video, it is fine to have an 18-19 minute presentation, but it is *not* fine to have a 10-11 minute presentation.

GRADE BREAKDOWN:

A+ 29-30
 A 26-28
 A- 24-25
 B+ 22-23
 B 20-22
 B- 18-19

C+	17
C	15-16
C-	14
D	11-13
F	0-10