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Fall 2023

PHIL-334 (001-003-451): Engineering Ethics

Daniel Estrada

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Phil 334: Engineering Ethics

Syllabus

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Office Hours: T 3-4pm and by appt.
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Fall 2023 Class Meetings:

PHIL 334 - 001	MW 11:30am - 12:50pm	FMH 408
PHIL 334 - HM1	TR 4:00pm - 5:20pm	CKB 106
PHIL 334 - 003	TR 4:00pm - 5:20pm	CKB 106
PHIL 334 - 451	ONLINE	

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

All assignments, discussions, and grading will take place on Canvas (canvas.njit.edu). Students will participate in group discussions and activities on weekly lesson material, and will prepare short presentations on the material periodically. Students will conduct an extended research project where they investigate a historical case of their choosing pertinent to engineering ethics, and prepare a presentation on their findings to the class. Detailed course information, including grading rubrics and late policies, can be found below.

Prerequisites: HUM 102 and one from among Hum 211, Hum 212, Hist 213 or Hist 214 or their equivalents, all with a grade of C or better.

Learning Outcomes:

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

- Identify ethical issues
- Describe different ethical decision-making approaches
- Analyze engineering ethics cases
- Apply different ethical decision-making approaches to engineering ethics cases
- Recognize the ethical responsibilities of engineers
- Evaluate the broader societal and environmental impacts of engineering
- Develop and defend positions about issues in engineering ethics

Main Text: Mike. W. Martin and Roland Schinzinger, *Ethics in Engineering*, **fourth edition** (McGraw-Hill, 2005). Available in the NJIT Bookstore and on Amazon. Thanks to your NJIT librarians, most core readings from this text are available digitally here. You will not need to purchase this text to complete the assignments, but you may find the additional material in the textbook useful. All other texts will be made available on Canvas.

Quick overview of the course:

- The course consists of **three subject units and an independent research project unit.** Students are assigned a unique group of 5-6 students for each subject unit.
- Each subject unit consists of **three weeks of lesson material**, followed by **one week of group discussion**.
- Students must prepare **one 10-15 minute Lesson Presentation for each unit**. Students can work individually or in pairs; pairs should prepare 15-20 minute presentations that divide the time evenly between the students.
    - One presentation per unit means **students must complete three Lesson Presentations total for the semester.** Lesson Presentations account for 30% of the total semester grade.
- For lessons where the student is not presenting, they must watch the presentations of other students in the group, and offer comments and responses to their presentation. Replies are **300+ words each, twice per unit**.
    - Two replies per unit means **students should complete 8 Replies (2400+ words) total for the semester.**
    - Note: 7 replies will earn full credit. Completing 8 replies earns extra credit.
- In the last week of each unit, students must meet with their group members via video conference to **record an hour-long conversation or "podcast"**. In these conversations, students are asked to discuss the material from the lesson, and also to role play an Ethics Scenario and discuss their reactions to the scenario.
    - One podcast per unit means **students must complete 3 Podcasts (~3 hours) of recorded audio conversation total for the semester.** Participating in these discussions constitutes 30% of the total semester grade.
- An **Independent Research Project** involves scholarly research into a case study on a recent historical (post-1950) case of the student's choosing. This project is completed over two weeks (Lessons 10 and 11), with essays due each week. The finished assignment will consist of **two 750+ word reports (1500+ words total).** Students will also complete an **annotated bibliography with at least 4 scholarly sources,** and a **Research Presentation of 5+ minutes** on the case study. The research project accounts for roughly 20% of your final grade.
- **Two Reflection essays** are short written or audio essays (~700 words or 5+ mins). One is completed at the end of the semester, where students reflect on

their work for the semester. The other can be completed at any other time during the semester. See assignment details below.
- That's it! No final exams or other tests.

These are the major assignments for the course. The overall grade for the class breaks down as follows:

3 Lesson presentations: 100 pts each x 3 = 300 pts
3 podcasts = 100 pts each x 3 = 300 pts
8 replies= 15 pts each x 8 = 120 pts
Research project = 200 pts
Reflection essays = 50 pts each x 2 = 100 pts

Total = 1000 pts

Final grades are calculated on the following scale:

A: 900+
B+: 850+
B: 800+
C+: 700+
C: 600+
D: 500+
F: < 500

There is a 5 point tolerance for bumping a grade to the next letter when calculating final grades. Note that on this grading scale, one missing assignment can easily swing one's final grade by a full letter.

Honors Sections: See Honors addendum on Canvas

~~**ACCELERATED SUMMER/WINTER SCHEDULE:** Summer courses will complete all 15 lessons in just over 4 weeks. That means 3 lessons should be completed each week, or about 15 hours of work each week. This is a significant time commitment, and it can be difficult for students to stay on top of this schedule with other summer obligations. Please put aside the time to complete the required work for this course!~~

The full syllabus below describes grading rubrics, late policy, and all other course matters in complete detail. **Please review this document!** It will answer almost any question you have.

The rest of the syllabus is organized as follows:
- Course policy details:

    - accessibility
    - late work & extensions
    - attendance
    - Students retaking the class
    - citation format
    - plagiarism
- Grading policy and Final Grades
- Detailed assignment instructions
- Full semester lesson plan with readings. The schedule of assignments for specific sections can be found on Canvas.

Course policy details

Accessibility policy

I want all students to succeed in this class, and I will gladly accommodate the special circumstances and needs of all students to make sure that happens. I understand that life doesn't happen on the semester schedule, and that school work can't always be a top priority. Students who find themselves in a family or medical emergency, or experiencing other forms of precarity or crisis should prioritize their own well-being! All my lesson plans and reading materials are freely available online. If you find that my lesson materials are inaccessible, or if you are struggling with the lesson plan and assignment schedule **for any reason**, please talk to me about your situation and we'll work something out. Even if you're behind on assignments, drop me a message, I'm sure we can figure something out =)

In most cases I recommend students get in contact with the Dean of Students, who can offer support for students in a variety of ways. You can contact the Dean of Students directly at dos@njit.edu or through this form: Student Concern form. The form is not meant to get you in trouble. The Dean of Students is equipped to discuss medical reports and other personal issues in a confidential manner, to go over your needs and how NJIT can support you, and they will inform me (and all your instructors) directly on legitimate absences that excuse your late work. If you expect a Dean's excuse for your late work, contact the Dean when you are able to, and complete your missing work and turn it in when you can. When the Dean informs me of your excused absence, I'll remove any late penalties that may have been applied. If you want to contact me to discuss your situation further, I'm always happy to chat.

Late Policy and Extensions

In an emergency situation or unplanned special circumstances that disrupt your capacity for school work, please attend to the emergency situation as a top priority! When you are ready for school work again, contact the Dean of Students through the links above to schedule an appointment where you can explain your situation. You don't need to share doctors notes or other personal information with me; my policy is the same regardless of the details of your situation. When you contact me, I'll work with you to plan out a way to make up missing assignments and recover your grade. **When I hear from the Dean of Students, I will waive any late penalties that might have accrued.**

For any non-emergency events, such as athletic events, academic conferences, job fairs, military service, or busy schedules around midterms and finals, I ask that you contact me at least 2 days in advance of the event to reschedule your assignments. In other words, **extensions will not be granted on the day an assignment is due.** If you contact me at least 2 days ahead of an event, we can arrange some rescheduling of assignments to accommodate your event.

Assignments approved by the Dean of Students or arranged in advance of a due date will not receive late penalties. Certain assignments cannot be made up directly, such as the group discussion. In these cases, alternative assignments might be arranged to meet certain assignment requirements. Other assignments have concrete due dates listed on Canvas. Unless otherwise stated, assignments are **due at midnight** according to the assignment schedule on Canvas. There is a 30 minute grace period for late assignments. Assignments submitted after a deadline will be penalized by 10%. Replies and Lesson Presentations can be submitted with a late penalty until the end of the unit. If you missed a deadline but the unit hasn't ended, you don't need to apologize or ask permission. **After the Unit has concluded, no assignments from that unit will be accepted without permission.** The research project will be accepted with a late penalty until the final day of class. See the schedule on Canvas for details.

Make up assignments

Certain assignments can be turned in late with a small penalty. Others, like the Group Discussion Podcasts cannot easily be made up. If you miss a podcast, you can complete the following assignments to make up 75% of the credit for that assignment.

- Listen to your group's podcast
- (If you haven't already) watch the presentations from other students in the group
- Write a 1000+ word (~3 pages) or 10+ minute recorded essay in which you
    - Engage with each presentation discussed in the podcast, and share your thoughts on those issues
    - Discuss and evaluate the role play scenario from the other students
- Post this essay on Canvas in the Completed Podcasts thread for that unit.

Note: You can make up at most 2 podcasts with a late penalty. If you miss all three, you cannot make up the third podcast for credit.

Extra credit

You can complete the following assignments for extra credit.

- Lesson 1 assignments are all extra credit. Total = 25 pts.
- There are 8 required replies: 2 each unit, including the Research Project unit. Replies are 15 points each, and 100 points total. This means that you can earn full credit (+5 extra credit) with only 7 replies (=105 pts). You can think of this as one free reply, which

you can skip without losing points. However, if you complete all 8 replies, the final reply counts as 15 pts extra credit.
- Complete one additional reply (300+ words) per unit beyond the required 2. Cannot earn extra credit on more than one additional reply per unit. Post the reply in the Group Discussion forum for that unit. Maximum 15pts x 3 = 45 pts.
- Complete one additional reflection essay (700+ words). Cannot earn extra credit on more than one reflection essay. Post the additional essay in the Reflection Essays forum. Maximum 50pts.
- Complete one podcast review (700+ words). Cannot earn extra credit on more than one podcast per unit. Listen to a full podcast from one group, and write 700+ words (2 pages) engaging with their conversation and/or ethics scenario. Post the review in the Completed Podcasts threads. Maximum 50pts x 3 = 150 points.
- For classes with live meeting times, regular attendance can earn up to 50 pts extra credit.

All extra credit assignments are due at the end of the semester. See the schedule on Canvas for details.

Attendance

Online sections of the course have no attendance requirements. All material is available to work through on Canvas. Online students must still arrange for a live group conversation at the end of each unit, and students should do their best to accommodate each other's schedules to arrange for the conversation. If scheduling a conversation is impossible, contact me and we'll figure something out.

Students in sections with a scheduled meeting time are expected to attend class regularly. Typically, we will discuss material as a class for the first weekly meeting, and students will present on the material in the second meeting. Attendance will be taken at the start of class through the class Discord server. Students more than 10 minutes late will earn 80% credit for that day's attendance. Students can earn up to 50 points extra credit over the semester, which amounts to roughly 3 attendance points per day.

For the Group Discussion at the end of the unit, class will typically meet in the classroom on the first weekly meeting to discuss the assignment and the Ethics Scenario. Then students are expected to meet as groups during the second weekly meeting, instead of meeting in the classroom. This ensures that all students have that time available for the group meeting. Students should then upload the recorded meeting to the appropriate place on Canvas for credit on the assignment.

Students who are retaking the class should plan to complete all assignments from scratch. You can discuss the same topics, use the same case study and research etc, but you should write your posts and replies from scratch. Posts copied directly from previous semesters will be penalized and given 2/3rd credit (20/30 points). Replies from previous semesters will not be accepted for credit. This policy may be flexible for lesson presentations or podcasts from

previous semesters that demonstrate significant effort. If you have questions, send me an email.

Citation format

Any material quoted directly must be indicated with “double quotes” and given a full citation at the bottom of your essay. Citations must include author, date, title, and publisher (if any). I prefer APA style citations, but you can use any style as long as you are consistent.

The point of these assignments is to develop your own thoughts; quoted or paraphrased material will not count towards the minimum word count. Posts that consist mostly of quotes and paraphrase from other sources will not earn credit. Use quotes sparingly to establish context for specific terms and concepts you want to discuss, but you should be doing most of the talking yourself. For sources cited in the lesson lecture or reading material, the author name in parentheses is sufficient, with page numbers where appropriate. For instance, your essay might read:

> Turing said that the question “can machines think?” was “too meaningless to deserve discussion.” (Turing, 4)

This citation format is only acceptable for material I’ve made available in the lesson. For any material that was not provided explicitly in lecture, you should *at a minimum* provide a link to the source at the bottom of your post. For instance, if you looked something up on Wikipedia or found a relevant news article as you wrote your essay, *even if you don’t quote it directly*, throw a link to the page at the bottom of your post. If you do quote directly from another source, **clearly mark the passage with “quotation marks”** and use inline author/page number citations (as above). Even if you don’t quote from a source, any material used in preparing your essay should be cited. Failure to cite sources properly may result in point deductions on assignments, and may trigger the plagiarism penalties discussed above. **Note:** Full citations are required for your annotated bibliographies in research project weeks 10 and 11.

NJIT Plagiarism Policy

“Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:

http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"*

Copying and pasting from the web is a form of plagiarism. **Using AI text generators like chatGPT is a form of plagiarism. Failing to provide adequate citations is a form of plagiarism. Copying from your own work (including work from previous semesters) without acknowledgement counts as plagiarism. Changing a few words in an extensively quoted passage is a form of paraphrase and may constitute plagiarism.** Check this link for a detailed explanation of legitimate paraphrase and illegitimate plagiarism. Any work you use should be given adequate citation so your readers can find and review your sources. Just as in mathematics, you need to show your work! If you use any source in your research, (including dictionaries, Wikipedia and other encyclopedias, and translation tools) *even if you don't quote it directly*, provide a citation.

Suspected cases of plagiarism will be given zero credit for the assignment with a warning about the plagiarism policy. Students found plagiarizing will also forfeit all extra credit opportunities for the semester. Repeated or extreme instances of plagiarism will be reported directly to the Dean of Students as a violation of the Student Code of Academic Integrity. **Note:** the research project is a honeypot for cheaters, and typically results in multiple instances of plagiarism in each section. I won't hesitate to fail students who cheat in my ethics course. Consider this your first warning.

I have substantially reorganized my class around group discussions and presentations to discourage the use of AI text generators. None of the writing assignments in class are "busy work". They all ask you to demonstrate direct engagement with the readings and with the ideas and perspectives of your fellow students. Please take this opportunity to engage your peers in discussions on ethics seriously!

Detailed Assignment Instructions

Overview of assignments

Each content unit consists of three weeks of lesson material and one week of group discussion. Lesson material consists of a recorded lecture with accompanying slides, along with several articles, videos, and other reading material. In the lecture, I will introduce that lesson's major themes, and I will briefly introduce the reading material for each lesson. The lectures will organize this material into three distinct "tracks" designed to help students explore the themes

and readings. Students should watch the lecture videos entirely, and engage with the readings they find interesting.

Students are organized into groups of 5-6 people for each unit. At the beginning of each unit, students must choose one lesson in the unit to prepare a Lesson Presentation, where they engage more deeply with the readings and themes for that lesson. Students must select lessons so that every lesson has at least one student presenting, and no more than two students are presenting on any lesson. Students can present their lessons individually or in pairs. Lesson Presentations are described in detail below.

In lessons where students are not presenting, they are still expected to engage with lectures and readings in the lesson plan. They are also expected to watch the presentations from other students in the group, and to leave Replies on Canvas that engage with those student presentations on the lesson themes and readings. These replies should raise questions for the group discussion at the end of the unit. See assignment details below.

After three weeks of lesson material, students are expected to arrange a group conversation that is recorded, typically in a medium like WebEx. The group should designate one person to be responsible for recording the conversation and uploading the finished recording. Part of this conversation will engage with the lesson themes and cases discussed in the unit. The other part of the conversation will involve an Ethics Scenario that the students will play out and discuss. The full conversation should take around an hour, and should involve substantive contributions from every person in the group. **An evenly distributed conversation among 6 people for an hour implies each person is contributing about 10 minutes to the conversation.**

After the podcast has been recorded, each person in the group is asked to fill out a small quiz to discuss the group dynamic. Students are asked to identify the person responsible for recording and uploading the recording, and anyone else who contributed significantly to the group dynamic and coordination. Students are also asked to recognize students who did not participate in the discussion or who otherwise disrupted a constructive conversation.

Specific assignments are discussed in detail below:

Lesson Presentations

Lesson Presentations are 10-15 minutes in length, 15-20 minutes if working in pairs. They should include slides and audio recordings, and they should be embedded as playable media in the Canvas group discussion thread. One or two slides a minute means at least 5 content slides, plus a title, end slide, and citations slide means the full deck should be between 10-20 slides.

Lesson presentations should engage deeply with some aspects of the lesson themes and reading material. I will cover the themes and briefly cover the readings in my lectures for the lesson. Your Lesson Presentation should explain these themes for the group in your own words,

as well as give your own views on the themes and case studies for the lesson. The Lesson Presentation should also cover some subset of the reading material for the lesson, diving into more detail than is covered in my general lecture. You can dive deeply into one or two sources, or you can touch on a few sources and relate them to the lesson theme. You should not feel obligated to cover all the readings; students are encouraged to focus on one of the thematic "tracks" which organize the readings, and you don't even have to cover all the readings in a single track. Covering material in multiple tracks is fine, but don't try to cover everything! Stick to just a few sources and readings and go deep, rather than saying a few general things about all the readings. You are also encouraged to incorporate other cases and sources you are familiar with through personal experience or independent research that are relevant to the themes for the lesson.

Other students in your group will watch your presentations and will respond to them in their Replies, so you should be taking your group members as your primary audience for this assignment. The podcast will involve discussing each other's presentations, so this is your chance to clearly lay out your perspective on these issues in preparation for that group discussion.

Replies

Replies are short written responses to other student presentations of 300+ words, or about one page of typed, double-spaced writing in a standard font. Replies should engage with the lesson themes and readings, and must explicitly engage with the content of other student presentations. In the Podcast recording at the end of the unit, students will ask questions and raise conversation about each other's presentations. You can think of your Reply assignment as preparation for that discussion. Replies are also a way for students to check in and stay on top of lesson material in weeks where they are not themselves presenting. Replies are due on the Monday after the lesson, giving students a couple of weekdays to watch their peer's presentations before finishing their replies. See the assignment schedule on Canvas for details.

If two groups are presenting, students can (but are not required to) divide their replies between the two presentations. You can ask a quick question on one presentation and a longer reply on the other, or you can divide your replies evenly between presentations. What matters to me from a grading perspective is that the total word count of engaged writing is over 300 words; in other words, what matters is that students are writing about a page a week engaged with peers on the issues and material from the lesson. Students should label their replies clearly for grading purposes in each Group Discussion thread with **Reply 1** and **Reply 2** in bold. If replies are divided between two lessons, label them **Reply 1a** and **Reply 1b**. Replies should not be divided further for credit; there should not be a Reply 1c, or a Reply 3. Only flag replies you want graded for credit. If you've completed two replies for the unit, you can continue using the group discussion forum without flagging further replies.

If students are in groups where no one has produced a Lesson Presentation by the Thursday deadline, they should write a reply on the lesson material directly. Please say explicitly in your

replies that no presentations were finished when writing the reply. Otherwise, **replies must make explicit reference to other student presentations in your group.** You don't have to focus your reply entirely on their work. You can take something they mention in their presentation as a jumping off point for discussing your own views and ideas on the lesson themes and material. But there should be some explicit evidence in your reply that you watched their presentation and are considering the things they say in it.

Replies are graded on the following criteria:

- Is the reply appropriate for the lesson and classroom? Off topic or inappriopriate replies will not earn credit.
- Was it completed on time? Late replies earn a 10% penalty (-2 pts) until the end of the unit.
- Is the reply sincerely engaged with the material from other student presentations? Replies that are not engaged with other student presentations may lose credit (unless no group presentations were produced).

Group Discussion Podcast

Your Group Discussion Podcast is a recorded 1-hour conversation among a Unit group discussing the lesson themes and case studies for the unit. **For classes with scheduled class times,** you should plan to meet with your group for the podcast during the Thursday class period for that week's lesson. There will not be a regular class meeting at that time to ensure everyone has a free schedule for the podcast. **Online classes must still arrange for a live one-hour meeting with their groups that fits the schedules of all members.** If a common schedule cannot be arranged, one student might agree to the make-up podcast assignment for that unit. Groups should agree to a recording schedule explicitly in the group discussion thread for that unit. One person in the group should also volunteer to lead the meeting, and one person should agree to record the conversation and to upload the recording for the group. These should not be the same person. **Make sure to test your recordings and do mic checks before starting the conversation, you don't want to lose an hour of conversation!**

The easiest way to record the conversation is by arranging a WebEx meeting with group members. The student recording the podcast can host the WebEx meeting and record to their computer, and can then upload the file to Kaltura and embed the video in the Completed Podcasts thread on Canvas as usual. The group can arrange other ways to record the conversation; as long as everyone in the group can participate and the finished product is an audio/video recording that is embedded directly on Canvas it will meet the requirements. Students must participate through an audio contribution to the conversation. Video is fine but not required.

In a 6 person group, equal contributions to an hour-long conversation means each person should be speaking for around 10 minutes over the course of the conversation. A 5 person group would mean that each person speaks for 12 minutes. This can fluctuate a bit, but anyone speaking for less than five minutes is below expectations and should be explicitly identified in the Wrap-Up quiz. The full hour conversation should involve direct engagement with the

material. You should not spend significant time (more than 5 minutes total) explaining the assignment instructions to each other, discussing off-topic issues, or reading the material silently . Everyone should be prepared for the conversation before it starts, and should stay focused for the full hour. If more than 5 minutes of the conversation is off-topic, I ask that you either explicitly edit this material out of your recording, or at least flag it when you submit the recording so I know which parts to skip for grading purposes.

The person leading the meeting is responsible for keeping the conversation on track, for monitoring the time, and for making sure that all group members are contributing to the conversation equally, and that their contributions are being heard by the group. Otherwise, they should contribute to the conversation like other students. The conversation should move explicitly between the following segments:

Pre-recording Checklist

- Before recording the podcast, make sure everyone is connected to the call and their microphone is working
- **Test the recording software.** Take note of where the saved file is located. Check the test recording to make sure it works and everyone's audio can be clearly heard in the recording.
- Make sure everyone understands the assignment and is prepared for the conversation.
- **Decide on roles in the Ethics Simulation.** You may want to brainstorm as a group before recording to make sure everyone understands their role in the scenario. You should not choose roles during the recording! Your recorded conversation should jump straight into the Ethics Simulation after lesson presentation discussions.

Part 1: Introductions.

- Your group has been interacting for three weeks, so you know each other already. You should still say your names explicitly to link your voice with your name. You should also remind the group of which lessons you presented on, and any notable contributions you've made to the group discussions.
- **No more than 5 minutes total on Introductions.**

Part 2: Lesson Presentations & Discussion

- Go through each lesson for the unit in order. The students who presented on those lessons should review the material and themes from that lesson, reminding the group of issues they raised in their presentations. The group should have a short discussion on this material. Ideally, everyone would say something about each other's presentations. But getting into a deeper discussion on the lesson themes and readings is also great. Ask each other questions and share your knowledge, experiences, and perspectives. You should NOT just read your replies to each other, but you can refer to what you wrote in the discussion board to develop some questions or analysis for the group.
- **No less than 25 minutes and no more than 40 minutes on Lesson Presentations & Discussion.** That means spending a minimum of 7-8 minutes reviewing and discussing each lesson with the group.

Part 3: Ethics Simulation

- Your group is asked to engage in a simulated scenario relevant to engineering ethics. Each student will play some role in the case, and the group is asked to play through the scenario in your role, attempting to come to some resolution. Students should start the conversation already familiar with the scenario, and already having agreed on roles to play in the scenario. You should not spend more than 5 minutes of the recorded conversation coordinating these roles. Students should try to take the simulation aspect of the activity seriously for as long as they can. When a resolution is reached, students can drop the role-play aspect and discuss the broader ethical issues and implications raised by the scenario from their own perspective. See assignment details on Canvas.
- **No less than 20 minutes and no more than 35 minutes on the Ethics Simulation.** Anticipate 10-15 minutes for the simulation itself, with another 5-10 minutes of post-simulation analysis and reflection. When the discussion has concluded the conversation leader should explicitly end the podcast to signal the end of the recording.

Both segments can go a bit longer, but they should not total fewer than 60 minutes of genuine conversation between the group members. If you finish the ethics simulation and still have 20 minutes on the clock, you should go back to discuss more material from the lessons. Groups should also be mindful of each other's time and not go significantly over 60 minutes. Podcasts that run less than 55 minutes of total content will begin to lose points in grading.

Reflection Essays

You are responsible for two Reflection Essays over the course of the semester. The final reflection essay should be posted in the Lesson 15 thread. All other Reflection Essays should be posted in the Reflection Essays thread.

Reflection Essays are 700+ words or 5+ minutes of recorded audio/video essays in which you explore some issue, theme, reading, or case study from the course in more detail. Other assignments in class (presentations, podcast, etc) have a focus on group interactions. Your Reflection Essay should be focused on expressing your own views and ideas on the course material. Reflection Essays earn 50 pts, and must be submitted to Canvas by the final day listed in the Assignment Schedule. It is strongly suggested that you submit your first Reflection Essay before the end of Unit 2 to avoid getting overloaded at the end of the semester. That said, there will not be a late penalty on this assignment if it is submitted by the end of the semester. See the Assignment Schedule for details.

You can treat the Reflection Essay as a free writing assignment. Your audience is your instructor and other students in class; your goal is to educate us and to express yourself in a way that helps us appreciate your perspective. You can write about any issue related to engineering ethics and the class lessons, themes, and readings. Anything clearly related to course themes that you are motivated to write about for two pages is fine for this assignment. The only specific requirement is to demonstrate some explicit engagement with the course material. Mention case studies or readings we've discussed in class, or things your group has mentioned in conversation. As long as your essay is explicitly engaged with course material, meets the minimum word count, and is otherwise appropriate for the class, you will earn full credit on this

essay. You will not lose credit for grammatical mistakes, although essays without sufficient formatting and editing so that I cannot understand what is being said might not earn credit. Essays that are not explicitly engaged with course material (perhaps due to AI generated text), or that fall significantly below the expected word count, or otherwise fail to meet the expectations for this assignment will receive partial or no credit.

You can complete one additional Reflection Essay for 50 pts extra credit. This third essay is optional and not required. Extra Credit Reflection Essays should also be posted in this Reflection Essays thread. Please label your extra credit essay with the words **Extra Credit Reflection Essay in bold**.

If you're struggling to think of what to write about, consider one of the writing prompts below. You are not required to respond to any of these prompts, these are just to help students who aren't already motivated.

- **Personal reflection on ethics**: Write a personal essay about your own views on ethics and value. If you have cultural or religious traditions that inform your views that you are comfortable sharing with class, you might elaborate on those aspects of your perspective on the class material here. Similarly, if you have secular beliefs about the role of ethics and values in society, write a short essay on the philosophical basis for your views.
- **Expanded Lesson Discussion:** If there's some issue that came up in group discussion on some lesson or topic and you're just itching to say more about it, this is the appropriate outlet! Sometimes writing it out helps. Explain the issue as it relates to the class material, and work out your ideas in this essay. Provide some research to support your perspective.
- **NSPE Board of Ethical Review:** Select two recent (after 1980) cases from the NSPE Board of Ethical Review. Be sure to give a link to the specific case so others can read your analysis. Do not copy the analysis directly from the BER reports! Your analysis should describe the case and offer analysis in your own words. You may want to discuss the relevant precedent cases discussed in the BER analysis, but you should give primary analysis to two distinct cases.
- **Historical case study:** If you love putting together case studies, you can put together another short case study on some historical case relevant to class. It can't be a case covered in lectures or in your independent research project. Discuss the case in detail and give the case an informed ethical analysis. Put together an informative bibliography to support your analysis.
- **Conceptual analysis:** Pick some important term or concept that has come up repeatedly in our ethics discussions, and give the concept a thorough explanation and analysis with scholarly research. Terms like "virtue", "integrity", "duty", "responsibility", and "whistleblower" are good candidates for such analysis, but there are many others; pick a term you find interesting and worthy of careful analysis. Look up some scholarly sources that offer theories and explanations of the concept, and discuss how it is applied in engineering ethics cases and discussion.
- **Technical analysis:** Pick some recurring feature of the engineering workplace that has some major safety, security, or other ethical significance, and give it a thorough analysis.

If you're not an engineer, pick some relevant ethical issues related to your field. Issues like corruption and sexual harassment are also appropriate for this topic. What are the major concerns, and how are these concerns addressed? Are these specific historical cases that exemplify these concerns?

- **Ethics of your field:** We've mostly talked about the ethics of engineering in class, but not everyone in class is planning to be an engineer. Even within engineering, there are many sub-fields (mechanical, chemical, etc) with specific ethical and safety issues that require specialized expertise. Write a reflection essay on the specific ethical challenges related to your field, and which might have been neglected in the general class discussion. What issues do you anticipate in your career path that other engineering students might not appreciate?

Appendix:

Comics used on Canvas

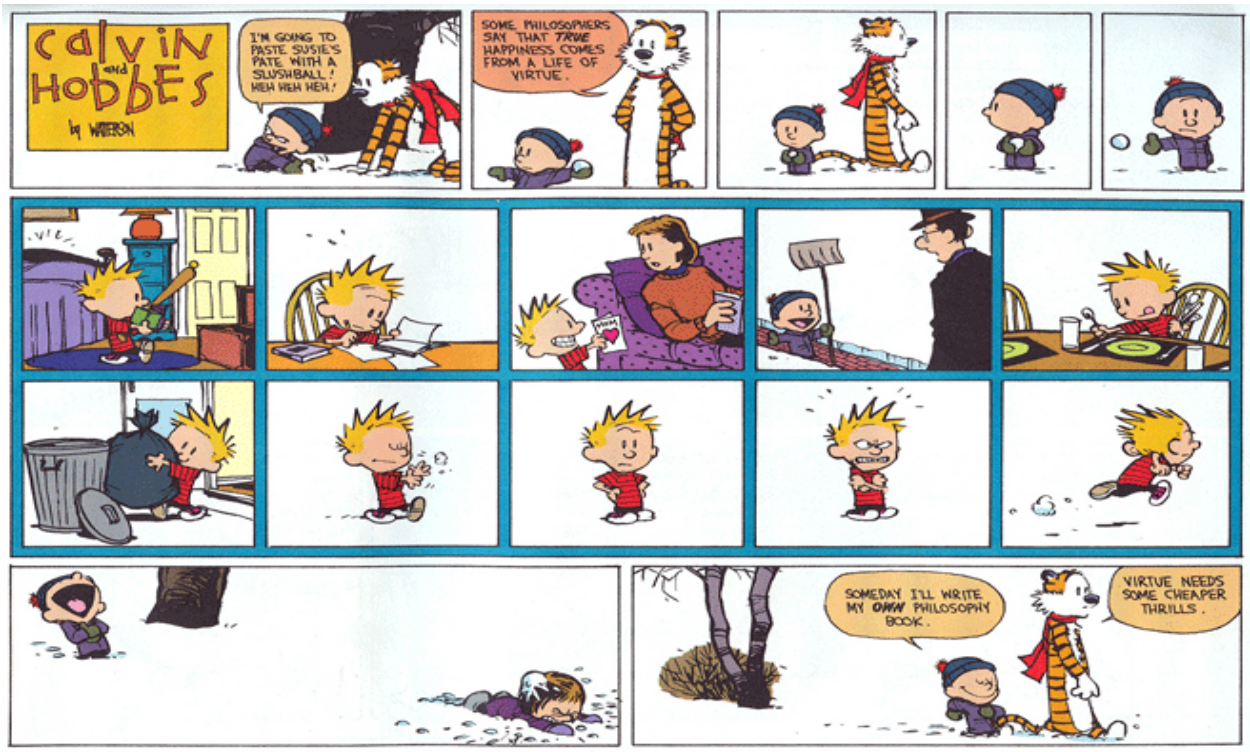
For the Lesson 1/Introductions thread:

Alt text: A Calvin and Hobbes comic. Calvin and Hobbes walk through the woods. Calvin: "Today at school, I tried to decide whether to cheat on my test or not. I wondered, is it better to do the right thing and fail... or is it better to do the wrong thing and succeed! On the one hand, underserved success gives no satisfaction... but on the other hand, well-deserved failure gives no satisfaction either. Of course, most everybody cheats some time or other. People always bend the rules if they think they can get away with it. ...then again, that doesn't justify MY cheating. Then I thought, look, cheating on one little test isn't such a big deal. It doesn't hurt anyone. ...but then I wondered if I was just rationalizing my unwillingness to accept the consequence of my not studying. Still, in the real world, people care about success, not principles. ...then again, maybe that's why the world is in such a mess. What a dilemma!" Hobbes: "So what did you decide?" Calvin: "Nothing. I ran out of time and had to turn in a blank paper." Hobbes: "Anymore, simply acknowledging the issue is a moral victory." Calvin: "Well, it just seemed wrong to cheat on an ethics test."

For the Unit 1 Discussion Board:

Alt text: Whenever I need to do some serious thinking, I go for a walk in the woods. There are always a million distractions out here. I don't believe in ethics any more. As far as I'm concerned, the ends justify the means. Get what you can while the getting's good - that's what I say! Might makes right! The winners write the history books! It's a dog-eat-dog world, so I'll do whatever I have to, and let others argue about whether it's

Unit 2 discussion board:

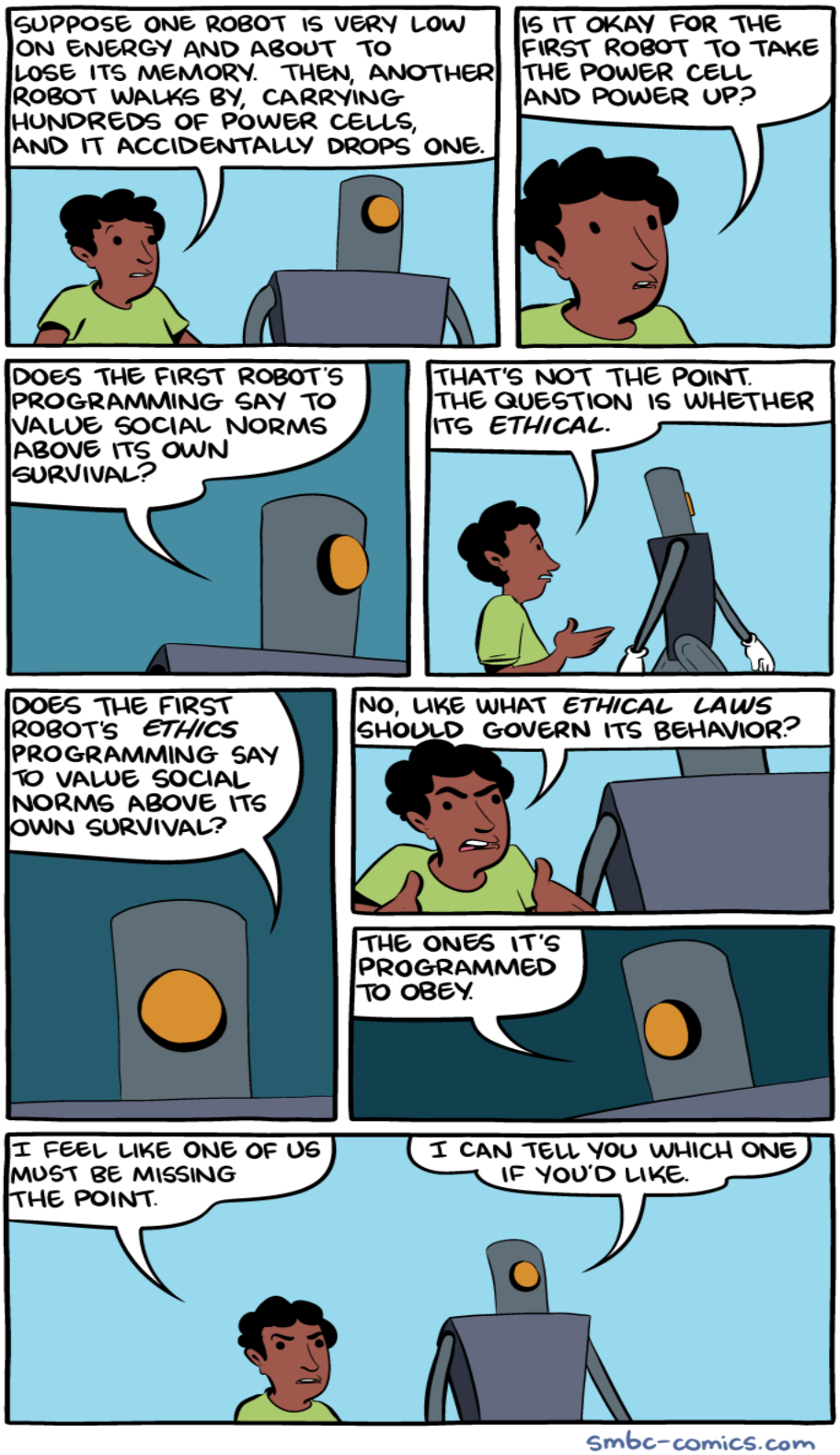


I don't know why we're wired this way, but we are.

Alt text: I'm going to paste Susie with a slushball! Heh heh heh! Some philosophers say that TRUE happiness comes from a life of virtue! Someday I'll write my OWN philosophy book. Virtue needs some cheaper thrills.

Unit 3 discussion board:

Unit 4 discussion board:



smbc-comics.com

Canvas Boilerplate

Introductions thread
Hello class! This is the first discussion thread for the semester. **You should complete the following three assignments for this thread:**

1. **Set your Canvas avatar** (**5 pts**)
2. **Introduce yourself to the class** (**5 pts**). You'll also want to introduce yourself to your Unit 1 group and arrange a presentation schedule in the Unit 1 Group Discussion thread, but in this thread you can introduce yourself to the entire class.
3. **Discuss the Lesson 1 lecture and reading material** (**15 pts**).

Leave your introductions in this thread. Completing introductions will earn 10 points of extra credit. Be sure to select an avatar for full credit!

This class depends heavily on your engagement in these forums, so it is important that we all get acquainted. Pick an avatar in your Canvas profile so we can recognize each other (it doesn't have to be your picture, just some unique, classroom appropriate image), and get comfortable with the format of these discussion forums because this is where we'll be doing most of our work. Introduce yourself below (preferred name, pronouns, etc), and be sure to answer:

- What is your major, year, career goals etc?
- Do you have any background in philosophy or ethics? If so, what did you study?
- What do you expect to learn from this class?
- Why do you think this class is a requirement at a technical school? Why is ethics important for engineers?
- We'll return to your expectations at the end of the semester. Any comments to your future self reading this intro in a few weeks?

You'll introduce yourself again to smaller groups a few times over the semester, so you might want to craft a short bio you can easily copy into future group discussions. I'll start: You can call me Dan, I use he or they pronouns, and I've been teaching this course at NJIT since 2014. I completed my PhD in Philosophy from the University of Illinois, Urbana-Champaign in 2014, and I also hold a BS in Computer Science from the University of California, Riverside from 2003. The philosophy of technology is my passion, and I love teaching this course online! I have strong opinions on these issues, and my biases will probably come through the in the lectures. That's why it’s important for us to hear from differing points of view. This class allows for a lot of diverse interaction, and I love watching the dynamics of these classes develop over the semester.

The format for this course is completely new for this Fall 2023 semester, and I'm not sure it will totally work, so your feedback will be important! I hope you all enjoy the course, I have a lot of fun putting it together!

Ethics Simulation Scenario 1

The Ethics Simulation is a group activity designed to be recorded as the second half of the Group Discussion podcast that students will complete at the end of each unit. Each simulation will present some scenario relevant to engineering ethics and the lessons and themes from the unit. I will give a brief discussion of the scenario, and I will identify key stakeholders in the scenario that students can choose to play for the simulation. The simulation brings these stakeholders together to address a specific issue. Each stakeholder will have some distinct interests and objectives in the simulation, and students playing the role should engage the simulation with those interests and objectives in mind. The simulation proceeds until some resolution is reached, or there's a consensus that no resolution will be reached.

Scenario 1: Airbag recall?

A public advocacy group has raised concerns about a potentially faulty airbag design in EthX cars after some recent crashes ending in fatalities were found to involve side airbags that failed to deploy. The airbags were manufactured by Temper8, a parts manufacturer that makes similar airbags for several major auto manufacturers. A representative for the National Highway Transportation Safety Administration (NHTSA) has convened a meeting of stakeholders to determine if the airbags should be recalled. A recall could have an impact on nearly 500,000 cars across several manufacturers. In this simulation, each party should make their case to the NHTSA representative for or against a recall.

Roles
Each of these roles represent key stakeholders in the Airbag Recall scenario. Students should distribute the roles among the group members, and they should each play their role by representing their interests and objectives as described below. Students can pair up on some roles, but the simulation works best if there are as many roles represented in the conversation as possible, so take every role before doubling up.

Keep the discussion friendly and professional! Students can play their role to the extent they and the group feel comfortable, and any student can end the simulation if things don't work for whatever reason.

- **NHTSA representatives:** The NHTSA representatives will lead the discussion during this ethics scenario. You have recently opened an investigation into the airbags, following several recent complaints filed after crashes with airbags that failed to

deploy. You have seen the files on these cases and know the details of the crashes. You've called this meeting among these stakeholders to determine if a recall of the airbags is necessary. The NHTSA policy is to issue a recall if the part creates an unreasonable safety risk or fails to meet minimum safety standards. For the purposes of this simulation, the investigation process requires considering the perspectives of each stakeholder to make a final decision. The representative's primary objective is to issue a quick but fair decision that protects the consumer and public safety as required by the law.

- **Consumer Safety Advocates:** Consumer safety advocates represent consumer interests and public safety, and are specifically representing the families of the victims of the recent EthX car crashes. You helped several clients file a complaint about this part to the NHTSA several months ago, and this meeting is the result of those efforts. If the NHTSA issues an airbag recall, this would set the basis for a class action lawsuit against EthX, with potentially large settlements awarded to the victims' families. It would also remove the faulty airbag from the roads, potentially saving future lives. Both are your explicit objectives in this simulation. You first became aware of a problem after a recent crash in which a family with two children were killed from a side impact collision where the airbags failed to deploy. Your independent research has found at least 12 similar cases in the last five years where EthX cars with Temper8 side airbags failed to deploy, and you're representing four clients as families of victims of those accidents in the meeting today, all of whom filed complaints to the NHTSA.
- **EthX representatives:** EthX is the manufacturer of the cars that are the focus of the NHTSA investigation. EthX maintains that its cars meet the minimal safety standards required by law, and that a recall is not necessary. A recall would impact a significant portion of their cars and would cost millions of dollars, so the EthX representative's biggest objective is to avoid the recall, or at least the responsibility of paying for the recall. The EthX representative at this meeting, who might represent EthX engineers and/or lawyers, is not aware of any performance issues for their airbags from their safety and testing team. The representative is also aware that their safety testing is not very rigorous by industry standards, although they believe it to still be within the safety standards required by law. If a fault in the airbags is found, the EthX representative plans to blame the issue on the airbag manufacturer Temper8, and will argue that Temper8 should be responsible for the cost of the recall.
- **Temper8 representatives**: Temper8 is a large manufacturing company with factories in several countries that makes airbags for several auto manufacturers, including EthX. Temper8 is recovering from a major scandal in 2015 where airbags made in one of their factories in Mexico were found to have a faulty manufacturing process, resulting in a recall of over 3 million vehicles to fix the faulty part and costing the company tens of millions of dollars. By 2018, Temper8 had completely reworked their manufacturing process in all its factories to mitigate such failures. The Temper8

representative, who might represent legal and/or engineering departments, is confident that the airbags made for cars in the last 5 years meet their updated quality control standards, and does not believe their part is faulty. However, they are not aware of the specific methods EthX uses to install the airbags in their cars. If there is a manufacturing defect, the Temper8 representative believes it is on the EthX side, and that they should not be responsible for any recall. Since the manufacturing process is largely the same, a recall of all airbags would implicate cars from many different manufacturers

- **Alliance for Automotive Innovation (AAI) representatives:** The AAI is a large trade association and lobbying group representing

Lesson 1: Introductions
- A: Challenger case study
- B: Scope of consideration
- C: Hoover

Unit 1: Ethical perspectives

Lesson 2: Ethics and Consequences
- A: Pinto
- B: Trolley Problems
- C: Banality of evil

Lesson 3: Duties and Obligations
- A: Whistleblowing
- B: NSPE code of ethics
- C. Hyatt Walkway collapse

Lesson 4: Virtues
- A: Honesty and Integrity
- B.
- C. VW dieselgate

Lesson 5: Group discussions
- Scenario 1

Unit 2: Case Studies

Lesson 6: Deepwater Horizon
- A: Technical failures
- B: Environmental impact

C: Political corruption

Lesson 7: Nuclear Disasters
- A: Technical failures
- B: Environmental impact
- C: Political consequences

Lesson 8: Geoengineering
- A: Climate science
- B: Technical challenges
- C: Political challenges

Lesson 9: Group Discussion
- Scenario 2

Unit 3: Research Project

Lesson 10: Research project part 1

Lesson 11: Research Project part 2

Unit 4: AI Ethics

Lesson 12: AI Ethics
- A: Can computers think?
- B: Algorithmic bias
- C: Facial Recognition case study

Lesson 13: Autonomous weapons and vehicles
- A: Autonomous weapons
- B: Autonomous vehicles
- C: Autonomy in robotics

Lesson 14: Technological unemployment
- A: Robots and workers
- B: Bullshit jobs
- C: Robot rights

Lesson 15: Group discussion
- Scenario 3

Assignment schedule:
Each unit students must prepare a presentation on the material for one lesson.

3 presentations total

Each lesson students must respond to other students 300 words engaged with their presentation. Not required for the week of presentation

2 responses/unit = 7 total responses

Each unit, students must meet with other students in the group for a discussion of at least 1 hour. 20-30 minutes should involve discussion of the unit presentations. Everyone must say something about the presentations of other students in each group. 30-40 minutes should roleplay the scenario. Note: you must complete the assignment. If you spend an hour talking about the presentations, you still need to roleplay the scenario for 30 minutes!

Participate in 3 total discussions

Research project: 1500 word total report

One additional 1,500 word essay

Can be two 700 word essays

Extra credit:

- Listen to any group discussion, write 500 words in response to the discussion. Required for students who miss a discussion.
- Leave replies of at least 200 words engaging with other student presentations