Humanities Syllabi NJIT Syllabi

Fall 2021

PHIL 334-453: Engineering Ethics

Daniel Estrada

Phil 334: Engineering Ethics
Syllabus

Instructor: Daniel Estrada, PhD
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Discord: https://discord.gg/NxFvdH7
Student Office Hours: Monday 11:30-12:30 PM Cullimore 419 and by appointment. Discord encouraged.

Online class discussions (extra credit): Wednesday 11:30 AM - 12:20 PM in WebEx

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). For each lesson, students are asked to watch a lecture video that introduces core lesson themes and materials. Students are asked to prepare short essays (written or video) expressing their thoughts on issues raised by the lesson, and to comment on other student essays in peer-directed discussion. 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. The final project will be to collect their best essays from the semester, and write a reflective essay on the value of their efforts this semester. Detailed course information, including grading rubrics and late policies, can be found below.

Course Goals:
- The primary goal of this course is for students to cultivate a sense of their own values, and of their capacity to act on their values in a professional context. Students will articulate their perspectives in a peer-directed, interest-motivated learning environment that encourages dialog, critical reflection, and independent research.
- Students will learn to recognize different kinds of ethical reasoning (consequentialist, deontologist, virtue based) as they appear in different engineering contexts.

- Students will be exposed to a number of detailed case studies of direct interest to professional engineering in order to better appreciate the workplace conditions in which ethical issues arise and how they might be resolved.
- Students will conduct scholarly research into a case study of their own choosing and will prepare a report that includes an ethical analysis and an annotated bibliography in order to practice writing, research, analytical, and critical thinking skills.
- Students will prepare two presentations on their research and on a lesson and themes of their choosing, in order to practice presentation and public speaking skills.
- Students will be introduced to ethical codes from institutions like the NSPE and other professional societies and regulatory bodies.

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:
- Each lesson consists of:
  - a **lecture** with **source material and slides**
  - a **discussion forum**
- Your assignment is to **watch the lecture, do the reading**, and **write in the discussion forum**.
- You should submit **one post** (350+ words or 3+ minutes) and at least **two replies** (150+ words each) to each lesson discussion.
- For **at least <u>three</u> lessons of your choosing**, write an **extended post** (700+ words or 7+ minutes) exploring the lesson themes and extended readings in more detail. Your three extended posts will be compiled into an **ethics report** at the end of the semester.
- A **research project** on a recent historical case study of your choosing will replace normal posts for Lesson 10 and 11.

- You are asked to prepare two short **presentations.** [Presentation schedule is here](#). See details below and on Canvas.
- Forum posts, replies, and peer reviews are due **according to the schedule on Canvas.**
- Posts and replies must be submitted to **plagiarism detection** each week to receive credit for those assignments.
- You should expect **each lesson** to require <u>**at least**</u> **five hours of work** to prepare.
- **That's it!** No other exams or finals will be required.

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.

Assignment Details:

This course consists of **15 lessons**. Lessons consists of:

- A short introductory **lecture video** with **slides**.
- A selection of **reading material**
- A **discussion forum**

You are required to watch the video lecture and review the reading material. From this material you will prepare a short written or audio/video essay to publish in the discussion forum on Canvas. At least three of your essays should be extended posts, in which you give more detailed critical analysis and scholarship. You are also required to engage your peers in discussion by leaving replies in the forum. In lessons 10 and 11 you are asked to conduct scholarly research on a historical case of engineering ethics of your own choosing, and to present your findings in the discussion forum. In Lesson 15, the final lesson, you are asked to compile your three extended posts along with an essay reflecting on your work over the semester. Finally, you are asked to prepare two short presentations: one on the subject of your research project, and another on one lesson of your choosing, which you'll schedule on Canvas. These are the only assignments for the course, and your grade will depend on your performance on these assignments. **There will be no midterms or finals.**

Lectures

Lectures are short introductions to critical issues and concepts for each lesson. Lectures will also contextualize that week's reading material. Lectures consist of a video lecture and accompanying slides. Lectures are designed to guide you through the reading material, and to

help you understand how the different sources are related to the central themes of the lesson. It is your responsibility to watch the lecture video, explore the lesson slides, and to review the reading material. The "Core readings" explore the central themes and cases in the lesson; the "Optional readings" explore peripheral issues. You are free to write about any of the readings in your posts, replies, and presentations.

Note: I supply a LOT of reading material for each lesson, and **you are NOT responsible for mastering it all**. You are asked to get a good enough sense of the material to select a topic for your essay and engage your peers in conversation. You should review the material with an eye towards these objectives. In some cases, quickly skimming a 10 page document might be sufficient for this purpose. You should devote most of your reading time to researching your chosen essay topic, and focusing on one or two pieces to study in detail. Don't try to cover everything superficially, I prefer you go deep into the issues that most interest you. It is your responsibility to use your time with the material wisely. **Expect to spend at least five hours *per lesson* to complete the assignments for this course**!

Discussion forums

Discussion forums on Canvas are where you post your writing assignments and engage in discussion with classmates. For each lesson you are required to produce a short written or video essay, which you should **post as a new reply** for that lesson's discussion forum. If you are making a video essay, upload your video to your NJIT Youtube account, and embed the video in your discussion post so it can be played directly in the discussion forums. You are also required to leave two short replies to your classmates posts. **Discussions will account for ~60% of your overall grade.**

Online discussion assignments are designed for you to critically engage the course material, to express your own thoughts and consider the thoughts of others, and to raise questions and challenges to the various philosophical and ethical positions covered in class. **Unless otherwise instructed, you are not required to write on any specific article or topic.** I want your writing to be self-motivated and honest, so you are encouraged to select the material that helps you to best express your own views. When you are interested in your essay topic you will find it easier to express your views, which will improve your writing and help others engage your work. Specific instructions for posts can be found on the lesson in Canvas where it is assigned.

Written posts should be a minimum of 300 words, or roughly one double-spaced page of text in a standard font. I strongly encourage you to prepare your essay in a word processor (MSWord or GDocs) to edit for spelling and grammar before copy/pasting into Canvas. Make

sure to paste the essay directly in the discussion forum so others can easily read and discuss your work. **Uploaded files do not meet the minimum requirements.**

<u>Audio/Video essays should be a minimum of 3 minutes of recorded discussion and presentation</u>. Video is optional, audio recordings are fine; please let YouTube auto-caption your videos, and you might want to check and revise the captions once they appear. Slides are helpful but not required for posts. Please upload your video to Canvas or Youtube, and embed your media file directly in the Discussion forums so other students can easily engage. Grading rubrics and expectations for A/V essays are otherwise the same as written essays.

<u>Replies must be written text, and should be at least 150 words each</u>, or a short paragraph. Replies below the minimum word count may earn less than full credit. You need at least **two** full-length replies to receive full credit for the lesson's reply requirements (see grading policy below), but you can post three or more shorter replies to earn the same credit. Yes, your replies to people who reply to you **do** count for reply credit, but remember that the point of the discussion is to engage the views of your peers, not just to defend your own views.

I have a "hands-off" approach to the discussion forums. I'll poke in if I think it is necessary or if I'm interested in the argument, but I'll tend to let the discussion develop among students without intervention. The point of the assignment is to enable peer engagement and self-guided research. Writing and reading on the discussion forum is the main learning environment for this class, so please take this time as seriously as you would a traditional classroom. **Don't treat your replies as busy work!** Put in effort not just to write well, but also to listen to and engage your peers. This is a rare chance to talk with your colleagues in open discussion on how your values intersect with your shared career goals. This is an opportunity to hear from lots of different perspectives and engage different points of view, which is absolutely critical for a topic like ethics. Please make the best of this learning community!

<u>Extended posts</u>

For **any three lessons** of your choosing (except the research project), you are asked to put additional effort into your lesson's post. If some topic touches on an active interest of yours, or you just want to go deeper than a single page post, share your interests with the class. Extended posts **should be at least 700 words** (or about 2.5 double spaced pages in a standard font, or about 7 minutes of video) and should demonstrate additional effort at critical analysis, independent research, and thoughtful introspection than a typical lesson's post. Extended posts will be graded by the same rubric as a regular post, and earns the same points when submitted. Extended posts will earn additional credit when compiled for your ethics report at the end of the semester. See details below.

Ethics report

For Lesson 15, the final lesson, you are asked to review your work over the semester. Prepare a single document in (MSWord of GDocs) that collects your three extended posts, your research project, and any other material that you believe reflects your best work over the semester. Review this work. At the front of the document, include a short essay discussing what lessons you've taken from the course, how your work demonstrates these lessons, and how you think the course will impact your future decision making and career trajectory. Submit the entire collection on Canvas.

Plagiarism check (required)

Students are required to submit a Word document (.doc or docx) including their full **Lesson post AND replies** to the lesson's Plagiarism Check assignment. Plagiarism checks are **due on the same day as replies**. Assignments that are not submitted to plagiarism check will not be graded.

Research project

The research project will extend over Lessons 10 and 11. You are asked to conduct scholarly research into a recent (after 1950) historical event relevant to engineering ethics. You cannot pick one of the major cases discussed in the previous lesson material (eg, Challenger, Pinto, Deepwater Horizon). I will provide example sources and events, but students are encouraged to explore cases directly related to their interests and career path. For Lesson 10, students are asked to present a neutral overview of the event, its causes and consequences, and the people and organizations involved. In Lesson 11, students are asked to evaluate the same case from an ethical perspective, and to derive lessons from this analysis that might be helpful to future cases. Students are asked to collect at least four primary or scholarly articles in the course of their research, and to present this research in the form of an annotated bibliography, which will replace the quiz credit for these lessons. This **research project will account for ~20% of your grade.**

Presentations

You are asked to complete two presentations during the semester: one covering your research project, and a second covering one lesson of your choosing. Presentations will be scheduled on a GDoc linked on Canvas, check the schedule for more details. **Lesson presentations** should be around 10 minutes long, and should highlight important themes from the lesson, explore ideas more deeply through additional research, and prompt the class for feedback and discussion. This is your chance to lead the class conversation, so use our attention wisely! You

can build off my lesson slides, or you can develop your own. **Research presentations** should be around 5 minutes long, and should review the details of the case study students choose for their research projects in Lessons 10 and 11. Explain what happened, who is responsible, provide a brief ethical analysis, and point students to further details in your full report in the discussion forums. Research presentations should be short and sweet, so we can cover all student projects in a short time. Slides aren't necessary, although a picture or two might help.

Presentations should include time for Q&A with the instructor and other students in class. Students may choose to pre-record their presentations for playback during the scheduled meeting times. See canvas for more details on the assignment. **Presentations count for 20% of your grade!**

Peer reviews (extra credit)

Canvas will automatically assign you two Peer Review assignments after a lesson's replies are due if you submitted your post on time. **Peer Reviews are optional, and should NOT be confused with your required Lesson Replies**. Peer Reviews are for providing peer grading feedback on student's work. You will use the same grading rubric I use to grade assignments, and you'll be given space to leave comments to the author. **These comments are *NOT* anonymous,** students will see your name when you grade their work. The goal of peer review is a) to provide another avenue for feedback and peer engagement over scholarship and writing, b) to give students insight into the grading process, in order to improve their own writing assignments, and c) as a double-check on my own grading practices, and to make sure my grades are fair and in line with class expectations. **Please do NOT comment on grading or assignment expectations in the discussion forum!** Keep the discussions focused on the lesson themes and the content, and save your comments on style and grading for the peer review.

Extra credit

Besides attendance credit and peer review, there will be two extra credit essays available in a special Extra Credit module, worth a total of 40 additional points. Students can also submit class-appropriate Engineering Ethics related memes. Details can be found on Canvas.

Honors Sections: See Honors addendum on Canvas

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. In

pandemic conditions we all need to be more flexible with scheduling and difficult work conditions; I understand how medical issues or disability can complicate these challenges. I've put captions on all the cartoons I use in the discussion forums, and my YouTube lectures and WebEx sessions will have captions auto-generated. 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 letting me know what's up, I'm sure we can figure something out =)

For Fall 2021, I will be streaming all class sessions online. If you are scheduled for a live classroom, but you feel sick or just don't want to come into the classroom, you will be able to participate in class through WebEx and Discord without penalty.

Late Policy

Assignments are due at midnight according to the schedule on Canvas. I'll allow a short (~30 min) grace period before material is considered late. Late posts and replies can be submitted until the following post/reply due date for reduced credit. After this period, late posts and replies will not be accepted for credit. Please do not submit late work long after the deadlines (like at the end of the semester), because such work will not earn credit without prior arrangement.

My late policy is strict, frankly because everything else in the class is relatively easy. Staying on top of the assignment schedule is your primary obligation in class, and it is important that you stay in sync with peer discussions throughout the semester. Material is made available online well in advance of due dates, allowing students to work around their other scheduling demands. It is your responsibility to put aside the time to do the work alongside your classmates each week. Please stay on top of the assignment schedule. Failing to complete assignments on time is the most common way to fail this class.

Extensions

If you anticipate missing future assignments, extensions must be granted ahead of the due date. Conferences, major school projects and exams, National Reserve duty and other volunteer service, expected delivery dates, and other such interruptions of the normal class schedule are good reasons for extensions on assignments, and are typically anticipated well in advance of assignment due dates. To get an extension, email me at least two days before the assignment deadline. **Extensions will not be granted within 48 hours of the due date.**

Excused absences: If you have special circumstances that prevent you from submitting work on time, such as a medical or mental health emergency, a death in the family, or other unanticipated circumstances, please contact the NJIT Dean of Students and explain your

situation using this [Student Concern form](#). The point of contacting the Dean is to make sure you are receiving the proper support as a student. The form is not to punish you or 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.

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. **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.

Students who are retaking the class should plan to complete all assignments fresh. 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 from previous semesters will be penalized and given 2/3rd credit (20/30 points). Replies from previous semesters will not be accepted for credit.

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.

Grading Policy

This is an ethics class, and your writing assignments will often be expressions of your own thoughts and beliefs on ethical issues. So I want to be clear that **your grade will not depend on whether anyone (including me!) agrees with your views**. You are encouraged to think independently and to bring your own values and interests to our discussions. If you disagree with the views being presented or discussed in lecture and readings, you are encouraged to respectfully say why and explain your views and criticisms. Stating your personal views openly will not affect your grade. I don't claim to be free of bias, but the grading rubric for this course is not designed to reward you for agreeing with my personal values. If you spot biases in my lecture and reading materials, engage and counter them with your own perspectives and sources. If you spot biases in your grades, please talk to me about it or report your concerns to the Dean of Students. I do not want you to feel uncomfortable for speaking honestly from your perspective in these discussions, and I will work to counter any sources of discomfort, including from myself. I am committed to creating a safe, respectful, and constructive educational community. I trust that all NJIT students share these goals.

Many students at NJIT struggle with abstract writing assignments. Many students do not have English as their first language. **So I also want to be clear that your writing will <u>not</u> be graded on grammar, spelling, or fluency in English**. The goal of this course is not to write the perfect essay. The goal is to provide all students the opportunity to reflect on the ethical dimensions of their work by engaging in active research and discussion, in a peer-driven, collaborative environment. Spending time on thoughtful philosophical reflection is an incredible privilege, and I hope you take advantage of it. If you sometimes trip over your words while sincerely engaged in that process it will not count against you. That said, clarity is a virtue in communication! For the sake of your readers, **please reread and edit your drafts** before submitting them online.

Your grade will largely depend on my impression of how seriously you have engaged with the course material and your classmates in a thoughtful discussion of the issues. Substantive, thoughtful posts and replies will be given more credit than half-baked or last-minute posts and replies that are transparent attempts to meet the minimum requirements. To do well in class you need to demonstrate that you are thinking critically about the issues, that you're engaging the readings earnestly, that you're taking the time to express your thoughts carefully, and that you are listening and responding to the contributions of your peers. The grading rubrics are designed to emphasize your critical peer engagement in the class discussion forum.

Meeting the default requirements for this class should be relatively easy with a few hours of dedicated work. Anyone who puts in minimal effort should be able to pass this class.

However, earning an "A" will not be easy. Earning an A grade means going beyond the minimum requirements to engage deeply with the material and your peers. **Detailed grading rubrics can be found on Canvas.**

<u>**Grade calculation**</u>

Each lesson (except 10 and 11) is worth **50 points**:
- Discussion: 50 pts
    - 350+ word post: 30 pts
    - 150+ word replies (x2): 20 pts max (10 pts each)

You need at least one post and at least two replies per lesson for full credit. You can leave more than two replies in each lesson, but cannot receive more than 30 total reply points per week. **Posts and replies have firm deadlines.** Late posts can earn a maximum of 25 points; late replies can earn a maximum of 7 points each. See the late policy above for details.

Research projects (lessons 10 and 11) are worth a **maximum of 100 points each:**
- Research presentation: 60 pts (Twice a normal post!)
- Replies: 20 pts max. (10 pts each)
- Annotated Bibliography: 20 pts

With 15 lessons, the total points for the semester is points:
- Introductions + Canvas avatar = 20 pts
- 12 normal discussions (posts and replies) x 50 pts each = 600 pts
- 2 research projects x 100 pts = 200 research pts
- Research project presentation: 50 pts
- Lesson presentation: 150 pts
- Ethics report: 100 pts
- **1120 total points possible**

Extra credit points available:
- 13 lessons * 2 peer review = 26 points
- 2 extra credit essays x 15 pts each = 30 points
- Engineering Ethics memes = 5 points
- **61 extra credit points possible (~5% of total grade)**

Final grades are calculated on the following scale. :

- A (90%) = 1005+
- B+ (85%) = 950
- B (80%) = 895
- C+ (75%) = 840

- C (65%) = 728
- D (50%) = 560
- F = less than 560

Notes: There is a 5 point tolerance for bumping a grade to the next letter when calculating final grades.

Tentative schedule and readings

Welcome Lecture

Welcome Slides

Lesson 1: **Engineering social systems**

Lecture 1, Slides

Core readings:
- Textbook pg 88-100: Engineering as social experimentation
- Textbook pg 11: Herbert Hoover, 1951 "The great liability of the engineer"
- Winner, 1986 "Do Artifacts have Politics?"
- Wiener, 1956 "I am a mathematician" (excerpt pg 324)

Optional readings:
- Strogatz How things in nature tend to sync up
- Millennium Bridge, London
- Carpenter's 1991 Pong experiment
- TwitchPlaysPokemon (2014), r/place (2017)
- Case: Parable of the polygons, Evolution of trust

Lesson 2: **The scope of ethical consideration**

Lecture 2, Slides

Core readings:
- Textbook Appendix B (pg 300ff): Professional ethical codes
- Textbook Questions 1-3 (pg 105-106): Professional roles
- Textbook (pg 106-113): Challenger Case Study
- NSF (2019) Report on Women, Minorities, and Persons with Disabilities in Science and Engineering
- AAUW (2010) Why so few?
- Wallace (2005) This Is Water (password: water) (full text)

Optional readings:
- Stonyer (2001) The 'problem' of Women in Engineering
- Zunger (2017) So, about this Googler's manifesto
- Wallace (2004) Consider the lobster
- Leopold (1949) The Land Ethic

Lesson 3: **Ethics and consequences: The Ford Pinto**

Lecture 3, Slides

Core readings:

- Thomson (1984) The Trolley Problem
    - video, wiki, kym
- Ford Pinto: video, wiki, Textbook 3.1 (page 54-59)
- Dowie (1977) Pinto Madness

Optional readings:
- Consequentialism: wiki, SEP
- SEP: Doing vs allowing harm
- Awad et al (2018) The Moral Machine, website
-     Jacques (2019) Why The Moral Machine is a Monster
- Rosenblatt (1994) How do tobacco executives live with themselves?

Lesson 4: **Dennis Gioia and the pressure to conform**

Lecture 4, Slides

Core Readings:
- Textbook 6.1.1 (pg 146-172): Workplace rights and responsibilities
- Gioia: Pinto Fires and Personal Ethics
- Elevator conformity, Waiting room conformity
- First Follower

Optional Readings:
- Asch conformity experiment (video)
- Milgram obedience experiment (video)
- Arendt (1963) Eichmann in Jerusalem
- Katz (2011) The Nazi Engineers

Lesson 5: **Duties and Obligations: Whistleblowing**

Lecture 5, Slides

Core readings:
- Textbook section 3.2 (pg 60-66): Loyalty and obligations
- Textbook section 6.4 (pg 172-180) Whistleblowing
- De George (1981) Ethical Responsibilities of Engineers in Large Organizations
- Birsch (1995) Whistleblowing, ethical obligation, and the Ford Pinto case

Optional readings:
- Ramirez (2007) Blowing the Whistle on Whistleblower Protection: A Tale of Reform Versus Power
- Khan (2018) Whistling in the Wind: Why Federal Whistleblower Protections Fall Short of their Corporate Governance Goals
- Deontology SEP/Wiki
- Categorical Imperative SEP/Wiki
- Noble lies Wiki

Lesson 6: **Honesty, Integrity, and Virtue**

[Lecture 6](#), [Slides](#)
Core readings
- Textbook page 66-72: Competence and loyalty. Community and the Golden Mean.
- Textbook Chapter 7 (pg 189-216): Virtues of engineering
- Harris (2008) [The Good Engineer](#)
- Paine (1994) [Managing for Organizational Integrity](#)

Optional readings
- Chun (2016) [What Aristotle can teach firms about Corporate Social Responsibility (CSR)](#)
- Rea et al (2016) [Corporate ethics can't be reduced to compliance](#)
- Sim (2010) [Rethinking virtue ethics and social justice with Aristotle and Confucius](#)
- Golden Mean [SEP](#)/[Wiki](#)
- Moral Luck [SEP](#)/[Wiki](#)

Lesson 7: **Ethical Codes**

[Lecture 7](#), [Slides](#)
- NSPE [Code of Ethics](#)
- NSPE [Board of Ethical Review](#)

Lesson 8: **Deepwater Horizon Oil Spill**

[Lecture 8](#), [Slides](#)
Core readings:
- Ingersoll [BP and the Deepwater Horizon Disaster of 2010](#)
- BBC Horizons (video, 1 hr): [BP Oil Spill: The Untold Story](#)
- BBC In Focus (video, 1hr): [Profit Pollution and Deception: BP and the Oil Spill](#)
- Klein: [A hole in the world](#)
- Houke: [Worst Case and the Deepwater Horizon Blowout: There Ought to Be a Law](#)
- Smith et al: [Analysis of Environmental and Economic Damages from British Petroleum's Deepwater Horizon Oil](#)

Additional sources:
- Wikipedia: [Deepwater Horizon Oil Spill](#)
- Image: [6 steps that doomed the rig](#)
- Image: [What happened on the Deepwater Horizon](#)
- Image: [xkcd: Lakes and Oceans](#) (warning: large!)
- Konopka "[Public, Ecological, and Normative Goods: The Case of Deepwater Horizon](#)"

Lesson 9: **Geoengineering**

Lecture 9, Slides

Core readings:

- Textbook Ch 8 pg 219- 225, 232-237: Environmental ethics
- Baez: Temperature
- Lawhead: Climate Change by Design (Prezi)
- climate.nasa.gov

Optional:

- Robock: Is geoengineering research ethical?
- Bloomberg: What's really warming the world?
- Rosen: Biosequestration
- Climate Change Calculator
- XKCD: Earth's Temperature History

Lesson 10 & 11: **Independent Research Project**

Lecture 10 & 11, Slides

Requirements:

- Select a recent historical event
- Do scholarly research, write up your findings and analysis
- Prepare an annotated bibliography (minimum 4 scholarly sources)
  - Must be posted as the first reply in your discussion thread
- Two parts:
  - Lesson 10: What happened? + 2 sources w/ annotations
  - Lesson 11: Ethical Analysis + all 4 sources w/ annotations
- 700+ word post each week
- 2 replies/week as normal, no quizzes
- Entire report (2 posts + bibliography) to Plagiarism Detection for Lesson 11

Lesson 12: **Artificial Intelligence and Ethics**

Lectures:

- Part 1: History of AI Lecture & Slides
- Part 2: The Day Computers took over the World Lecture & Slides
- Part 3: Machine Learning and Baby Computers Lecture & Slides
- Part 4: Algorithmic Injustice Lecture & Slides
- Part 5: Robot Rights Now Lecture & Slides

Core readings:

- Turing (1950) Computing machinery and Intelligence
- Asaro (2006) What should we want from a robot ethic?

Optional readings:

- Lots of resources in the slides!
- Boulamwini (2017) How I'm fighting bias in algorithms

- Boulamwini (2018) [AI, aint I a woman?](#)
- HPE (2018) [The Ethics of AI](#)

Lesson 13: **The autonomy of machines: weapons and drones**

[Lecture 13](#), [Slides](#)

Core readings:
- Textbook pg 259, 266-271: Ethics of military technologies
- Roff and Moyes (2016) [Meaningful Human Control, Artificial Intelligence, and Autonomous Weapons](#)
- Lin (2016): [Why Ethics Matters for Autonomous Cars](#)

Optional readings:
- Asaro (2016): [“Hands up, Don't shoot!” HRI and the Automation of Police Use of Force](#)
- FLI: [Open letter on autonomous weapons](#)

Lesson 14: **Technological Unemployment and the future of AI**

[Lecture 14](#), [Slides](#)

Core readings:
- Textbook pg 258: Job Elimination
- Video: [Humans need not apply](#)
- Fuller: "[Earn a living](#)"
- Frey and Osborne - [The Future of Employment](#)

Optional readings:
- Srnicek and Williams: [Inventing the Future](#)
    - Philosophical Disquisitions: [Demanding a post-work future](#)
- Bill Watterson: [A Cartoonist's Advice](#)

Lesson 15: **Wrap up**

[Lecture 15](#), [Slides](#)

All assignments and extra credit due

No quiz, no replies