

Spring 2024

## **PHIL 334-454, 456, 458, 460: Engineering Ethics**

Amber George

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**PHL 334**  
**Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering**  
New Jersey Institute of Technology  
Spring 2024

Dr. Amber E. George  
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**Office Hours:** Monday & Friday 10:00 AM- 12:00 PM EST

**Prerequisites/Co-requisites:** HUM 102 with a grade of C or higher, and one History and Humanities GER 200 level course with a C or higher.

**Course Description:** This course presents a philosophical examination of the nature of engineering practice and applied technology. We will consider such questions as: How do the societal functions of engineers and the practical application of technologies relate to fundamental moral and intellectual values? What moral obligations are implied by the uses and creation of technology? What are the ethical duties of engineers in the practice of their careers?

**Student Learning Outcomes (SLOs)**

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

1. Identify ethical issues
2. Describe different ethical decision-making approaches
3. Analyze engineering ethics cases
4. Apply different ethical decision-making approaches to engineering ethics cases
5. Recognize the ethical responsibilities of engineers
6. Evaluate the broader societal and environmental impacts of engineering
7. Develop and defend positions about issues in engineering ethics

**Required Text:** Harris, C. E., et al. (2019). *Engineering Ethics: Concepts and Cases*, 6<sup>th</sup> ed. Cengage.  
Additional course materials are in each module.

Teaching/Learning Strategies	Evaluation Methods	Percentage of Final Grade
<p><b>Discussion Board</b> <b>(SLOs 1, 2, 3, 4, 5, 6, 7)</b> Each week one (1) graded discussion. Each discussion requires one (1) initial response and two (2) substantive peer responses.</p> <p>All initial posts should cite appropriate resources, whether course materials or outside sources using APA citations, 7<sup>th</sup> edition.</p> <p>All initial posts must be made by the initial deadline (Friday) and follow up posts made by the last day of the module week (Sunday).</p> <p>Discussions posts will not be accepted past this Sunday deadline each week. The late penalty will be assessed according to the due</p>	Writing responses to prompts and peers.	45%

date of the initial post. Additional directions and guidelines are on Canvas.		
<b>Quizzes/Exams</b> (SLOs 1, 5, 6) At the end of some weeks, there is a quiz/exam that will cover the previous material. This assesses your completion and comprehension of the module materials and reading requirements. More details are on Canvas.	Multiple-choice questions, true-false, select all that apply.	25%
<b>Written Assignments</b> (SLOs 1, 2, 3, 4, 5, 7) These activities are interactive and help you engage with ideas and experiences that bring about questions, comparisons, insights, criticisms, speculations, and tentative conclusions. The specific requirements, along with a grading rubric for each assignment, are located online.	Scaffolding writing assignment leading to a final essay	30%
<b>Readings/Audio</b> <b>Visual Components</b>	-	-
	Total	100%

**Topical Outline of Modules:** Each module begins on Monday and ends Sunday. The following week's material will be available to you by Thursday, so feel free to work ahead. All due dates are for Eastern Standard Time (EST) zone.

**Instructor Feedback & Response Time:** I will typically reply to your questions, concerns, and comments within 24-48 hours. Assignments will typically be graded within one week from the due date.

**Instructor-Learner Communication:**

Students have every opportunity to exchange ideas and express concerns with me. As such, communication is as follows:

**Email/Canvas Messages:** This is the primary method I will communicate with you and with which you should communicate with me. My email is [Amber.e.george@njit.edu](mailto:Amber.e.george@njit.edu). You should check your email account each day as important course information might be waiting for you. During weekdays, I will do my best to respond to student messages within 24 hours. Over weekends, my goal is to respond to emails within 48 hours.

**Activity Feedback:** I will always provide feedback on all graded assignments. If for some reason, your work misses the mark, I will leave you feedback identifying what you can do to improve. My goal is to assess your submissions within a week of the assignments' due dates.

**Office Hours:** Monday and Friday mornings 10AM-12PM. I can also be available by appointment outside of these hours. Please note that I am in New York and, therefore, on EST.

**Announcements:** I will use the Announcements area in Canvas to broadcast course-related information to everyone in the class. Please check the Announcements frequently.

**Reading/Assignment Schedule (Meeting-by-Meeting Outline):**

**Class Term Begin:**

**1/16/24**

<b>1/16 Module 1: Introduction to the Subject</b>			
<b>Theory Content:</b>	<b>To Read/Review:</b>	<b>To Do:</b>	<b>Due Dates</b>
<ul style="list-style-type: none"> <li>The nature of professional identity and professionalism</li> <li>Why engineering is essential to human welfare, well-being and quality of life</li> <li>The Importance of having a critical attitude toward technology</li> </ul>	<p>The "Start Here" module</p> <p>Chapter 1 "Engineers: Professionals for the Human Good"</p> <p><i>Module 1 Content</i></p>	<p>Discussion 1 Initial Post</p> <p>Discussion 1 Peer Posts</p>	<p>January 19, 2024</p> <p>January 21, 2024</p>
<b>1/22 Module 2: Ethical Approaches to Engineering</b>			
<b>Theory Content:</b>	<b>To Read/Review:</b>	<b>To Do:</b>	<b>Due Dates</b>
<ul style="list-style-type: none"> <li>The nature of moral theories</li> <li>The basics of utilitarian moral approaches to solving moral problems</li> <li>The nature of virtue ethics</li> </ul>	<p>Chapter 2 "A Practical Ethics Toolkit"</p> <p><i>Module 2 Content</i></p>	<p>Discussion 2 Initial Post</p> <p>Discussion 2 Peer Posts</p>	<p>January 26, 2024</p> <p>January 28, 2024</p>
<b>1/29 Module 3: Code of Ethics</b>			
<b>Theory Content:</b>	<b>To Read/Review:</b>	<b>To Do:</b>	<b>Due Dates</b>
<ul style="list-style-type: none"> <li>An understanding of codes of ethics</li> <li>The nature of engineering codes of ethics</li> <li>The correlation between codes of ethics and protection of employees</li> </ul>	<p>Appendix (pp. 269-174)</p> <p><i>Module 3 Content</i></p>	<p>Discussion 3 Initial Post</p> <p>Discussion 3 Peer Posts</p>	<p>February 2, 2024</p> <p>February 3, 2024</p>
<b>2/5 Module 4: Responsibility, Accountability, and its Challenges in Engineering</b>			
<b>Theory Content:</b>	<b>To Read/Review:</b>	<b>To Do:</b>	<b>Due Dates</b>
<ul style="list-style-type: none"> <li>The nature of responsibility and accountability</li> <li>The fundamental impediments or obstacles to responsibility</li> <li>Suggestions for how virtues can assist engineers in coping with impediments</li> </ul>	<p>Chapter 3 "Responsibility in Engineering"</p> <p><i>Module 4 Content</i></p>	<p>Discussion 4 Initial Post</p> <p>Discussion 4 Peer Posts</p> <p>Module 4 Quiz</p>	<p>February 9, 2024</p> <p>February 11, 2024</p> <p>February 11, 2024</p>
<b>2/12 Module 5: Tensions Between Responsibilities and Organizations</b>			
<b>Theory Content:</b>	<b>To Read/Review:</b>	<b>To Do:</b>	<b>Due Dates</b>
<ul style="list-style-type: none"> <li>The nature of organizational culture, communication, and managerial practices</li> <li>An understanding of whistleblowing and its relationship to loyalty</li> <li>How to preserve moral integrity and moral decision making</li> </ul>	<p>Chapter 4 "Engineers in Organizations"</p> <p><i>Module 5 Content</i></p>	<p>Discussion 5 Initial Post</p> <p>Discussion 5 Peer Posts</p> <p>Stage 1 of Final Essay</p>	<p>February 16, 2024</p> <p>February 18, 2024</p> <p>February 18, 2024</p>
<b>2/19 Module 6: Trustworthiness in Relationships</b>			
<b>Theory Content:</b>	<b>To Read/Review:</b>	<b>To Do:</b>	<b>Due Dates</b>
<ul style="list-style-type: none"> <li>An understanding of trustworthiness in engineering</li> <li>An appreciation of different forms of dishonesty</li> <li>Issues related to conflicts of interest</li> </ul>	<p>Chapter 5 "Trust and Reliability"</p> <p><i>Module 6 Content</i></p>	<p>Discussion 6 Initial Post</p> <p>Discussion 6 Peer Posts</p>	<p>February 23, 2024</p> <p>February 25, 2024</p>
<b>2/26 Module 7: Responsibility in Design and Operation of Products or Engineered Systems</b>			

<p>Theory Content:</p> <ul style="list-style-type: none"> <li>The risks imposed on the public in the design and management of engineered systems</li> <li>Assessing harm in terms of quantifying and qualifying risks</li> <li>The nature of informed consent concerning the distribution of risk</li> </ul>	<p><b>To Read/Review:</b></p> <p>Chapter 6 "The Engineer's Responsibility to Assess and Manage Risk" <i>Module 7 Content</i></p>	<p><b>To Do:</b></p> <p>Discussion 7 Initial Post Discussion 7 Peer Posts Module 7 Quiz</p>	<p><b>Due Dates</b></p> <p>March 1, 2024 March 3, 2024 March 3, 2024</p>
<b>3/4 Module 8: Cultural Diversity in Engineering</b>			
<p>Theory Content:</p> <ul style="list-style-type: none"> <li>The nature of international technical standards for engineers</li> <li>Potential moral dilemmas engineers may encounter working in international areas</li> <li>How to approach possible conflicts of engineering standards in different cultures</li> </ul>	<p><b>To Read/Review:</b></p> <p>Chapter 8, "Engineering in the Global Context" <i>Module 8 Content</i></p>	<p><b>To Do:</b></p> <p>Discussion 8 Initial Post Discussion 8 Peer Posts Stage 2 of Final Essay</p>	<p><b>Due Dates</b></p> <p>March 8, 2024 March 10, 2024 March 10, 2024</p>
<b>3/11 Spring Break</b>			
<b>3/18 Module 9: Engineering Meets Environmental Ethics</b>			
<p>Theory Content:</p> <ul style="list-style-type: none"> <li>The history of the environmental movement</li> <li>The nature of sustainability</li> <li>The conflicts between sustainability and economic development</li> <li>Why engineers should be concerned about the environment</li> </ul>	<p><b>To Read/Review:</b></p> <p>Chapter 7, "Engineering and the Environment" <i>Module 9 Content</i></p>	<p><b>To Do:</b></p> <p>Discussion 9 Initial Post Discussion 9 Peer Posts</p>	<p><b>Due Dates</b></p> <p>March 22, 2024 March 24, 2024</p>
<b>3/25 Module 10: Human Engineering Meets Animal Ethics</b>			
<p>Theory Content:</p> <ul style="list-style-type: none"> <li>Ecological Engineering</li> <li>The nature of speciesism</li> <li>The conflicts between animal ethics and human development</li> <li>Why engineers should be concerned about animals</li> </ul>	<p><b>To Read/Review:</b></p> <p><i>Module 10 Content</i></p>	<p><b>To Do:</b></p> <p>Discussion 10 Initial Post Discussion 10 Peer Posts Module 10 Quiz</p>	<p><b>Due Dates</b></p> <p>April 5, 2024 April 7, 2024 April 5, 2024</p>
<b>4/8 Module 11: Future Challenges for Engineers</b>			
<p>Theory Content:</p> <ul style="list-style-type: none"> <li>Introduction to challenges engineers are likely to face in the future</li> <li>Suggestions for how technological advancements offer promise</li> <li>Ethical challenges and how to address them</li> <li>How you will apply ethics to your personal and professional lives</li> </ul>	<p><b>To Read/Review:</b></p> <p>Chapter 9 "New Horizons in Engineering" <i>Module 11 Content</i></p>	<p><b>To Do:</b></p> <p>Discussion 11 Initial Post Discussion 11 Peer Posts</p>	<p><b>Due Dates</b></p> <p>April 12, 2024 April 14, 2024</p>
<b>4/15 Module 12: Selected Topics in Ethical Engineering</b>			
<p>Theory Content:</p>	<p><b>To Read/Review:</b></p>	<p><b>To Do:</b></p>	<p><b>Due Dates</b></p>

· Important cases involving ethics in engineering	Cases (pp. 210-268) <i>Module 12 Content</i>	Discussion 12 Initial Post Discussion 12 Peer Posts	April 19, 2024 April 21, 2024
<b>4/22 Module 13: Wrap-up and Review</b>			
Theory Content: · Important takeaways from the course · How you will apply ethics to your personal and professional lives	<b>To Read/Review:</b> <i>Module 13 Content</i>	<b>To Do:</b> Discussion 13 Initial Post Discussion 13 Peer Posts Stage 3 Final Essay	<b>Due Dates</b> April 26, 2024 April 28, 2024 April 30, 2024

**Textbook Reading:** This course requires that a great deal of intellectual and philosophical ground be covered. The course is rather reading-intensive, as the readings form the basis of all other course activities. Hence, it is the student's responsibility to carefully complete all readings before contributing to a discussion forum or otherwise engaging in a course-related activity. In other words, you must complete the readings, complete them well, and do this before attempting anything else. Without these, it is impossible to derive any benefit from the course.

**Quizzes/Exams:** To take exams in this course, you must use Respondus LockDown Browser. This program prevents you from printing, copying, going to another URL, or accessing other applications during a quiz. [Watch this video to get a basic understanding of LockDown Browser.](#) Please take the following steps when taking a quiz:

1. [Download and install LockDown Browser from this link:](#)
2. Once your download and installation has finished, log into Canvas using your standard browser.
3. From your Dashboard or under "Courses", click on the course in which you have to take the exam that requires LockDown Browser.
4. After you enter the course, find the exam and click on it.
5. A new tab will open with a message stating "Assessment Loading". You will also see a pop-up window asking you to open Lockdown Browser. Click "Open Lockdown Browser".
6. Lockdown Browser will automatically launch and your quiz will be loaded into Lockdown Browser. Click "Begin" to take the quiz. Once a quiz has been started with LockDown Browser, you cannot exit until the "Submit Quiz" button is clicked.

Questions or problems can be submitted via web form by going to: <https://servicedesk.njit.edu> and clicking on the "Report your issue online" link. You may also call the IST Service Desk with any questions at 973-596-2900.

**Grading System:**

- A 93 - 100
- B+ 87 – 92.9
- B 83 – 86.9
- C+ 77 – 82.9

- C 73 – 76.9
- D 65 – 72.9
- F 0 – 64.9

**Student Attendance Policy:** Students who fail to participate by posting in two consecutive discussion board assignments may be instructor-initiated withdrawn from the course.

**Attendance and participation are essential in this class.** In an online class, attendance is partially determined by participation and the times a student accesses the course and materials. To be successful in this class, plan on accessing our environment multiple times per week. Please do not wait until the last minute to submit your assignments; that will not give you the time needed to learn about the week's topic or ask questions promptly should you need help. Your participation will also be tracked through Canvas Grades. The statistics that can be gathered include the date of last participation, which folders have been viewed and when, and how many assignments have been submitted, along with when they were submitted and how well you did. It is through this data that I can also partially determine your participation.

**Due Dates:** You can find each assignment and due dates by going to our Canvas Syllabus, looking at the course Calendar, or downloading the Assignment Calendar. *This is not a work-at-your-own-speed class; assignments submitted past the published due dates may not be graded, and those points are not included in your final grade.*

**Late Policy:** Quizzes will be penalized 5% for each late day. Late assignments will be penalized 10% for each day late. Discussion posts are not assignments and will only be accepted by the Sunday due date each week. The late penalty for discussions is assessed according to the due date of the initial post each week. It is impossible to duplicate the discussion board's interactive nature when the discussion is over for a given module week. The discussion board will be closed for that module week, and class members will not respond to messages or posts after the discussion has ended.

If you know you will be offline the day an assignment is due, please submit it early. No assignments will be accepted after the final day of class. Students with an excused absence (hospitalization, jury duty, or family emergencies) may be asked to produce proper documentation to make up work. All makeup work is at the discretion of the instructor.

**Late Submission of Required Course Work:** It is essential to understand that each student is responsible for their own attendance and communication about that attendance with the instructor and for any work missed due to absences. In other words, the instructor bears no responsibility for informing you that you are missing an assignment or late in submitting a project. Nor is it incumbent upon the instructor to notify the student that they are not making a satisfactory grade or progress in the course. The instructor also has a fair amount of discretion in setting policies regarding late submission and completion of coursework and make-up work that could be a substitute for initially assigned work—if possible or feasible at all.

**Late Submission Instructor Grading Policy:** Late assignments will be graded at the instructor's earliest convenience, amidst the regular workload and other responsibilities. Due to the additional management required for late submissions, I cannot guarantee an immediate turnaround on grading. Your patience and understanding in this matter is greatly appreciated.

**Academic Integrity:** 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 to which you are working. 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 my professional obligation and responsibility is to report any academic misconduct to the Dean of Students Office. Any student found violating the code by cheating, plagiarizing, or misusing any online software 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 get in touch with the Dean of Students Office at [dos@njit.edu](mailto:dos@njit.edu)

**Information Literacy:** Knowing how to find, cite, and reference your sources is integral to your success in this course. The best resources are course materials and the online lectures and presentations, as both were (1) written by academic experts and (2) peer-reviewed.

All of your assignments will be automatically submitted to **Turnitin**. Since plagiarism is not always intentional, this tool helps students protect themselves from possible plagiarism scenarios while also assisting instructors with identifying apparent attempts at plagiarism. Once your essay has been submitted, Turnitin will analyze it for a percentage of the possibly plagiarized essay and identify any areas that need editing to reduce plagiarism. The instructor also reserves the right to check your discussion assignments if they suspect the academic integrity policy is violated. However, this is more an opportunity to help you learn how to properly cite your work and maintain a culture of academic integrity than a policing system.

You may view your **Turnitin Originality Similarity Report** and make any necessary edits to ensure your submission complies with NJIT's correct citation and academic integrity policies.

The objective is to keep the similarity score under 30%, denoting proper quotes and common phrase citations.

Scores above 30% signify extensive matching content and will be scrutinized for plagiarism and proper references. Aim to write in your own words, appropriately citing paraphrases and quotes using APA style.

**Generative Artificial Intelligence (AI), Coursework Recycling, and Third-Party Hiring:**

The University forbids the submission of previously submitted work from other courses, as well as contracting third parties to complete coursework. This includes using generative AI tools, such as ChatGPT, Bard, Copilot, GrammarlyGo, and Adobe Firefly, which are not permitted for any coursework in this class. The student must independently create all work. Breaches of this policy will be regarded as academic dishonesty and may lead to failure of the assignment or course, along with formal reporting to the governing academic authorities.

**Extra Credit Policy:** All assessments are designed to evaluate your understanding and mastery of the material fairly. There are no extra credit assignments in this course to maintain the integrity and rigor of the course. Students are encouraged to focus on the scheduled assignments, discussions, quizzes, and exams to maximize their learning and performance throughout the semester. Your final grade will reflect the scores earned on these assignments alone.

**Disability Statement:** By Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, this college strives to ensure that "no otherwise qualified individual with a disability shall, solely because of their disability, be excluded from participation in, be denied the benefits of, or be subjected to



discrimination under any program" administered by the University. If you are a student who requires academic accommodations due to a disability, please contact the disability support office.

**Student Code of Conduct:** Respect for the rights of others and for the College and its property are fundamental expectations for every student. The Student Code of Conduct outlines behavioral expectations and explains the process for responding to allegations of student misconduct. In other words, no trolling. **Remember, you are not anonymous online.** Students are expected to respond and write professionally and appropriately when activities are assigned to create scenarios, discuss beliefs, present on a selected subject, or post to the web board. Inappropriate or harmful language will not be tolerated and could result in disciplinary measures and a failing grade for the class.

**Instructional Requirements and Support:** You should have the following: At least an Intel or AMD 2.0 GHz processor, but an Intel Dual Core 2 Duo would be best. At least 2 Gb of memory (RAM), but 4 Gb would be best. A broadband Internet connection (DSL, cable, or T1). A 56K dial-up connection should work but is not recommended. Have the recommended software, Microsoft Office, and Adobe Acrobat Reader. Scan your PC for viruses each week and keep up-to-date with the latest virus definitions and Windows updates. If you have questions about your computer and the technology used at the college please call the Student Help Desk.

**Trigger and Content Warnings:** In this course, we'll explore topics that might touch on sensitive issues such as death, injury, cultural differences, and oppression. It's important to differentiate between being triggered by personal trauma and feeling intellectually challenged. If you're a trauma survivor and come across triggering content, please prioritize your emotional well-being, which can include requesting an alternate assignment or speaking with a university therapist. While opting out of a discussion may be necessary for your comfort, you'll still need to engage with the course material, and we can find alternative ways to do so. Experiencing discomfort from new ideas is often part of the learning process, and it's critical to your intellectual and personal growth. If course content proves distressing, campus resources like the Student Health Department and Dean of Students Office are available for support. Remember, I'm here to assist you throughout your learning journey in this class.

**Faculty Reserves the Right to Change Syllabus - Subject to Change Clause:** While information and assurances are provided in this course syllabus, it should be understood that content may change in keeping with new research and literature and that events beyond the instructor's control could occur. Students will be informed of any substantive occurrences that will produce syllabus changes.

**Religious Holidays:** To appreciate religious diversity, students who desire to observe a religious holiday during a scheduled class meeting should request reasonable consideration by the end of the second week of the course.

**Course and Instructor Evaluation:** The University values student feedback as part of its ongoing quest for excellence in education. Using a standard evaluation instrument, you can evaluate this course and provide the instructor with feedback and comments. Commitment to the teaching and learning process requires each student to complete this evaluation as part of the ongoing revision of this course and instructional competence. Your participation in this process is an expectation of this course.

**Non-Discrimination Statement:** NJIT (the "University") is committed to maintaining an environment free of illegal discrimination and harassment for all faculty, staff, students, and third parties. In keeping with that policy, the University prohibits discrimination and harassment by or against any faculty, staff member, student, applicant for admissions or employment, customer, third-party supplier, or any other person (collectively the "University Community") because of their race, color, religion, national origin, sex, sexual orientation, gender identity,

pregnancy, ancestry, age, disability, genetic information, veteran status, or any other legally-protected class (collectively “protected statuses”).

**Student Health and Well-Being:** As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating, and lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The University is committed to advancing its students' mental health and well-being. You can learn more about the broad range of confidential mental health services available on campus.