ECS 392:
ETHICAL ASPECTS OF ENGINEERING
AND COMPUTER SCIENCE
Fall 2025

Section M001: MWF 9:30-10:25 in SciTech 3-105
Section M002: MWF 10:35-11:30 in SciTech 3-105

Instructor: Dr. Jeremy Pierce

Because I'm teaching six classes this semester at two institutions, I will not normally be sitting in an office somewhere at particular times. I love to discuss class material with students and want to make myself available outside class time as much as I can, but I find that it works best if I work that out with you individually rather than schedule times every week that I am available. So if you would like to meet with me individually, I am happy to schedule time to meet you, either in person or by Zoom.[1]

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In almost every aspect of our lives, we are heavily dependent on technology. Household chores, transportation, communication, power generation, healthcare, entertainment—in these and many other areas, the use of technology is essential to the pursuit of our personal and collective goals. Indeed, our reliance on increasingly sophisticated technology is one of the defining characteristics of life in the twenty-first century.

This trend is propelled by the fact that technology enables us both to accomplish previously impossible tasks (e.g., transplanting human organs) and to perform old tasks much more efficiently and effectively (e.g., diagnosing and treating diseases). Yet, while technology's benefits to society are great and far-reaching, so are its risks. For the more dependent on technology we become, the more vulnerable we are to the harm that results when its power escapes responsible control. These risks are inevitable and often difficult to recognize and quantify.

Thus, given that technology's "genie" is "out of the bottle," it is vital to the welfare—and even survival—of human beings that those who develop, build, operate, and maintain the machines and technical processes on which we depend be people of integrity and sound judgment. For engineers, this means that it is crucial that they appreciate the potential impact of their work on others and the

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[1] I formerly said simply "Office hours by appointment (I can meet by Zoom or in person, but it's easier to schedule Zoom sessions)." This language is much warmer and makes it clear that I want to be available for students. It explains why I don't hold regular office hours in a way that shows that I do want to be available for them.

importance of maintaining the trust society accords them as professionals. It means, as well, that engineers must be able to identify and deal responsibly with the ethical dilemmas that arise in the course of their work, particularly in a market economy.

Course Catalog Description: Ethical issues related to engineering and computer science, including professionalism, collective and individual moral responsibility, codes of ethics, whistle blowing, conflicts of interest, product liability, employer-employee expectations, oppression/injustice, inclusion/accessibility, and ethics issues related to cyberspace.

Credits: 3 credit hours

Course Goals[2]

- To grow in understanding the wider social context in which engineers and computer professionals work and how their own values, identities, cultures, histories, and communities can inform their lives and careers

- To identify and analyze the ethical issues students will face as technology professionals and (in many cases) managers

- To understand different ways of understanding oppression, socialization, biases, systemic injustice, and access and to identify ways such concepts apply to your lives as engineers and computer scientists[3]

Objectives

- To apply expectations from engineering and computing codes of ethics to real-world cases to evaluate how to respond appropriately.

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[2] My original objectives handed to me by the previous instructor were:

- To enhance students' awareness of the wider social context in which engineers and computer professionals work;
- To strengthen students' ability to identify and analyze the ethical issues they will face as technology professionals and (in many cases) managers;
- To familiarize students with the codes of ethics adopted by the engineering and computing professions;
- To equip students with skills in moral reasoning needed to make ethically sound decisions;
- To enable students to recognize and avoid psychological traps that can lead to unethical behavior.

All of those are instructor-centered rather than student-centered. They are all about what I do as an instructor, with them as recipients of my doing. The current goals and objectives are more student-centered.

Additionally, several of the original objectives are more general and not very measurable. They might also be part of a much longer process that will take a lifetime. I have separated those out as goals for growth and made the more specific, measurable outcomes into a separate list that I have continued to label as objectives.

[3] What are now the final goal and the final objective were added in order to get this course approved as an IDEA course. I am not able to alter that language.

- To apply skills in moral reasoning (from what we will call our ethical toolkit) to make ethically sound decisions

- To recognize and avoid psychological traps that can lead to unethical behavior

- To apply concepts such as inclusion, accessibility, and equality/equity to students' lives as engineers and computer scientists

Prerequisites: There are no prerequisite course requirements, but the course is intended for juniors and seniors.

Audience: The primary audience includes students majoring in engineering and/or computer science, but all Syracuse students interested in ethical decision making in technology are welcome to enroll. This course is a requirement for the computer science, electrical engineering, and computer engineering majors and for the engineering management minor.

Required Texts

The texts for this course will be provided through **Orange Instant Access** (OIA). You are automatically enrolled, and your required course material will be accessible via Blackboard. There is a Textbooks link in Blackboard's left-hand menu that should get you to OIA. You might need to log in once you get to the external website that it goes to.

You are welcome to find this material in some other way if you prefer to find a hard copy or another source. You will have until **Sept 8, 2025, 11:59PM EDT** to decide if you would like to remain enrolled in OIA. If not, you have been provided instructions on opting out by the bookstore. If you opt out, you are still responsible for obtaining the materials elsewhere. After **Sept 8, 2025, 11:59PM EDT,** the cost of your material will be charged to your SU Bursar account if you have not opted out.

Title	Author	Publisher	ISBN	Price to Student	Duration
Engineering Ethics: Concepts and Cases	Harris, Jr., Charles E.; Pritchard, Michael S.; Rabins, Michael J.; James, Ray; Englehardt, Elaine	Cengage	9781337670746	$41.18	180 days
Cyberethics: Morality and Law in Cyberspace	Richard A. Spinello	Jones and Bartlett Learning	9781284184075	$38.27	LIFETIME

Course Expectations

 You are expected to:
- Prepare for each class session by doing the assigned reading
- Attend class (and communicate with me in any cases when you cannot[4])
- Take part in class discussions and discussion boards[5]
- Submit (on time) the assigned papers
- Contribute your fair share of time and effort to the assigned group project (see below)

Grading
- Six individual papers (600 – 800 words each)   60%
- A group project (see below)   25%
- Class participation (incl. attendance & discussion boards)   15%

Individual Papers. These writing assignments will be discussions of topics raised in the readings and class sessions or of related cases. The papers will provide students with the opportunity to demonstrate their understanding of ethical concepts and principles covered in the course and their application in decision making in engineering and computer science.

There will be a paper assignment roughly every two weeks, and you will have at least some selection of topics to pick from for each paper assignment (sometimes two, sometimes more). I always accept late work, but unless I have approved you for an extension, I will take off one point per calendar day (up to ten points off as a maximum penalty).[6]

Papers must be submitted through Turnitin on Blackboard. Turnitin is a plagiarism detection and prevention system. You can also use Turnitin to check that the sources you used have been properly acknowledged and cited before you submit the paper. That is, you will be able to use Turnitin's "Generate

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[4] I have added "and communicate with me if you cannot," both to reflect my actual policy, since I do generally excuse students for absences when they have communicated with me about their absence, and to be more transparent about that policy upfront, which reads more warmly to students by demonstrating that I am not absolute about this, while still making it clear that I have a general expectation of attendance.

[5] I have had discussion boards as part of the participation/engagement grade for several years now, but I never updated this expectation to reflect the fact that I include that grade as part of the participation (now engagement) grade. It removes some of the sense that students might get that their grade depends on how able they are to say things in class on a regular basis and lets them know that there is at least one other source. I take time the first day of class to be clear about that, but adding a little extra in the syllabus expectation might reduce a small amount of anxiety some might have about talking in class, especially a large class like this.

[6] My policy on late work is intended to find a middle ground between absolute deadlines that do not account for real-world student lives and complete openness. There is an expectation of submitting assignments on time. There is room for openness to vary that as needed when students communicate with me. Even if they do not communicate with me, I don't disincentivize doing the work by giving them penalties in the order of 50% of the assignment. The learning goals of the course require them to do the work, and they meet those goals better by doing late work than by not doing it at all. So I remove one point per calendar day to allow some wiggle room but still give them reasons to meet the learning goals. And those who communicate with me often have those penalties waived entirely.

Originality Report" prior to submitting the final version of your paper. Needless to say, the similarity score should be zero or close to zero, apart from quotes or references. Turnitin compares submitted documents against documents on the Internet and against student papers submitted to Turnitin. All papers that you submit for this class will become part of the <u>Turnitin.com</u> reference database to protect you from being plagiarized in the future. (When you submit a paper to Turnitin, be sure to receive a confirmation that the paper was accepted by Turnitin.)

Group Project. For this requirement, we will assign you to teams of 4-5 class members, with each team completing a set of tasks relating to *Inclusion, Diversity, Equity and Accessibility (IDEA)* and writing a project report 5-6 pages (double-spaced) in length. I am expecting to release the specific directions for the project and team assignments about a month before the end of the semester, and the team's report will be due around the end of the semester, so you should have 3-4 weeks to work on it. I will give you exact dates as the time gets closer.

Class participation. You are expected to attend class and actively take part in class discussions. **The university requires attendance in all courses.** Attendance will be taken at each class. At the end of the semester the instructor and TAs will assign you an engagement grade based on your attendance record and the extent of your engagement in class, discussion boards, and other communication or engagement with the instructor or TAs throughout the semester.

The grading scale used in this course is as follows:
A = 94 – 100; A- = 90 – 93.9; B+ = 87 – 89.9; B = 84 – 86.9; B- = 80 – 83.9;
C+ = 77 – 79.9; C = 74 – 76.9; C- = 70 – 73.9; D = 60 – 69.9; F = below 60.

<u>Attendance:</u>

University Policy: Attendance in classes is expected in all courses at Syracuse University. Students are expected to attend the first meeting of all classes for which they are registered. **Students who do not attend classes starting with the first scheduled meeting may be academically withdrawn as not making progress toward a degree by failure to attend**. Instructors set course-specific policies for scheduled class meetings in their syllabi. It is a federal requirement that students who do not attend or who cease to attend a class be reported at the time of determination by the faculty. Faculty will use "ESPR" and "MSPR" in Orange Success to alert the Office of the Registrar and the Office of Financial Aid. Students should also review the university's religious observance policy and make the required arrangements at the beginning of each semester.

Policy for this Course: Attendance will be taken at each class. Absences will affect the "Engagement" portion of the course grade, although that grade will be taken from a

combination of attendance, class participation, discussion boards, and other ways of engaging[7].

I am often lenient on missed classes if you communicate with me about your absences, especially if you notify me ahead of time of a planned absence with a good reason for missing.

Late policy: I accept late work until the end of the semester. Unless I excuse its lateness, I will take off one percentage point per calendar day, with a maximum penalty of 10 percentage points (one letter grade).

Academic Integrity Policy:

As a pre-eminent and inclusive student-focused research institution, Syracuse University considers academic integrity at the forefront of learning, serving as a core value and guiding pillar of education. Syracuse University's Academic Integrity Policy provides students with the necessary guidelines to complete academic work with integrity throughout their studies. Students are required to uphold both course-specific and university-wide academic integrity expectations such as crediting your sources, doing your own work, communicating honestly, and supporting academic integrity. The full Syracuse University Academic Integrity Policy can be found by visiting class.syr.edu, selecting, "Academic Integrity," and "Expectations and Policy."

Upholding Academic Integrity includes the protection of faculty's intellectual property. Students should not upload, distribute, or share instructors' course materials, including presentations, assignments, exams, or other evaluative materials without permission. Using websites that charge fees or require uploading of course material (e.g., Chegg, Course Hero) to obtain exam solutions or assignments completed by others, which are then presented as your own violates academic integrity expectations in this course and may be classified as a Level 3 violation. All academic integrity expectations that apply to in-person assignments, quizzes, and exams also apply online.

Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. Students may not drop or withdraw from courses in which they face a suspected violation. Any established violation in this course may result in course failure regardless of violation level.

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[7] At some point in the past, the University changed its rules on attendance grades. They stopped allowing a portion of the grade to be labeled Attendance, although attendance could be a factor in a Participation grade. I have since used that name for a number of factors, including attendance, discussion boards, class participation, and engagement outside of class with me, TAs, and other, perhaps less measurable, elements of engagement. The language of engagement seems less restrictive, since participation often conveys talking in class to a student. I am now labeling the entire category Engagement rather than Participation.

Syracuse's academic integrity expectations extend to the fast-growing realm of artificial intelligence (AI) and represent the importance of understanding, exploring, and evaluating emerging technologies.

Based on the specific learning outcomes and assignments in this course, artificial intelligence used to check your writing for grammar or to help you to transform something you have written into a form that does not change the content (e.g. Grammarly, Google Translate) is permitted. Use of AI to give you ideas of what you can write about is allowed, but the writing itself must be your writing. Specific assignments may allow some other use, but if no instructions are provided for a specific assignment, then no other use of any artificial intelligence tool is permitted. Any AI use beyond that which is detailed in course assignments is explicitly prohibited except when documented permission is granted.

The above is official SU policy language on AI use. I will add that the learning goals and objectives of this class include doing certain tasks as part of the learning process, and AI can be used to circumvent that actual learning. You are not getting the value of your education if you do that. AI can be used to aid your learning, and it can be used to disrupt and prevent learning. The first is welcome, and the second is an academic integrity issue.

For that reason, you will be required to submit an AI disclosure statement for every written assignment in this course. That will include a description of every Generative AI you have used, what prompts you used, and how you used what it gave you in your writing. I expect this even for AI tools like Grammarly and Google Translate but especially for more generative tools like ChatGPT. If we find that you are using AI beyond what you disclose, that is itself an academic integrity issue. If we find that what you disclose is avoiding of learning goals of the class, that is also an academic integrity issue.[8]

This class will use the plagiarism detection and prevention system Turnitin. You will be submitting your papers to Turnitin by submitting them in Blackboard to check that all sources you use have been properly acknowledged and cited, and you can see the Turnitin report immediately in case you need to make any chances and resubmit. Turnitin compares submitted documents against documents on the Internet and against student papers submitted to Turnitin at Syracuse University and at other colleges and universities. I will take your knowledge of the subject matter of this course and your writing level and style into account in interpreting the originality report. Keep in mind that all papers you submit for this class will become part of the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. That will also safeguard your work from being plagiarized in the future.

Other University Policies:

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[8] I added these last two paragraphs on AI use both to be transparent about what we will expect of the students in this class and to highlight the fact that some AI use (but not all) is circumventing the learning goals of the class, even if other AI use can serve to meet those goals.

General: Students should review the University's policies regarding Disability-Related Accommodation; Diversity and Disability; the Religious Observances Notification and Policy; the Academic Integrity Policy; and Orange Success, which can be accessed via the Office of the Provost website at http://provost.syr.edu/

Accommodations:

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to contact me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability accommodations or register with CDR, please visit Center for Disability Resources (https://disabilityservices.syr.edu/). Please call (315) 443-4498 or email disabilityresources@syr.edu for more detailed information.

Faith Tradition Observances:

Syracuse University's Religious Observances Policy (https://policies.syr.edu/policies/university-governance-ethics-integrity-and-legal-compliance/religious-observances-policy/) recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their traditions. Under the policy, students are given an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance, provided they notify their instructors no later than the academic drop deadline. For observances occurring before the drop deadline, notification is required at least two academic days in advance. Students may enter their observances in MySlide under Student Services/Enrollment/My Religious Observances/Add a Notification.

Counseling Services. Mental health and overall well-being are significant predictors of academic success. As such it is essential that during your college experience you develop the skills and resources effectively to navigate stress, anxiety, depression and other mental health concerns. Please familiarize yourself with the range of resources the Barnes Center provides (*ese.syr.edu/bewell*) and seek out support for mental health concerns as needed. Counseling services are available 24/7, 365 days a year, at 315.443.8000.

CLASS TOPICS AND READING ASSIGNMENTS

I will produce a separate document with reading assignments and topics for each class session.[9]

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[9] I am providing a separate document with specific readings and assignment due dates. This document is long and unwieldy to use as a daily reference for work throughout the class. I keep that information in a more user-friendly, shorter document and keep the semester-long information that they might not need to refer to as often in this larger syllabus.