# Ethics and Engineering

**ECE/Philosophy 316**

**Fall Semester**

**2024**

**Course Guidelines**

“Ethics and Engineering” is a broad-ranging course in *moral theory and practice*, open to all disciplines and all majors. The principles studied throughout the semester are applicable to all career paths, and all who are interested are welcome to be members of the class. The course will be structured in three interrelated parts — (1) an *introduction* to the central themes of the course, (2) a focused study of *normative ethics*, and (3) an exploration of *ethical issues in the practice of a profession*, applied in the vocational context of the discipline of engineering (including safety and liability, professional responsibility to clients and employers, legal obligations, codes of ethics, and career choice). As a course in *philosophy*, one of the primary objectives of our journey together will be to explore the fundamental structure of human personhood, the grounding of moral action, and the development of moral character as a precondition of integral work in a profession — and the essential foundation necessary for our life together in society.

The course fulfills credit as an upper-division class in *advanced composition*, for which the University of Illinois requires twenty to thirty pages of *revised writing* as a minimum standard. In order to fulfill this requirement, each member of the class will *write and revise* a personal *mission statement* reflecting on your life work and career path (three pages), followed by two *position papers* — an article analysis (three pages) and a substantive paper on normative ethical perspectives (five pages) — plus a final *research paper* of your own choosing(nine pages or more in length). All members will give a five-minute presentation on their research project at the end of the semester, concluding with questions from the class. The research paper and class presentation function together as the final examination for the course.

# Instructor

Professor Philip Hillmer

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**Course Home Page**

The course home page can be accessed at the following URL [Uniform Resource Locator]: [http://publish.illinois.edu/ecephil316/](https://webmail.illinois.edu/owa/redir.aspx?C=-ZkV4KLDA0qHmzrtcyAQ9smHhZqak9EITJ5vlx3FwwTJEUR0MYpeTFpE66Qvvm88gmcN33M5GIc.&URL=http%3a%2f%2fpublish.illinois.edu%2fecephil316%2f).

**Classes**

Section E1: Tuesdays and Thursdays, 11:00 – 12:20, Gregory Hall 329

Section E2: Tuesdays and Thursdays, 2:00 – 3:20, Gregory Hall 329

**Prerequisites**

Junior standing and Rhetoric 105. The term “junior standing” — in this context — means that the course will be taught at the level of an upper-division class in Philosophy and in Advanced Composition, and that every enrolled member of the course is willing and able to work at the level necessary to fulfill these University requirements.

**Credit**

3 hours. ECE/Philosophy 316, “Ethics and Engineering,” satisfies University General Education requirements for Advanced Composition and Humanities and the Arts (Historical and Philosophical Perspectives).

**Course Objectives**

* To read and think critically
* To develop moral reasoning skills
* To improve writing skills in an engineering context
* To understand multiple perspectives and respect others of diverse persuasions
* To study the fundamental structure of human personhood (what it means to be a human being), the grounding of moral action, and the development of moral character as a precondition of integral work in a profession — and the essential foundation necessary for our life together in society.

**Required Texts**

* Charles E. Harris, Jr., et al., *Engineering Ethics:* *Concepts and Cases,* 6th ed. (Boston: Cengage, 2019) — e-book, rental, and text purchase options are available directly from Cengage at <https://www.cengage.com>
* A three-volume integrated set of course readings — *Volume 1: Introduction, Volume 2:* *Normative Ethical Perspectives, and Volume 3: Windows into Applied Ethics* — is available in digital form to all enrolled members through weekly modules constructed on the University canvas course site. (The use of three sequential periods or brackets within a given reading indicates that a portion of the original text has been removed or rephrased for clarity.)
* *The Chicago Manual of Style*, 17th ed. (Chicago: University of Chicago Press, 2017) — available online through the University Library home page at [www.library.illinois.edu](http://www.library.illinois.edu). See the direct link through the course home page under “Important Tools” at <http://publish.illinois.edu/ecephil316/>
* William Strunk, Jr., *The Elements of Style* (New York: Harcourt, Brace and Company, 1920) — available online through “Project Gutenberg.” See the link on the course home page under “Important Tools” at <http://publish.illinois.edu/ecephil316/>

**Important Reference Works**

A good dictionary will assist you greatly in your use of the English Language. *Webster’s New World Dictionary* is an excellent reference work that provides clear definitions and an etymological history of each word. As a member of the University community, the *Oxford English Dictionary* can be viewed online through the University of Illinois Library home page (www.library.illinois.edu). From this site, you can also consult the *Oxford American Thesaurus of Current English*.

**Source Citation**

The proper use of source citations is an important skill in formal writing. All writing assignments (reflection papers, position papers, the research paper, and the mission statement) must use appropriate citations. Sources must be cited in “Notes and Bibliography” citation format, as outlined in the *Chicago Manual of Style,* 17th edition (University of Chicago Press, 2017). See “Part Three: Source Citations,” Chapter 14, “Notes and Bibliography,” 14.1–14.305 [743–890].

**Thesis and Supporting Arguments**

All papers for the course are to be written as “position papers” — not simply thematic summaries of the readings or topics at hand. Take a position, state your thesis, and then provide a coherent set of well-articulated and substantive reasons in support of your thesis. A clear thesis and strong arguments are what make good writing. Attention to these foundational skills of effective writing will have a significant effect on the grade for each assignment.

**Assigned Readings**

The assigned readings are an essential component of the course. All required readings are listed on the course schedule (see the course home page under “Course Documents”). Seek to understand the central thesis and the supporting arguments of the readings to the best of your ability, within the time allotted to you (see “Time Investment” below). For each class you will indicate (on the canvas course site) — using an honors system — the readings that you were able to complete. We encourage you to make digital notations on the readings as you are able, which will facilitate your engagement and reflection upon the assigned texts (see the canvas document entitled “Digital Readings Notation Instructions”).

**Reflection Papers**

A series of eight focused reflection papers over the assigned readings will also be an important part of the course. These papers will help you crystallize your understanding of the readings and our discussions together in class — they will also help you learn the art of clear and concise writing, which is developed through consistent and regular practice. The reflection papers are only one page (or more) in length, but the goal of each paper is to develop the skill of substantive philosophical reflection. View your reflection papers as a progressive series of cumulative home-work assignments, designed to engage the substance of the required readings in an upper-division course in philosophy.

To allow time for reflection, your papers will be due at the end of the week, submitted electronically through the canvas course site on Friday by 11:00 p.m. [CST] — except for the first week of the semester. No reflection papers will be assigned for weeks three, four, nine, and ten (i.e., classes #5 and #6, #7 and #8, #17 and #18, #19 and #20, when major writing projects will be due). There will be a total of eight reflection papers during the semester. Your reflection papers will be read and evaluated using a check/check-minus scale, and your score on each reflection paper will be factored into your final course grade. As with all of your papers that will be submitted during the semester, type your reflection papers in twelve-point, Times New Roman font, double-spaced, with one-inch margins. Cite all sources clearly and accurately, using *Chicago Manual of Style* “Notes and Bibliography” citation format. Footnotes should be in ten-point font. Place your name and submission date on the first line of your paper, and then begin your work on the next line. All papers must be visually at least one full page of text in length. You may write papers of greater length, if you choose.

You are responsible for all of the assigned readings, but use your reflection papers to focus on a portion of the readings that you found to be significant. Briefly summarize the substance of the *author’s position* and then reflect upon the reading, developing *your own position* with well-reasoned argumentation in dialogue with the author. Formulate your own position on the readings (rather than simply summarizing the readings). There is no mid-term or final examination for the course. The reflection papers — together with your completion of the assigned readings — will count toward a significant portion of your final course grade.

*Sequential Due Dates for Reflection Papers:*

Reflection Paper #1: September 1 (reflecting on the readings for class #2)

Reflection Paper #2: September 6 (reflecting on the readings for class #3 and #4)

Reflection Paper #3: September 27 (reflecting on the readings for class #9 and #10)

Reflection Paper #4: October 4 (reflecting on the readings for class #11 and #12)

Reflection Paper #5: October 11 (reflecting on the readings for class #13 and #14)

Reflection Paper #6: October 18 (reflecting on the readings for class #15 and #16)

Reflection Paper #7: November 8 (reflecting on the readings for class #21 and #22)

Reflection Paper #8: November 15 (reflecting on the readings for class #23 and #24)

**Mission Statement**

Your first major writing project of the course will be to draft a three-page mission statement, due at the beginning of the third week of the semester. The mission statement addresses the question: “Who are you? Where are you going? And how will your arrive at your destination?” During the course of the semester, you will revise and rewrite the draft of your mission statement. The final version of your work will be due at the end of the semester. Guidelines for the mission statement (and for all subsequent writing projects) will be provided, and posted on the University course site under “Course Documents” — [http://publish.illinois.edu/ecephil316/](https://webmail.illinois.edu/owa/redir.aspx?C=-ZkV4KLDA0qHmzrtcyAQ9smHhZqak9EITJ5vlx3FwwTJEUR0MYpeTFpE66Qvvm88gmcN33M5GIc.&URL=http%3a%2f%2fpublish.illinois.edu%2fecephil316%2f).

*Due Dates for the Mission Statement:*

Draft Due: September 8

Final Version December 2

**Writing Skills Assessment**

The “Writing Skills Assessment” (5% of the course grade) is a take-home assignment in which you demonstrate a working knowledge of accurate *source citation* (using *Chicago Manual of Style* “Notes and Bibliography” format) and *principles of effective writing* (drawing upon the readings and discussion from classes #7 and #8 — which focus on language, communication skills, and guidelines for good writing).

**Position Papers**

The mission statement will be followed by two position papers. Each paper will be submitted through the compass course site first as a complete draft and then in a final version. The drafts of your papers will be evaluated with substantive comments and suggestions for revision (using Microsoft “Track Changes” format), but only the final version will be graded. A grading rubric will accompany each assignment.

*Due Dates for Position Papers*

Position Paper #1

“*Article*” *Analysis* (3 pages)

Complete Draft: September 15

Final Version: September 29

Position Paper #2

*Normative Ethical Perspectives* (5 pages)

Outline: October 22

Complete Draft: October 27

Written Peer Review: November 1

Final Version: November 10

**Research Paper**

As the compositional apex of the course, you will complete a substantive research paper of nine pages or more in length — in which you carefully explore the ethical implications of a topic of your choice. The research paper will follow the same procedural steps of a complete draft, evaluation, and revision. At the end of the semester, you will also give a five-minute presentation of your research project, followed by your response to questions from the class. The research paper and in-class presentation function together as the final examination for the course.

*Due Dates for Research Paper:*

Research Topic September 22

Bibliography, Thesis, Outline October 13

Complete Draft of Research Paper November 3

Written Peer Review Evaluation November 13

Final Version November 17

Project Presentations November 19, 21; December 3, 5, 10

**Course Grading**

Attendance and Class Participation 10%

Assigned Readings 10%

Reflection Papers 15%

Writing Skills Assessment 5%

Mission Statement 5%

Position Papers 25%

Research Paper 25%

Research Project Presentation 5%

**Plus and Minus Scale**

98 – 100 % A+

93 – 97.9 % A

90 – 92.9 % A-

87 – 89.9 % B+

83 – 86.9 % B

80 – 82.9 % B–

77 – 79.9 % C+

73 – 76.9 % C

70 – 72.9 % C-

67 – 69.9 % D+

63 – 66.9 % D

60 – 62.9 % D-

0 – 59.9 % F

**Attendance and**

**Class Participation**

As an upper-division University course, every member is expected to be present in class every day. Attendance is required and recorded for each class. You are allowed three absences for the semester. In the event of an absence, attendance credit will be granted by writing an additional reflection paper on the assigned readings for the day you were absent. Only three “absence papers” will be accepted, and must be written and submitted within seven days of your absence.

All “absence papers” must be submitted directly to the course aide with whom you are working. The assigned readings completed for the day you were absent must also be indicated on the canvas course site weekly reading assessment and to your course aide.

Attendance and participation in class will be an important factor in determining your final grade. The synergy of the course hinges upon your active engagement with your colleagues in exploring the fundamental ideas that we will be studying throughout the semester.

**Classroom Guidelines**

* Class will start promptly at the beginning of the University scheduled time for each class session. Attendance will be taken (through an attendance “sign-in” document).
* As class begins, have ready at hand (and open before you) the course schedule and the texts of the assigned readings for the day. Careful textual reading will be essential to the internal dynamics of the course. The importance of this requirement cannot be overemphasized.

**Review of Paper Submission and Evaluation Guidelines**

* The guidelines and grading criteria for all papers and projects will be located and found sequentially during the semester on the ECE/PHIL 316 University course site under “Course Documents” (see http://publish.illinois.edu/ecephil316/).
* All papers must be submitted electronically through the canvas course site by 11:00 p.m. [CST] on the specified due date. Papers submitted after 11:00 p.m. are considered late, and will be subject to the appropriate grade reduction. Extensions of due dates cannot be granted, except in emergency cases with appropriate documentation.
* All writing assignments (reflection papers, position papers, research paper, and the mission statement) must use correct *Chicago Manual of Style* citation format, following the “Notes and Bibliography” guidelines.
* All papers — including drafts — must be the complete number of pages. An incomplete paper will be given a ten percent [10 %] reduction.
* All papers must be submitted on time.
* All reflection papers and the beginning steps of the research project (the research topic, and the working bibliography, thesis, and outline) will be graded on a check/check-minus scale. If they are late, they will be given a check-minus [.5/1]. For all of the major writing assignments, late papers will receive a ten percent [10 %] reduction in the assigned grade. An additional five percent [5%] reduction in grade (per calendar day) will continue for each day the paper is late — for a total of seven days. If the paper is not submitted within seven days, it will no longer be accepted. Note that the late penalty for papers applies to the draft as well as the final version (both of which are necessary to meet the University requirements of a course in advanced composition).
* All of the major writing projects have been scheduled to allow sufficient time for revision between the complete draft and the final version due dates. It is your responsibility to plan for these target dates. You will receive detailed comments on the draft of each major paper. It is incumbent upon you to read these comments carefully and to incorporate them into your final version. Based upon your revision and improvement of the paper, a final grade will then be assigned.
* All assignments must include your name and submission date. The submission dates will be different for the draft and the final version of your major writing projects.
* All documents must be written and submitted in Microsoft Word format. Assignments that are submitted in any other format (such as PDF, Pages, or Google Docs) will result in significant complications and cannot be accepted. If you write an assignment in PDF, the file will not be properly formatted when your assigned course aide opens it in Microsoft Word. If you do not have Microsoft Word, you may obtain a copy (free of charge for both PC and Mac computers) from the University Webstore.
* All evaluative comments on all of your papers are to be read with care. All documents returned to you must be downloaded with Microsoft Word interface in order to read the evaluative comments. You are then responsible for implementing the grammatical and substantive changes suggested in each paper. Comments on reflection papers should be applied in subsequent reflection papers, and those on the drafts of the position papers and the sequential steps of the research paper should be implemented in the final version.

**Member Correspondence and Communication**

Early in the semester, each member will be assigned a course aide, who will be responsible for grading all of your written assignments. Accordingly, send all questions and communications regarding all facets of the course (including issues related to illness and emergency complications) directly to the course aide with whom you will be working.

**Course Aide Oversight**

In order to facilitate communication, the names and addresses of the course aides working with us this semester are given below.

**Section E1**

Niki Hakimzadeh — [nikih2@illinois.edu](mailto:nikih2@illinois.edu)

Matthew Carlins — [mcarlin2@illinois.edu](mailto:mcarlin2@illinois.edu)

**Section E2**

Katharine Sexton — [ksexton2@illinois.edu](mailto:ksexton2@illinois.edu)

Yevheniy Kozak — [ykozak2@illinois.edu](mailto:ykozak2@illinois.edu)

**Academic Integrity**

Read carefully the University of Illinois “Student Code,” Article 1, Part 4 “Academic Integrity Policy and Procedure,” focusing on section #1-402 “Academic Integrity Infractions,” subsection “b. Plagiarism” 1–4 (<https://studentcode.illinois.edu/article1/part4/1-402/>).

What is “plagiarism” and how can the careful use of source citations guard and protect you from committing plagiarism? To “plagiarize” means to “take and pass off as one’s own (the ideas, writings, etc. of another)” — *Webster’s New World Dictionary* (New York: World Publishing, 1953), 1116. As stated in the University of Illinois code of conduct, no member of the University community “shall represent the words, work, or ideas of another as his or her own in any academic endeavor” (Article 1, Part 4, section #1-402, subsection “b” on plagiarism). The art of writing involves the development of a worldview and corresponding mode of conduct in which the author is in dialogue with the wider intellectual community — listening to each person, honoring each person, and taking one’s own position in the context of this interchange of ideas. Source citation is functionally the *modus operandi* (i.e., the “manner of working” or accepted “procedure”) of this dialogue.

All submitted writing documents for the course must be your own work. Appropriate citation must be given for all sources. Violations of the standards of academic integrity will result in appropriate disciplinary action (as required by the University).

The goal of a University education is to learn to think for yourself. The use of AI in composing and submitting a document under your name jeopardizes this goal — and is an example of an academic integrity infraction (as outlined in the University of Illinois “Student Code,” Article I, Part 4 — see the link above).

**Time Investment**

Steward your time well. University guidelines suggest that all members allocate two hours of work per week for every hour in class. Hence, for a three-hour course, the expected work load required to complete all assignments is approximately six hours of work per week.

**Course Member Responsibilities**

In order to form a team together, all of us must understand and hold to the basic guidelines and core procedural principles of the course. See the course homepage (under course documents) for a verification statement of having read and understood the above course guidelines. All enrolled members must submit a signed copy of this document to the canvas course site by the end of the third week of the semester — September 13.

**Ethics and Engineering**

**ECE/Philosophy 316**

**Fall Semester**

**2024**

**Course Schedule**

**Volume I**

**Introduction**

**Class #1 Tu 8/27 Course Overview**

**The Universe of the University**

**Hermeneutics — The Science of Interpretation**

**Gilbane Gold: A Case Study in Engineering Ethics**

**Class #2 Th 8/29 Moral Theory: Concepts and Cases**

Pritchard and Holtzapple, "Responsible Engineering: *Gilbane Gold* Revisited," 217–30

Graham, "Palchinsky's Travels," 23–31

Fleming, "Engineers of Death," 19

Historical Context: “Hitler Comes to Power,” “Nazi Rule,” “The Nazi Terror Begins,”

“SS Police State,” and “The Nuremberg Trials” (https://www.ushmm.org)

**Sun Reflection Paper #1 Due**

**9/1 Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

**Class #3 Tu 9/3 Freedom, Responsibility, and Human Personhood**

Hackett, *A Philosophical and Critical Ethic,*

“The Nature and Importance of Moral Inquiry,” 1–4

Covey, *Restoring the Character Ethic,*

Habit 1: “Principles of Personal Vision,” 66–73, 78–80, 93

Habit 2: “Principles of Personal Leadership,” 98–100, 106, 109, 144

Principles Applied

“Viktor Frankl”

**Class #4 Th 9/5 Social Context and the Professions**

*Engineering Ethics*, Chapter 1:1–18, and Case 3: “Bridges,” 212

Greenwood, "Attributes of a Profession," 67–77

Grose, "Danger Zone: “What It Takes to Fix America's Crumbling Infrastructure," 28–32

American Society of Civil Engineers, "Report Card for America's Infrastructure,"

ASCE online at infrastructurereportcard.org. See also the canvas course site videos —

“Roads and Bridges” + “Energy and the National Power Grid”

**F 9/6 Reflection Paper #2 Due**

**Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

**Sun Draft of Mission Statement Due**

**9/8 Electronic Submission via Canvas, 11:00 p.m.**

**M 9/9 10th Day Semester Add/Drop Deadline**

**Class #5 Tu 9/10 Class Member Introductions**

**History of Science and Engineering**

**Codes of Ethics**

Reflection Questions, Class #5

**History of Modern Science — Key Moments**

Mahon, “How Maxwell’s Equations Came to Light,” 2–4

[See also Forbes and Mahon, *Faraday, Maxwell, and the Electromagnetic Field: How Two Men Revolutionized Physics* (Amherst, NY: Prometheus Books, 2014), and Weinberg, *The Discovery of Subatomic Particles* (New York: W. H. Freeman, 1983).]

**History of Engineering — A Brief Outline**

Davis, "A History of Engineering in the United States," 18–30, 196–203

Dunwoody, et al., *Fundamental Competencies for Engineers*, 9–13

[See also Blockley, *Engineering: A Very Short Introduction* (Oxford: Oxford University Press, 2012), and Grayson, *The Making of An Engineer: An Illustrated History of Engineering Education in the United States and Canada* (New York: John Wiley & Sons, 1993).]

**Professional Codes of Ethics**

IEEE, NSPE, Software Engineering, and Journalism Codes of Ethics

**Class #6 Th 9/12 The Moral Responsibility of Engineers**

*Engineering Ethics*, Chapter 3, "Responsibility in Engineering," 50–74

Engineering Accreditation Standards, ABET 2000 (Figure 1, 2, and 3) + ABET Revisions

University of Illinois, College of Engineering — “Mission, Vision, and Educational Objectives”

Alpern, "Moral Responsibility for Engineers," 187–95

**The V-22 Osprey: Two Perspectives**

Thompson, “Time Investigation: The V-22,” 36–37, 39–40, 42, 44

Whittle, “V-22 Proves Itself in Combat,” 22–28

[For further study of the V–22 case, see Whittle, *The Dream Machine: The Untold Story of the Notorious V-22 Osprey*, and the review of this work by Schooner and Castellano, “Reading *The Dream Machine*,” *Public Contract Law Journal* (Spring 2014): 391–422.]

**Boeing 737 Case Study**

Gelles, “Boeing 737 Max: What’s Happened after the 2 Deadly Crashes,” [1–5]

Sgobba, “B–737 MAX and the Crash of the Regulatory System,” 299–303

Mika Grondahl, Keith Collins, and James Glanz, “The Dangerous Flaws in Boeing’s Automated System,” *New York* Times — <https://www.nytimes.com/interactive/2019/03/29/business/boeing-737-max-8-flaws.html> — online, updated interactive site on the Boeing 737. [Online access to the *New York Times* for all enrolled University of Illinois undergraduates is provided for those who log in with their NetID and password to the Collegiate Readership Program homepage (<https://collegiatereadership.illinois.edu/>).]

[For a recorded radio broadcast dealing with the larger context of the Boeing 737 Max case study, see “Boeing CEO Dennis Muilenburg Steps Down as 737 Max Crisis Continues” (National Public Radio, 23 December 2019), and Shapiro in conversation with Stumo, whose daughter was killed in the March 2019 Boeing 737 MAX Crash (National Public Radio interview on 23 December 2019) — canvas course site audio.]

**F 9/13 Acknowledgement of Course Member Responsibilities**

**Document Accessible through the Course Home Page**

**Submitted to the Canvas Course Site, 11:00 p.m.**

**Sun Draft of Position Paper #1**

**9/15 Electronic Submission via Canvas, 11:00 p.m.**

**Class #7 Tu 9/17 Language and Communication Skills**

Sullivan, *Fundamentals of Logic*, 3, 6–10, 14–15, 31–33, 77–81, 113–15, 281–82

Zinsser, *On Writing Well*, “Simplicity,” 7–13

Strunk, *The Elements of Style*, [II] “Elementary Rules of Usage,” [III] “Elementary Principles of Composition,” and [V] “Words and Expressions Commonly Misused” — available online through “Project Gutenberg” and public domain documents. See the link on the University course site under “Important Tools” at <http://publish.illinois.edu/ecephil316/>.

Tolkien, *The Lord of the Rings*, Part I, *The Fellowship of the Ring*, 3, Book Two, Chapter 5,

"The Bridge of Khazad-Dum," 335–46.

**Class #8 Th 9/19** **Principles of Effective Writing**

Diagram: Principles of Effective Writing

Williams, “The Grammar of Clarity,” 8–17, 30

Grammar of Clarity — Summary + Application

Cohesion, Coherence, Concision

Williams, “Sustaining the Longer Sentence,” 80–86, 90–91, 93–96, 103–105

Appendix A: Diagrammatic Outline — Emphasis, Elegance

Appendix B: Some Terms Defined,” 205–217

Economy and the Stewardship of Language

*Chicago Manual of Style*, 17th edition (University of Chicago Press, 2017), “Part Three: Source Citations and Indexes,” Chapter 14, “Notes and Bibliography,” 14.1–14.305 [741–890]. The full text of *The Chicago Manual of Style* is available online at [www.library.illinois.edu](http://www.library.illinois.edu). See the link under “Important Tools” on the University course site <http://publish.illinois.edu/ecephil316/>.

Tolkien, *The Lord of the Rings*, Part I, *The Fellowship of the Ring*, Book Two, Chapter 10,

“The Breaking of the Fellowship," 411–23.

**Sun Writing Skills Assessment + Research Topic Due**

**9/22 Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

**Volume II**

**Normative Ethical Perspectives**

Reflection Question Guidelines

Source Citations

**Class #9 Tu 9/24 The Discipline of Philosophy**

**Epistemology, Metaphysics, and Ethics**

**Ethical Theories: Teleological and Deontological Perspectives**

Library Introduction — Research Projects and Finding Sources

*Engineering Ethics*, Chapter 2, “A Practical Ethics Toolkit,” 19–49

The Discipline of Philosophy: Epistemology, Metaphysics, and Ethics

Ethical Theories: Teleological and Deontological Perspectives

**Class #10 Th 9/26 The Scientific Method and the Tests of Truth**

**The Principles of *Contradiction* and *Causality***

Reflection Questions, Class #10

Sandage, "Cosmology," 321–34

**Two Fundamental Laws Operative in the Present Universe**

[1] The Law of Gravity: Mathematical Formulation, Diagrams 1–3

[2] The Law of Electromagnetism: Interrelationship with the Law of Gravity

Hyde, “The Periodic Relationships of the Elements”

“The Search for a Unified Field Theory”

**Two Fundamental Principles Necessary for the Existence of Any Universe**

[1] The Principle of **Contradiction** (also known as the principle of “non-contradiction”)

Definition

Aristotle, *Metaphysics*, Book IV, 731–32; 736–38 [1003a–1003b; 1005b–1006a] + [Note]

[2] The Principle of **Causality**

Definition

Aristotle, *Posterior Analytics*, 110–11 [71a–72b]; the *Metaphysics*, Book V, 752–53

[1012b–1013b]; and Adler, *Aristotle*, 39–46

Worldview Principles — Systematic Consistency and Systematic Explanation [Diagram]

Objective Evaluation of Truth Claims

[See also the *Stanford Encyclopedia of Philosophy* articles by Falcon, “Aristotle on Causality,” and Gottlieb, “Aristotle on Non-contradiction,” linked through the University course site at <http://publish.illinois.edu/ecephil316/>.]

**F 9/27 Reflection Paper #3 Due**

**Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

**Sun Final Version of Position Paper #1**

**9/29 Electronic Submission via Canvas, 11:00 p.m.**

**Class #11 Tu 10/1 The Systematic Study of Normative Ethics [Part 1]**

**Normative Ethical Naturalism**

**Aristotle, Darwin, and Nietzsche**

Hackett, *A Philosophical and Critical Ethic*, “Central Concerns of Normative Ethics,” 169–71

Definition of Normative Ethical Naturalism

Aristotle — Life Context

Nicomachean Ethics — Source and Outline

Reflection Questions, Class #11

Aristotle, *Nicomachean Ethics*, Book I.1–12[1094–1102]

White, "Preface" and "The Pursuit of Happiness," xi–xii, 3–11

**Class #12 Th 10/3 The Systematic Study of Normative Ethics [Part I]**

**The Structure of Aristotelian Ethics**

**in Dialogue with Darwin and Nietzsche**

Summary of the *Nicomachean Ethics*, Book I, Chapter 1–6 [Diagram]

Reflection Questions, Class #12

Aristotle, *Nicomachean Ethics*, Book I.13 [1102], Book II.1–9 [1103–1109],

Book III.1–5 [1109–1115]

White, "The Pursuit of Happiness," 12–21

White, “Works Cited” [307–16]

The Doctrine of the Mean

Reason as an Instrument of Knowledge

Dialogue with Darwin and Nietzsche [Diagram]

Additional Resources

[For further study, see the link <http://publish.illinois.edu/ecephil316/> under course documents (normative ethical perspectives — additional readings) to the online articles in the *Stanford Encyclopedia of Philosophy* by Shields, “Aristotle,” and by Kraut, “Aristotle’s Ethics.” A contemporary exposition of Aristotle's literary corpus can be found in Shields, *Aristotle* (London and New York: Routledge, 2007). See also Kraut, *Aristotle on the Human Good* (Princeton, NJ: Princeton University Press, 1989). For other perspectives on *Ethical Naturalism*, see Darwin, *The Descent of Man*; Nietzsche, *On the Genealogy of Morality*; and Spinoza, *Ethics*.]

**F 10/4 Reflection Paper #4 Due**

**Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

**Class #13 Tu 10/8 The Systematic Study of Normative Ethics [Part II]**

**Normative Ethical Idealism**

**Plato, Kant, and Hegel**

Definition of Normative Ethical Idealism

Raphael, “The School of Athens,” 1509–1511

Plato Overview

Kant Overview

Reflection Questions, Class #13

Kant, *Groundwork to the Metaphysics of Morals,* “Preface,” [392], “First Section: Transition from the Common Rational Knowledge of Morality to the Philosophical," 49–58 [393–404]

Wood, “General Introduction” — “The Basis of Kant’s Practical Philosophy,” xxiii–xxiv

Paton, “The Good Will,” 34–37, 44–45; “Duty,” 47–52, 55

**Class #14 Th 10/10 The Systematic Study of Normative Ethics [Part II]**

**The Structure of Kantian Ethics**

Eastern Perspectives as Types of Normative Ethical Idealism

Reflection Questions, Class #14

Kant, *Groundwork to the Metaphysics of Morals*, “Second Section: Transition from the Common Moral Philosophy to the Metaphysics of Morals," 61–63, 65–89, 93 [406–12. 414–40; 444–45]; “Third Section: Transition from the Metaphysics of Morals to the Critique of Pure Practical Reason," 94 [446–47]

Paton, “The Maxim of Morality,” 58–62; “The Law,” 69–73

Wood, “General Introduction” — “The Second and Third *Critiques*,” and “The Final form of Kant’s Practical Philosophy,” xxv–xxvi, xxx–xxxiii

Allison, *Kant’s Groundwork*, “Introduction,” 1; “Bibliography,” 364–72

“Kant’s System of Transcendental Ideas” (as developed in the “Transcendental Dialectic” of the *Critique of Pure Reason*, published in 1781, second edition 1787) — schematic outline

Themes and Questions

Hegel, Letter to Schelling, 1795

Additional Resources

[See the link <http://publish.illinois.edu/ecephil316/> under course documents to the article by Rohlf, “Immanuel Kant,” and the essay by Johnson, “Kant’s Moral Philosophy,” in the online *Stanford Encyclopedia of Philosophy*. A systematic introduction to Kant's literary corpus can be found in Guyer, *Kant* (London and New York: Routledge, 2006). For a modern retrieval and interpretation of Kant's work as applied to contemporary moral theory, see the work of Rawls as summarized in Freeman, *Rawls* (London and New York: Routledge, 2007) — in particular, Chapter 7: "Kantian Constructivism," 284-323. For other perspectives on *Ethical Idealism*, see Plato, *The Republic*; Hegel, *The Phenomenology of Spirit*; Schwartz, *The World of Thought in Ancient China*; Raju, *The Philosophical Traditions of India*; and Hackett, *Oriental Philosophy*.]

**F 10/11 Reflection Paper #5 Due**

**Canvas Course Site, 11:00 p.m.**

**Sun Research Project**

**10/13 Bibliography, Thesis, and Outline Due**

**Electronic Submission via Canvas, 11:00 p.m.**

**Class #15 Tu 10/15 The Systematic Study of Normative Ethics [Part III]**

**Normative Ethical Theism**

**Augustine, Aquinas, and Luther**

Definition of Normative Ethical Theism

The Field of Knowledge

Reflection Questions, Class #15

Aquinas, *Summa Theologiae*, Question #2 [5–17], #5 [61–81], #6 [83–93]

The Importance of the Cosmological Argument

Moreland, “The Cosmological Argument,” in *Scaling the Secular City*, 15–30, 38–41

“The Myth of Modernity”

“The Five Dimensions of the Universe” — schematic diagram

*Genesis* 1:1–31; 2:1–3

**Class #16 Th 10/17 The Systematic Study of Normative Ethics [Part III]**

**The Structure of Biblical Theism**

**Reflections on a Treatise in Moral Theory**

The Structure of Biblical Theism

The Foundations of Biblical Theism

Biblical Narrative Outline

Reflection Questions, Class #16

Selected Texts of the Biblical Narrative

*Genesis* 2:4 – *Revelation* 22

Additional Resources

[See the link <http://publish.illinois.edu/ecephil316/> under course documents to McInerny and O’Callaghan on “Aquinas,” and Finnis on “Aquinas’ Moral, Political, and Legal Philosophy,” in the online *Stanford Encyclopedia of Philosophy*. For other perspectives on *Ethical Theism*, see the *Talmud* and the *Qur’an*. For a contemporary study of the cosmological argument in the tradition of Aquinas and Leibniz, see O'Connor, *Theism and Ultimate Explanation: The Necessary Shape of Contingency* (Oxford: Blackwell, 2008).]

**F 10/18 Reflection Paper #6 Due**

**Position Paper 2 Discussion Question**

**See the Schedule Instruction Guidelines**

**Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

In preparation for the writing of your second position paper, Class #17 will be structured as a final review session of our work together over the last three and a half weeks on the systematic study of normative ethics. In order to facilitate dialogue and discussion, formulate a well-crafted question (or set of questions) that you would like to explore, dealing with any issue related to our study of normative ethical perspectives. Submit your question(s) to the canvas course site (see “Position Paper 2 Discussion Question”). The entire set of class questions will be sent to you in digital form on the day preceding class #17.

**F 10/18 Deadline to Drop Course without Grade of W**

**Class #17 Tu 10/22 Normative Ethical Perspectives Working Class Session**

**Review, Dialogue, Online Discussion Forum**

**Position Paper 2 Thesis and Outline**

**Canvas Course Site, 11:00 p.m.**

Class #17 will be a *working* class session — there will be *no formal class*. Your task will be to read all of the questions on normative ethical perspectives submitted by your colleagues. Respond to one of the questions (in 150 words or more = approximately one-half page in length). Post your response on the canvas course site. Then read the responses from (at least) three other members and begin to outline the draft of your second position paper. Submit the thesis and outline of position paper two (and the acknowledgement of having read three class member responses) to the canvas course site (see “Position Paper Two Outline”) by 11:00 p.m. The goal of your paper (and outline) is to take a position on the grounding of normative ethics — in the context of open dialogue and discussion.

**Volume III**

**Windows into Applied Ethics**

Harris, “Windows”

Reflection Questions

Source Citations

**Class #18 Th 10/24 The Engineer as Citizen**

Reflection Questions, Class #18

Bellah, et al., *Habits of the Heart*, "Preface," vii–ix

Alexis de Tocqueville, *Democracy in America*, xvii–xix, xxxix–xlii, 27–35, 39

Founding Documents of the United States: [1] “The Declaration of Independence,” i–v,

[2] “The Constitution of the United States,” 1–34, [3] Lincoln’s “Gettysburg Address,” 17–23

**Sun Draft of Position Paper #2 Due, 11:00 p.m.**

**10/27 Canvas Course Site + Peer Review Neighbor**

**Class #19 Tu 10/29 The Engineer and Society, Fiduciary Relationships**

**Conflicts of Interest, Frontiers of Cyberspace**

Reflection Questions, Class #19

*Engineering Ethics*, Chapter 5, "Trust and Reliability," 97–120

*Titanic: An Illustrated History*, 8, 48–50, 118–19

Martin and Schinzinger, *"*Engineering as Social Experimentation*,"* 88–106

Spinello, *CyberEthics: Morality and Law in Cyberspace*, 1–10, 31–35 [2nd edition]

Frontiers of Cyberspace Resources: 227–32 [4th edition; see also the 7th edition, 2021]

Wikipedia Case Study:

“Internet Encyclopaedias Go Head to Head,” *Nature* (2005), 900–901

“Reflections and Resources”

**Class #20 Th 10/31 Artificial Intelligence**

**No Reflection Paper Due**

Reflection Questions, Class #20

**The History of Artificial Intelligence**

**Dartmouth Project, 1955 Proposal**

McCarthy, Minsky, Rochester, and Shannon, “A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence, August 31, 1955,” 12–14

**Ethics and Artificial Intelligence**

Boddington, “Towards a Code of Ethics for Artificial Intelligence,” 102–103

Open in-class dialogue and discussion on the construction of a code of ethics for artificial intelligence. In preparation for our discussion, read the abstracts and focus on the following two journal articles (digital copies of which can be found on the canvas course site in the module “Artificial Intelligence”): [1] Amitai Etzioni and Oren Etzioni, “Incorporating Ethics into Artificial Intelligence,” *Journal of Ethics*, 21 (2017): 403–18; and [2] Peter Vamplew, Richard Dazeley, Cameron Foale, Sally Firmin, and Jane Mummery, “Human-Aligned Artificial Intelligence Is a Multiobjective Problem,” *Ethics and Information Technology* 20 (2018): 27–40.

“Asymptotic Curve” + “Human Consciousness and the Self”

**F 11/1 Written Peer Review Evaluation of Position Paper #2**

**Submission to Peer Review Neighbor and Canvas**

**Course Site, 11:00 p.m.**

Submit your constructive evaluation of your neighbor’s draft of position paper #2 on normative ethical perspectives to your peer-review neighbor and to the canvas course site (using Microsoft “Track Changes” format). Read carefully the evaluative comments that your neighbor will in turn send to you in preparation for the final version of the second position paper.

**Sun Complete Draft of Research Paper Due**

**11/3 Canvas + Peer Review Neighbor, 11:00 p.m.**

**Class #21 Tu 11/5 The Engineer's Responsibility for Safety**

Reflection Questions, Class #21

See the canvas course site video — “Why the Towers Fell”

*Engineering Ethics*, Chapter 6, "The Engineer’s Responsibility to Assess and Manage Risk,"

121–54 (study pages 136–37 in preparation for class #22), and Case 2: “Big Dig Collapse,”

211–12

**The Hyatt Regency Hotel Walkway Collapse, 1981**

See the canvas course site video (Modern Marvels, History) — “The Hyatt Walkway Collapse”

Petroski, *To Engineer Is Human*, Chapter 1: "Being Human," 1–5, 9–10,

and Chapter 8: "Accidents Waiting to Happen," 85–97

*The Philadelphia Inquirer*, June 14 and June 7, 1979

[See Petroski, *To Engineer is Human*, 3]

Martin and Schinzinger, *Ethics in Engineering*, 16–20

“The Hyatt Decision: Two Opinions,” 69–72

**The Boston Central Artery/Tunnel Project, 1991–2006**

See the canvas course site video — “Boston’s Big Dig”

Fein, “… Boston’s Big Dig …” and Figures 1, 2, and 3

Sullivan, “Reply to *The Boston Globe*’s Investigative News Series Concerning the Big Dig”

and Letter from the Office of the Inspector General to the Massachusetts Turnpike Authority

**Class #22 Th 11/7 The Significance of the Apollo Lunar Landing**

**and the *Challenger* and**

***Columbia* Case**

Reflection Questions, Class #22

*Engineering Ethics*, Chapter 4, “Engineers in Organizations,’ 75–96

**The Apollo Lunar Landing**

Historic Photo, Wright Brothers — December 17, 1903

Apollo lunar landing video (University Alexander Street video collection) — http://www.library.illinois.edu/proxy/go.php?url=https://video.alexanderstreet.com/

watch/apollo-11 [produced in 2004]. See the video module on the canvas course site.

Clavius Home Page — <http://www.clavius.org>

“Mythbusters,” 1–5, and “Fundamental Argument Structure” (see note, page 5)

Perlmutter and Dahmen, “(In) visible Evidence,” 234–45, 248–51

**The *Challenger* and *Columbia* Case**

See the canvas course site video (2001) — “Challenger: Beyond the Tragedy”

Bell and Esch, "The Fatal Flaw in Flight 51-L," 36–51

Boisjoly, “Morton Thiokol Memo” and “Moral Responsibility and the Working Engineer," 6–14

"History as Cause: *Columbia* and *Challenger*," *Columbia Accident Investigation Board,* 195–204

**F 11/8 Reflection Paper #7 Due**

**Canvas Course Site 11:00 p.m.**

**Sun Final Version of Position Paper #2 Due**

**11/10 Canvas Course Site 11:00 p.m.**

**Class #23 Tu 11/12 Engineers and the Environment**

**Stewardship and Sustainability**

Reflection Questions, Class #23

Gruev and Garcia, “Seeing Cancer through New Eyes,” 10–13

*Engineering Ethics*, Chapter 7, "Engineering and the Environment," 155–75

Manion, “Ethics, Engineering, and Sustainable Development,” 39–48

ECE Building — Energy Efficiency Design and Construction

https://ece.illinois.edu/about/buildings/energy-efficiency

Thompson and Pahl, “Plastics, the Environment, and Society: Current Consensus and Future Directions,” 177–85 [References: 185–187], in *Plastics and the Environment*, edited by Hester and Harrison (Cambridge: Royal Society of Chemistry). [See also “The Nature of Plastics and Their Societal Usage,” 1–20, and “Plastics Recycling,” 156–76.] The full text of *Plastics and the Environment* can be found as an e-book through the University of Illinois main library. The three chapters mentioned above are downloaded as documents on the canvas course site in the module entitled “The Environment.”

“The Environment and the Oceans”

**Wed Written Peer Review Evaluation of Final Research Paper**

**11/13 Submission to Peer-Review Neighbor and Canvas 11:00 p.m.**

Submit your written evaluation of your neighbor’s draft of the final research paper to your peer-review neighbor and to the canvas course site (using Microsoft “Track Changes” format).

**Class #24 Th 11/14 Choosing a Vocation**

**Obligations of the Profession**

Reflection Questions, Class #24

*Engineering Ethics*, Chapter 9, “New Horizons in Engineering,” 196–202

**The Sealed Beam Headlight**

Fleddermann, "Doing the Right Thing," 116–18

Meese, "The Sealed Beam Case: Engineering in the Public and Private Interest," 1–20

**The Fifty-Nine Story Crisis Revisited**

Fleddermann, “Doing the Right Thing,” 115–16

Martin and Schinzinger, "Saving Citicorp Tower," 12–14

Morgenstern, "The Fifty-Nine Story Crisis," 45–53

Diane Hartley — “People to Know,” 1–2

Vardaro, “Introduction, Case Study, Endnotes”

**F 11/15 Reflection Paper #8 Due**

**Canvas Course Site 11:00 p.m.**

**Sun Final Version of Research Paper Due**

**11/17 Electronic Submission, 11:00 p.m.**

**Canvas Course Site**

**Class #25 Tu 11/19 Research Project Presentations [1]**

**Class #26 Th 11/21 Research Project Presentations [2]**

**Thanksgiving**

**University Fall Break**

**November 12–December 1**

**Mon Final Version of Mission Statement Due**

**12/2 Electronic Submission, via Canvas, 11:00 p.m.**

**Class #27 Tu 12/3 Research Project Presentations [3]**

**Class #28 Th 12/5 Research Project Presentations [4]**

**Class #29 Tu 12/10 Research Project Presentations [5]**

**University Final Examinations**

**December 13–19**

**“Final Exam” Session**

**E1 The Final Session for Section E1 will be held on Friday, December 13**

**@ 10:00–11:00 AM — during a portion of the University scheduled**

**final examination time [8:00–11:00 AM].**

**Final Review of the Course. University ICES Evaluations.**

**Final Letters. Final Words.**

**E2 The Final Session for Section E2 will be held on Tuesday, December 17**

**@ 7:00–8:00 PM — during a portion of the University scheduled**

**final examination time [7:00–10:00 PM].**

**Final Review of the Course. University ICES Evaluations.**

**Final Letters. Final Words.**