PHIL 006: Science, Technology, and Ethics

Fall 2025

2025-08-14

Table of contents

> ⚠ This class is in beta
>
> This is a brand new class, and I (Prof. Hicks) am teaching it for the first time. There will probably be some things that don't work as well as I'd hoped. You'll be giving me occasional feedback through some of the assignments. But you should always feel free to talk with me if something about the class isn't working for you.

Quick links

- Book list
- Course grades
- List of extras (for an A)

1 What is this course?

Science and technology are pervasive features of our lives, part of what philosopher John Rawls called the "basic structure of society." Science and technology are often held up as solutions to the greatest challenges our society faces — climate change, health and disease, a fractured social sphere — but are also criticized as the *causes* of those challenges.

Understanding science and technology involves more than just the technical details of how a scientific theory or technological system works. We also need to understand the *ethical, legal, and social implications* of scientific research and technological development. This understanding comes from the interdisciplinary fields of *science studies*, which include the history, philosophy, and sociology of science. This course is an introduction to science studies.

What will I learn?

This version of the course has four learning outcomes: You'll develop skills in/as a

Critical consumer of science and technology We all use the products of science and technology throughout our daily lives — social media, weather forecasts, cars, electricity. Being a critical consumer means being able to reflect on how science and technology shape our lives, both individually and socially, and appraising and critiquing these impacts.

Trustworthy critic of science and technology If you're like most UC Merced students, you probably come from a working class or blue-collar background, are one of the first members of your family to pursue a four-year degree, and will end up working in a professional or white-collar field (science, engineering, or otherwise).

If that fits you, you'll probably play two important roles in your life after graduation:

1. Representing your home community to other scientists, engineers, or professionals
2. Representing your profession to members of your home community

Being a trustworthy critic means that you can fill both of these roles, adopting one perspective to critique the other while still remaining true to the goals and values of both.

Intellectual curiosity Part of the point of a college education is to teach you how to teach yourself. How do you find, evaluate, and work with new information, when you don't have a teacher giving you a lecture and assigning you practice problems? In this course, you'll spend some time exploring and analyzing *scicomm* — news stories, social media videos, or other forms of media intended to explain scientific research and findings to the general public.

Philosophical analysis The academic discipline of philosophy is very different from what you probably think of when you hear the word "philosophy": aphorisms ("sayings"), something-like-religion, useless bullshit. Academic philosophy revolves around the analysis of *arguments*, the reasons we give each other for why we should do something or believe something. In this class we'll focus on *casuistry*, or reasoning by case studies. This style of reasoning is widely used: in law, clinical medicine, business, and my own field of philosophy of science.

Are honors contracts available, for the campus honors program?

Yes, honors contracts are available! Talk to me to start developing a contract.

2 Who's the professor? How do I get in touch with them?

Professor D. Hicks (please call me Professor Hicks)
they/them
danhicks@ucmerced.edu
Student hours:
- 10:30-11:30am in the Lantern
- Or make an appointment

I grew up in Placerville, in the Sierra Nevada foothills between Sacramento and Lake Tahoe. I have degrees in political science, math, and philosophy of science; spent a few years working as a data scientist; and I've worked at the Environmental Protection Agency and the National Science Foundation. I live with two cats, Jasper (white) and Jag (black), and like to go hiking, take nature photography, and play TTRPGs.


Is there anything I should know about how Prof. Hicks teaches their classes?

Compassion is a central part of my teaching. I firmly believe that every student can succeed in my classes, and my job is to provide you with the support you need to be successful. I use things like attendance policies and assignment deadlines because most students benefit from that structure. But I'm not here to be a cop. If something about the course isn't working for you, talk to me right away and we can develop an alternative that enables you to be successful.

I also generally design my classes to be **student-driven**. This class is here to benefit you, and should be relevant to the things you care about and find interesting. Class time is set up to build off of the things you find interesting or confusing in the readings, not necessarily the things that I think are most important. The assignments generally have a specific structure you need to follow, but within that structure you're free to explore topics and develop ideas in line with your own interests.

3 What will we read?

We'll be reading two books:

- Elliott, Kevin C. 2017. *A Tapestry of Values: An Introduction to Values in Science*. Oxford University Press.
- ~~Coeckelbergh, Mark. 2022. *The Political Philosophy of AI: An Introduction*. John Wiley & Sons.~~

- Benjamin, Ruha. 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. John Wiley & Sons.

You'll need a copy that you can annotate. This means you can highlight, underline, write notes in the margins, etc. While you can get electronic versions of both books, they are locked into particular apps, so I do not recommend them.

The bookstore should have copies of Elliott and Coeckelbergh (though we're not reading the second one). You can also find copies of Elliott on Alibris and Amazon. For Benjamin, you'll need to order a copy online. Lots of inexpensive copies are available on Alibris, or you can get a new copy on Bookshop.org.

> **Note**
>
> I needed to submit my book titles before I'd really designed the course, and chose the Coeckelbergh book before I had a chance to look at it carefully. When I did read it over the summer, I felt that Benjamin's book would be a better fit for our class.
> The Elliott book is also more expensive than I'd anticipated. If purchasing the books for this course would be a significant burden for you, please talk to me.

You'll probably also want the following:

- highlighters or writing pens in 2+ colors
- sticky notes or a notebook (for longer notes)
- book stand (for holding your book open as you type)

Do I have to do the readings?

In a lot of courses you might think you can get away with skipping the readings: the professor will cover the essential material in lecture anyways. This actually isn't a great approach, because it's really important to go over the course content a few times. But I know lots of students do it anyways.

In this course, our class discussions will start by assuming you've done a first pass through the readings. There may be lectures on Thursdays, but not necessarily every week; and not at all on Tuesdays. If you skip the readings, you won't have any clue what's happening on Tuesdays.

There's some structure on Mondays and Tuesdays to help you stay accountable and on track. We can also talk about some time management skills, either as a whole class or 1-1 in student hours.

Help, I don't understand the readings!

I chose these books because (I think) they're challenging but doable for first-year students. The chapters are kind of dense, make some references you might not get, and we won't cover everything each week.

But **uncertainty is a resource**, and a lot of the work we'll do this semester is about learning to recognize when we're uncertain, pinpoint exactly where the uncertainty is coming from, and leverage that uncertainty to improve our understanding.

The weekly flow of class is based on the idea of the **hermeneutic cycle**, which is illustrated in the figure. *Hermeneutic* is a fancy term for the interpretation of texts, so the *hermeneutic cycle* refers to the way we develop an interpretation of a complex text.

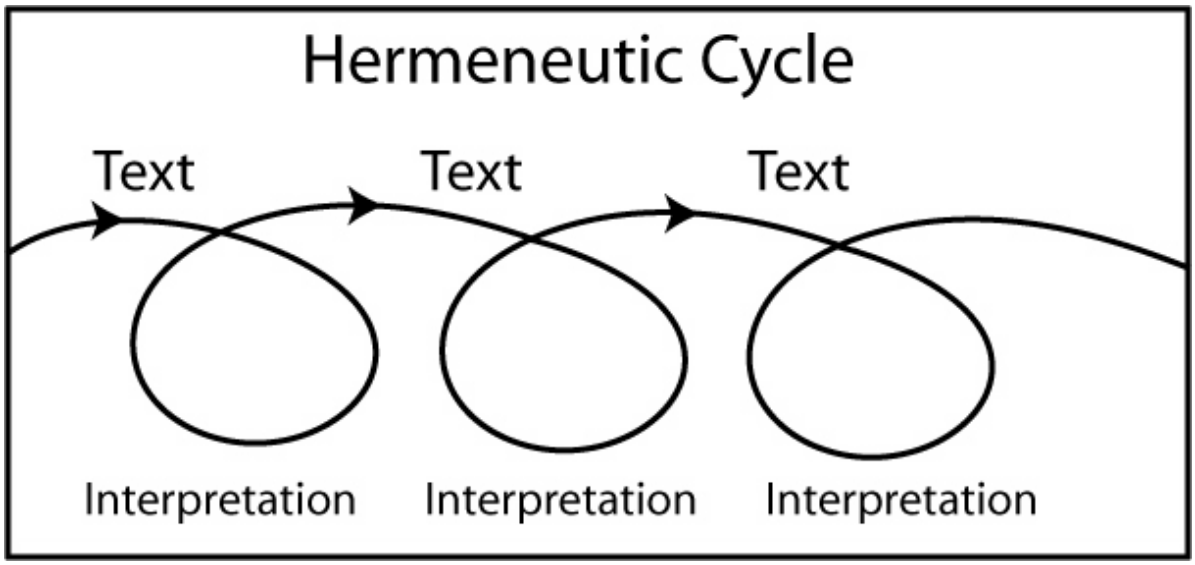

Figure 1: Source

Typically we won't really understand what's going on the first time we read it. But we'll get a rough idea, maybe even just of a small part. We work with this first interpretation, usually through writing and discussing the text with other people. Reflecting on our uncertainty helps us figure out when and where we need to look more closely. Then we can re-read the text, and use our first interpretation to get a better understanding of what's going on.

4 How does the weekly flow work?

Weekend: *Reading* Do the reading for next week, usually one chapter from one of our books. The chapters are generally about 25 pages long, but can be pretty dense. I'd guess most

students will need 2-3 hours, but I could be wrong.

Monday, noon Submit your vibe check on CatCourses

Tuesday: *Your time* After checking in with your small groups, I'll facilitate a whole-class discussion based on questions from your vibe checks. This is "your time" because it's about exploring the ideas from the readings that you find interesting and important.

Thursday: *My time* I'll have a planned activity or lecture. Sometimes this will cover ideas from the week's chapter, maybe building on Tuesday's discussion, or instead things that we didn't discuss on Tuesday that I want to emphasize. Sometimes it will be complementary ideas or course material that isn't included in the readings at all. This is "my time" because it's about the things that I, as the instructor, think are interesting and important.

Friday: *Our time* This will vary from week to week. Sometimes I'll have a planned activity that's less connected to the week's readings. Other times I won't have anything planned, and as a class we'll decide whether to (a) continue the discussion of the week's readings, from Tuesday and Thursday, or (b) take a step back, have a more reflective discussion, and help you build your metacognitive skills. (*Metacognition* is awareness and understanding of your own thinking.) This is "our time" mostly because I wanted to complement "your time" and "my time," but also because there's something kind of communal in metacognition: I understand my thinking better by talking it through with other people.

Is there an attendance policy?

I've been teaching for most of the last 20 years, and until a couple of years ago I didn't have an attendance policy. College students are adults, and part of that is prioritizing and managing the different demands on your time.

However, after the Covid lockdown year I found that students were struggling to get to class. In Fall 2021, after Thanksgiving, I had a class session where only 3 out of 60 students showed up. Low engagement and chronic absenteeism are very strong predictors of missing assignments and failing a course.

In Spring 2022 I asked my students what would help them get to class, and they said they wanted an attendance policy. I still find them paternalistic, but I've been able to maintain 80% attendance or better.

Exit tickets As you leave at the end of class you'll turn in an "exit ticket," which is just an piece of paper with your name, the date, and a question about the day's session. Maybe it's something you didn't understand, or something you want to think about more. I'll read the day's questions and record your attendance on CatCourses.

Six absences You may miss **up to six sessions** — ie, not turn in your exit ticket — without any penalty. **After that, at my discretion, you can fail the class.**

I don't do excused absences. But six absences is two weeks — enough time to recover if you have a cold, or some slack if you have to travel for sports.

My goal with this policy isn't to weed out students, but instead to nudge you into coming to class and identify students who might be struggling. If I see you're having trouble with absences, I'll reach out directly. Depending on your situation, I might be able to offer you an accommodation or some extra support to be successful.

5 How do grades work?

Why doesn't this class use traditional grades?

In most of your other classes (if not all of them), each assignment is worth a certain number of points, the instructor or TA gives you points based on an assessment of the quality of your work, and your course grade is based on the total number of points you get.

This approach emphasizes the points, rather than genuine feedback, the effort you make, and improvement in the quality of your work over the term. It also introduces subjectivity in the grading of individual assignments, especially on things like papers that don't have an objectively correct answer.

What do we do instead?

Your course grade will be based on the work your complete. This mostly reflects the effort you put in, with a small role for quality: all the assignments are graded as "complete" or "incomplete," and usually "incomplete" assignments will need to be revised until they're "good enough."

The table below shows the required assignments. **If you complete all of these, you pass the class with a B.**

Assignment Type	To Pass with a B, do
Vibe check	10/13
Exit ticket	34/40
Annotation Check-in	4/4
Self-Assessment	4/4
SciComm Analysis	5/5
Final Project	1/1

I don't normally give passing grades below a B. If you do not complete all of these required assignments, you will fail the class. However, **if you're on track to fail, talk to me ASAP**. I would much rather work out an alternative assignment schedule or other accommodations, so that you can pass the course successfully.

How do I turn in and track my assignments?

Exit tickets are turned in on paper, at the end of each class. All of the other assignments are turned in using CatCourses.

To track what assignments are **due**, go to the course schedule. The three kinds of major assignments have a column showing when they're due. Remember that you almost always have a vibe check due on Monday!

To track assignments **after you turn them in**, go to the Modules view on CatCourses. The assignments are grouped by type, so you can easily hide all the exit tickets and vibe checks. Some modules will be empty at the start of the term, because I haven't loaded all the assignments into CatCourses yet.

How do I get an A?

To get an A, you need to complete the required assignments, plus **seven (7) extras**. Some extras on the list below only count a certain number of times.

❗ Extras include, but are not limited to:

- Completing an additional scicomm analysis (all parts)
- Develop a weekly schedule (limit: 1x)

  Your schedule should include time for:

  - attending classes,
  - doing homework/reading/studying,
  - any regular extracurriculars,
  - work, and
  - taking care of basic needs (eating, exercise, social time, creative time, etc., and noting bedtime and when you wake up)
- Meet with me 1-1 outside of class (student hours or by appointment) (limit: 2x)
- Work 1-1 with a Writing Center consultant on an assignment for this class (limit: 2x)
- Attend a Philosophy department event (limit: 2x)

  - Reading Room: Wednesdays, 2-4pm
    - A weekly opportunity to read for class, research, or just for fun. Tea and snacks provided by the Philosophy Department.
  - Philosophy Speaker Series: certain Fridays, 3:30-5pm
    - A series of academic talks by guests and local faculty.
  - Examined Life: Fridays at 5pm, starting September 5, Branding Iron
    - Examined Life is an informal group that comes together on a weekly basis to brainstorm philosophical questions or topics. It's organized by UCM philosophy students and open to the public. Contact examinedlife@myyahoo.com for more information.

- Read a book or scholarly journal article that's relevant to this course but not required as part of an assignment
  - Then write a 3-paragraph reflection explaining the connection to this course
- Make a connection between this course and another one, or between this course and "real life"
  - Then write a 3-paragraph reflection explaining the connection
  - The other course can be in any discipline/field/department
  - Ideally, this connection would happen in a class discussion or paper assignment for the other course.
  - But it's okay if all you do is write the reflection.

Other activities might be eligible, at my discretion. Check with me first!

Extras are tracked using assignments on CatCourses. When you complete an extra, just submit a description of what you did for the assignment. Attach proof if appropriate, e.g., your written reflection or a screenshot of your weekly planner.

Extras do not substitute for the required assignments. They only count towards getting you from a B to an A. If you've done 7 extras, but 9 out of 10 required vibe checks, you can still fail the course.

6 Is there an LLM policy?

Our LLM policy will be developed by you, as a class, during the first few weeks of the semester.