

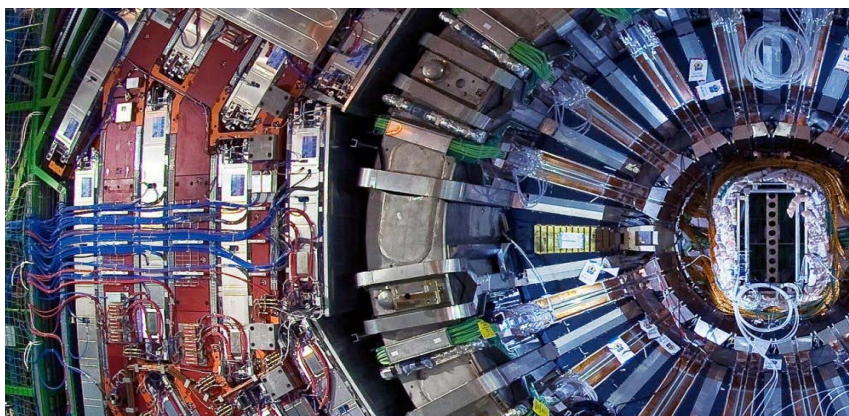
HNRS 20803

Understanding Science

Fall 2022: Monday/Wednesday, 4:00–5:20 pm Central; Rees-Jones Hall 215

Contact

Instructor: Dr. Mikio Akagi
Email: m.akagi@tcu.edu
Office: Scharbauer 1016F
Office hours: Mon., Tue., Wed.,
3–3:50 pm



Course Description

Science is important for society and relevant to our lives, and we often put our trust in it. But how many of us—including scientists—really understand what it is, why it works (when it does), and in what ways it can break down? In this course we will examine foundational questions about science. What is it? Is scientific progress rational? Are scientific theories true, or just useful? How do scientists choose what gets published, and do they choose well? Is science objective? Should it be? And how can science go terribly wrong—by lending authority to nonsense, or enabling prejudice? This course is for students of all majors.

Curriculum attributes:

TCU Core Curriculum:

- Humanities (HUM)
- Citizenship and Social Values (CSV)

John V. Roach Honors College:

- Cultural Visions (CV)

See Appendix F for learning outcomes.

Course Format

As students in an Honors course you will have extra **freedom**—but also extra **responsibility**—to direct class discussion and to work at your own pace.

In class sessions we will explore ideas through discussion, which will often be directed by your questions and comments. There will be some lecturing, but I always encourage you to interject with questions, criticisms, and observations. Your preparation and engagement with each other are essential to make our class time interesting and productive. You are responsible to each other for the success of the course. I have confidence that you will hold yourselves and each other to high standards.

In written work, you will express ideas—especially arguments—clearly and precisely. You are free to set your own pace, but responsible for setting reasonable goals and meeting them in a timely manner. There are no absolute deadlines (except the end of the semester). I am happy to help you plan your work, if asked.

Honors courses are **interdisciplinary**. My focus is shaped by my background as a philosopher of science. Your background may be different—scientifically, artistically, professionally, personally, &c. Your perspective is welcome. Please share it with us!

Course Texts

📖 Barker, Gillian and Philip Kitcher. (2014). *Philosophy of Science: A New Introduction*. New York: Oxford University Press.

Some required readings are in the text above, which you must purchase. Other required readings and resources are posted on TCU Online. If you discover any resources are missing, or links are broken, please let me know and I will mend them quickly. If you require OCR-readable PDFs, let me know and I will accelerate my efforts to make readings more accessible.

Syllabus Format

I try to provide as much information as you might need. However, I don't want to overwhelm you. Therefore, the syllabus is split into parts:

- 📖 This part is the **syllabus proper**. It contains essential information about the course. Please review it during the first week of the term.
- 📖 The **Schedule of Readings** contains a list of the weekly topics, readings, and due dates. You will refer to this document regularly throughout the semester.
- 📖 The **Syllabus Appendices** contain a table of contents, guidelines for assignments, and other course policies. These other policies are not less important than those in the syllabus proper, but they are either more detailed or are university-wide policies posted elsewhere.

Student skills: I provide a packet on student skills for all my classes. It can be found on TCU Online under "Content," in the folder marked "Course documents." You should review its sections as needed:

Guidelines for reading: Please review these in the first week of the term and take them to heart.

Best practices for quoting and citing: Please review these before submitting an argument map commentary, a reflection paper, or a final paper/project.

Guidelines for writing: Please review these before submitting a final paper/project.

Impartiality

My role in this course is to guide you in understanding and thinking through questions, not to train you in answers. I have my own views, some of which you will be able to discern even if I try to hide them. But your grade in this course will never depend on which conclusions you defend; agreeing with me will neither help nor hurt you. Instead, I will evaluate you based on (1) your ability to articulate clear, sophisticated arguments (2) in light of the various texts we cover. I welcome any viewpoint that is expressed thoughtfully and respectfully. You should disagree with and question each other in this class, and you should do the same with me.

Final Examination

The final exam will be held **Monday, 12 December** from **2–4:30 pm**, during the final exam period. The exam will consist of a group discussion, and is mandatory. It can be rescheduled only to accommodate graduating seniors.



As a member of the John V. Roach Honors College, I pledge to dedicate myself to intellectual inquiry, life-long learning, and critical thinking, to demonstrate personal and academic integrity, and to engage others in earnest and respectful discussion with an open mind.

Learning Skills

My educational focus is on teaching skills. Specifically:



Reading comprehension You will identify claims and arguments in academic texts, i.e. the conclusions that an author argues for and the considerations she offers in support of those conclusions.

Reading is hard. Give yourself the opportunity to practice and improve.



Critical thinking You will assess claims and arguments in texts. This involves questioning authors' premises, questioning authors' inferences, applying general claims to novel examples, and comparing claims and arguments within a text or across texts. You must not just understand; you must question, evaluate, and apply.



Constructive discussion You will practice discussing arguments with each other. This activity involves (1) asking questions, (2) answering questions, (3) making suggestions, and (4) listening respectfully to others. Emphasis is placed on treating one another respectfully in discussion. It is important to articulate objections in a civil manner, and to accept disagreement gracefully.



Careful self-expression You will express your thoughts about the course topics in a precise manner, both in verbal discussion and in writing. This requires (1) using concepts correctly, (2) correctly attributing claims and arguments to others, (3) critically evaluating those claims and

arguments, and (4) formulating original objections to arguments in a respectful manner.

Writing is thinking in slow motion. Precise expression is hard, especially about abstract topics—take care to say what you mean.



Integration You will make illuminating connections between various authors and with material from outside of class (e.g. from other classes, the media, personal experience, &c.). Illuminating connections include (1) applying views from class to new situations, (2) noticing that various views are (in)consistent with each other, (3) noticing how various claims might bear on the views or arguments under discussion (e.g. by supporting them, by undermining them, by calling certain premises into question, &c.).



Knowledge acquisition If I am to assess your mastery of the skills above, you must demonstrate your learning and attention to detail. Thus, you are expected to become familiar with the main claims and arguments discussed in class. This involves understanding (1) various philosophical and scientific concepts, (2) the claims associated with various authors or views, and (3) the arguments associated with various authors or views.

Facts are important, but they're not the most important thing you'll learn in this class.

Mastery-based scoring

This course uses a **mastery-based scoring system**. For each assignment, I provide instructions that set out my expectations explicitly and a rubric that assigns point values to specific expectations (Appendix A). Please review these instructions before working on assignments. You get points for demonstrating the skills being assessed, but partial credit is rare. You can re-attempt assignments many times until you pass.

In **mastery-based scoring**, you can retry assignments until you succeed. Your final grade is based on how many assignments you pass, not on a weighted average.

This way, your grade reflects your level of mastery at the end of the semester, regardless of your preparation in prior courses. If you already have the skills you need, the assignments will be easier. But you can also try again until you succeed.

Final Grades

You earn points by completing assessed activities. Each activity is graded according to a rubric; all the rubrics can be found in Appendix A, along with detailed instructions. Since there are more than 100 possible points, there are many routes to success. *You do not need to complete every assignment.* My recommended route to an A is indicated with manicules (☞).

assessed activity	pts. per pass	max pts.	recommended pts.	see pp.
☞ Online discussion	1	40	30	6, 35–37
Short presentation (up to 3×)	3	9	0	6, 22
☞ Identifying ideas	4	4	4	6, 23
☞ Argument maps (up to 10×)	7–16	160	(3 maps) 30	6, 24–27
☞ Reflection papers (up to 4×)	3–8	32	(2 papers) 6	7, 28–29
☞ Final paper	13–31	31	26	7, 30, 30–31
Final project	13–31	31	0	7, 30, 32–33
Total		276	96	

I strongly recommend that you complete *two successful argument maps* (minimum: 14 points) to avoid a **final grade cap**. If you submit fewer than two passing argument maps, your final grade will be limited, no matter how much other work you have submitted:

argument maps passed	maximum course points	final grade cap
0	85	B
1	90	A–
☞ 2 or more	∞	(none)

I report final grades to the Registrar based on the total number of points you earn (taking into consideration the grade cap). I may raise your letter grade if in my view it does not properly reflect your performance. I will not lower your letter grade.

grade	min. points	grade	min. points
A	95	C	73
A-	90	C-	70
B+	87	D+	67
B	83	D	63
B-	80	D-	60
C+	77	F	0

It is also possible to lose points by failing to contribute adequately to the classroom community.

assessed activity	penalty per occasion	notes
Classroom Community		
Unexcused absence	-7	after first two absences
Repeated tardiness	t.b.d.	
Repeated unpreparedness	t.b.d.	
Repeated lack of respect for others	t.b.d.	can be made up
Missing the final exam	-12	
Online discussion		
Missed critical thinking post	-1	

Assessed Activities

Weekly activities

I expect you all to take responsibility for the success of the course by being an active and positive presence in class each week.



Attendance Discussion is essential to this course, so you must come to class. Your lives are complicated, so two unexcused absences are allowed for any reason. You don't need to explain, but it is a courtesy to let me know in advance. Each unexcused absence after the second incurs a penalty of **7 points**.




Note on participation I do not grade participation in this course, but I still expect you to participate by (1) asking questions, (2) answering questions, (3) making suggestions, and (4) listening respectfully to others. Ideally, you will contribute to *each class session*.



Preparation You should come to class with the required readings and materials for taking notes. You should also come with *questions* (critical or comprehension questions). The topics we cover get more confusing the more attention you pay, so having questions is the mark of a student who is paying attention.



Respect for others We can (and should) be critical of each other and the authors we read, but we will do so respectfully. We should articulate objections frankly but kindly, and accept disagreement gracefully. I also ask that you demonstrate respect for your peers and others by staying on topic and cultivating a positive climate free of prejudice. Prejudice can undermine the learning environment even if it is unintentional, or outside the classroom.

 **Online discussion** You will prepare for class each week by discussing the readings on TCU Online. Posting online before class encourages you to think critically about the reading, and allows you to seek help from your classmates. Post comprehension questions as well as critical comments, and reply to each other. **You must also make at least one “critical thinking” post per module by Sunday at 6 pm.** (The deadline may differ for some modules, marked in the Schedule of Readings.) These “CT posts” must be substantive; for more guidance on online discussion, see Appendix B (p. 35).

You get one point for each post you make, but lose one point each time you fail to make a critical thinking post by a deadline. A post doesn’t earn points if it merely repeats what has been posted before, or merely (dis)agrees with earlier posts without adding

a new argument or connection. You can get up to 40 points for online discussion, but I recommend aiming for about 30. If you post at least twice per module, including a critical thinking post by each deadline, you’ll be in good shape.




Short presentation You can earn points by giving a short presentation. Bring in an example of a connection between topics related to class and something outside of class (an event in the news, a story or television show you found, or whatever). Presentations take place at the beginning of class according to the class schedule, and should last *no more than five minutes*. Please prepare a visual aid, e.g. a handout. Each connection presentation is worth 2 points, up to a total of 6 points. For more details see Appendix A (p. 22).

Opportunity assignments


The core skills in this course are assessed through argument maps and reflections papers (and commentaries). There will be an opportunity at the end of each module (roughly weekly) to submit opportunity assignments. These assignments can be submitted many times—on different topics—to earn points throughout the semester.

You can attempt one opportunity assignment per module. If you pass an assignment, you get some number of points according to the rubric for that assignment. If you do not pass, you can re-attempt it in a later module. I will strive to return work promptly (usually the next class meeting). Assignments must always be about the most recently finished module, so **each new attempt must be new work, not a revision of a previous attempt**. Opportunity assignments about a topic are due on the Friday after our discussion about that topic. Please use the naming convention for filenames (p. 21).

Before composing an assignment, **please review the detailed guidelines in Appendix A.**


 **Identifying ideas** For one of the week’s readings, identify three concepts, three claims, and one argument. This assignment is a prerequisite for the other opportunity assignments.

To make sure we’re all on the same page.

 **Argument map** Select an *argument* from the week’s reading. Create a map that author’s conclusion and premises, including implicit premises. See instructions on TCU Online. This assignment is very challenging, but it allows you to practice a fundamental skill for understanding and thinking critically.

You may have to try more than once.

Argument map assignments can be fairly simple or very complicated. I recommend that you start by attempting a simple map, and work up to more complex maps with commentaries and objections. Commentaries on argument maps can be no longer than 300 words (strict limit). Be sure to include a word count and to cite all sources appropriately, and to use your own words (review the policy on Plagiarism, p. 9). You can work together argument maps, but not on commentaries (see p. 24).

 **Reflection papers** For each module, instead of attempting an argument map, you may choose to write a short, reflective paper in response to the readings or discussion (up to four times). Be sure to cite all sources appropriately, and to use your own words (review the policy on Plagiarism, p. 9). You can earn bonus points on reflection papers by replying to my notes. Replies should be no more than about 300 words (rough limit), and are due at the next regular deadline. You can submit a reply at the same time as a new argument map or reflection paper.

End of the semester



Final paper/project proposal Before beginning your final papers/projects, please send me a brief email (not an attached document!) with your plan. I will provide feedback and advice.




Final paper/project At the end of the semester, you will submit either a final paper or a final project. In the **final paper** you will discuss some media source of your choice from outside class—a newspaper or magazine article, academic paper, blog post, podcast episode, video, film, newscast, &c.—and its relation to topics discussed in class. Final papers should be around 2500–3500 words long (5–7 pages).


 Put all your skills together.


Alternatively, you might design and complete a **final project**. This is a creative project that connects somehow to the topics discussed in class, e.g. a short story, brief documentary film, short documentary podcast, mixtape, &c. For more elaborate creative works, a plan is sufficient (e.g. a procedure for an experiment, a pitch for a novel or screenplay, a plan for a curated exhibition). Final projects should be submitted with an analytical paper (around 1000 words; about three pages) explaining how the creative work relates to class topics.

The final paper/project should be an opportunity for you to express yourself and explore your interests. Be sure to cite all sources appropriately, and to use your own words (review the policy on Plagiarism, p. 9). The word count requirement for the final paper is flexible. See “Guidelines for Writing” in the student skills packet for advice on effective analytical writing.


 **Final exam** The final exam will take place during the final exam period, and consists of a group conversation in which you will reflect on your learning experience in the course. I will distribute questions near the end of the semester to guide our discussion. There is a penalty of **12 points** if you fail to attend this final session and participate in good faith.


Class Resources


 **TCU Online** You will use TCU Online to access readings and course materials, to participate in online discussion, to submit assignments, and (if necessary) to access links for classes on Zoom. See Appendix E, p. 42 for more information.


 **Office hours** Each week, I set aside extra time to meet with you outside of class. You are always entitled to visit me during office hours in person or via Zoom. No appointment or previous arrangement is required; you can simply drop by my office. For Zoom meetings, please email me (short notice is fine). If my office hours do not suit your schedule, please email me to make an appointment (please suggest a date and time). I encourage you to visit frequently to discuss the course, your academic or professional interests, or other topics.

I strongly encourage you to make a visit during the first three weeks of class, even if you do not have specific questions, just to become comfortable. And I advise that you visit to discuss your plans for the final paper later in the semester. In addition, please feel free to meet with me to discuss outlines or drafts of your assignments, or my comments.

 **Zoom access** Zoom videoconferencing software can be downloaded at it.tcu.edu/zoom/. Please familiarize yourself with the program (see Appendix D, p. 39). Classes will be held via Zoom if they cannot occur safely in person, and you may attend office hours in person or via Zoom. If you wish to meet via Zoom but have no appointment, just send me an email and I will do my best to reply promptly.

 **Website** I maintain a website with resources for students. You can find study guides and other advice at www.mikioakagi.net/teaching-resources/. You can also find a frequently-updated list of extra resources relevant to this course at www.mikioakagi.net/teaching/science/ (these resources are all examples of suitable media sources for the final paper).

 **Peer learning groups** Your greatest resource at TCU is your classmates, so please share their knowledge, experience, and thoughtfulness in and outside of class. I think you will find that you will excel in this course if you find opportunities to discuss the course topics and practice the course skills with each other. Therefore, although it is not a requirement, I encourage you to form groups with 3–5 of your classmates and meet every week or two (after class, over dinner, in study sessions, or whatever). I've provided space for you to record each other's names and contact information at the end of the syllabus proper (p. 10).

 **Other resources** For information on campus-wide resources, see Appendix E, p. 41.

There are many ways to get extra help, and that help is for thriving students no less than for students having difficulty. Take advantage of these resources!

Research shows that students learn most from each other, not from instructors.

Basic Course Policies



Excused absences Regular attendance is required (see also “Attendance,” p. 5). TCU excuses absences only in special circumstances. I excuse some additional absences (e.g. for illness without a note, mourning). Any absences about which you have foreknowledge should be discussed with me as early as possible.



Plague policies This class will be held in-person. Face coverings are required indoors for *all* students (see TCU’s policies below under “Safety,” Appendix E, p. 43). If you have been exposed to COVID-19, you must quarantine. Do not come to class. My hope is that we will have a full semester of healthy and safe in-person learning. However, if for any reason we cannot meet for class (i.e., COVID-19 exposure in our class or another unforeseeable event), we will have class via Zoom as a temporary measure. If we must meet via Zoom, I will send instructions by email and/or post instructions on TCU Online.

Bear in mind that some students in our class may be especially vulnerable to COVID-19, so we must all be cautious. I ask you to be responsible for your health and well-being and be considerate and respectful of others.



Technology in class In order to fully participate in class you must listen attentively to your peers (it is disrespectful to check your email, post on social media, or shop online while your peers are speaking, though I know the temptation can be strong!). Therefore, mobile phones should be silenced during class and kept out of sight. Computers and tablets may not be used unless you have a good reason, discussed with me in advance (accommodation for disability is always a good reason, and there are some others).



Plagiarism You should cite your sources properly whenever possible, in whatever format you’re most comfortable with (MLA, APA, etc). Failure to properly cite your sources (not just your quotations!) is plagiarism, even if it is unintentional. It is your responsibility to be familiar with what counts as plagiarism. I recommend you review guidelines on “patchwork paraphrase,” which is a form of plagiarism. If you find yourself in doubt, please seek advice from me or from the Writing Center. Please review the “Best Practices for Quoting and Citing” in the student skills packet, and at least one of the resources on plagiarism I’ve posted on my website at www.mikioakagi.net/teaching-resources/#plagiarism. I use plagiarism-detection software such as Turnitin when reviewing student work. For more information about university policies on academic misconduct, see Appendix E, p. 45.

Many Honors students *think* they know how to avoid plagiarism, but do not.

I handle several cases *each semester*. Don’t be one!



Collaboration on assignments You can (and should!) discuss your ideas, struggles, and solutions with each other up to the point of composing your assignments. You may not collaborate on composing text for this course—that goes for papers, presentations, final projects, and discussion posts. Any words you submit for assessment in this course must be by you, unless they are carefully and correctly attributed.

One exception: you can and should help each other with argument maps, since they are so difficult to get the hang of. However, each student must submit their own argument map assignment (see note p. 24).



Extensions and late work I will grant extensions on assignments and the final paper by request. Please ask me before the deadline, and please suggest a new deadline. If you are busy or feeling stressed out about your work, talk to me. Online discussion posts cannot be accepted late.



Grading If you are confused about the way grades are assigned, please talk to me (in class or one-on-one) and I will be happy to clarify. I will not negotiate grades (e.g. “I need a higher GPA” is not a reason for me to alter your grade). However, I am human and I do make mistakes. If you feel you have received a particular grade in error or that the process was unfair, please do not hesitate to discuss it with me.



Accommodation for disability I take disability accommodations very seriously. If you require accommodations, please discuss them with me as early as possible. I also recognize that since this course is unusual, some students who may not normally require accommodation (and have no documentation) may find it helpful in this course. If you find yourself in that situation, please let me know. More information about student access and accommodation at TCU can be found in Appendix E, p. 43.



Discrimination and Title IX Discrimination and harassment are wrong and undermine the learning environment. I want you to feel comfortable sharing your experiences with me, and will keep your confidence as well as I can, but I am legally required to report incidents of discrimination, harassment, or assault to the University. More information about university policies on discrimination and Title IX, as well as information on confidential resources, can be found in Appendix E, p. 44.



Other policies More information on course policies, including TCU-wide policies, can be found in Appendix E (p. 41).

Peer Contacts

Your first resource for small difficulties with the course will probably be your classmates, anyway. So meet some of them, and help each other out. You can also use these contacts to start your first peer learning groups (p. 8).

Name

Email

HNRS 20803

Understanding Science

Schedule of Readings

Schedule for Each Module


Some modules have variant schedules (X or S); exceptions are noted in the Outline below.


Wednesday	Sunday	Monday
Preparation Review weekly readings (close reading is optional at this point). Come to class prepared with comprehension questions.	Preparation Finish your close reading of the weekly readings.	Preparation Complete your critical review of weekly readings. Come to class prepared with critical thinking questions.
In class We will generally focus on understanding the assigned readings and background. The whole class will meet together.	In class (No class.)	In class We will focus on evaluating the readings and broader themes. Discussion is often organized around online discussion posts.
Assignments (None.)	Assignments Make a critical thinking post online by 6 pm.	Assignments Attempts at written assignments are due the following Fri. at 5 pm (after starting a new module).

Course Outline

This outline is subject to change. All listed resources can be found on TCU Online or in the course text. You are required to read (or listen to or watch) each resource except those marked “recommended” or “further learning.”

Since my reading lists are always changing, some resources may not yet be fully accessible. If you have difficulty with texts, video, or audio due to disability (e.g. you require subtitles or OCR-processed documents), *please let me know early in the semester* and I will strive to make accommodations more quickly.

 **Target resources** are marked with a manicule. These resources should be read (or watched or listened to) with special care (i.e. with the enthusiastic embrace of the methods described in “Guidelines for Reading” in the study skills packet), and are the resources most suitable for assignments.

 **Notes** on the resources are marked with a floral dingbat, and apply to the resource immediately above. Look at these—sometimes you don’t need to read everything.


Background resources offer context for understanding other required readings. They are required, but need not be reviewed thoroughly; they can be skimmed for the relevant bits.

Recommended resources are not required, but might offer some especially useful insights and might be fun.

Further learning resources are not required. They will often be described in lectures, and are listed in case you wish to explore a topic more deeply on your own.

00 Introduction to course and methods

22 Aug. I'll introduce you to the philosophy of science and to some of our main topics. We'll also discuss the format and expectations for the course.

 B & K Preface, pp. ix and Chap. 1 "Science and Philosophy," pp. 1–3.

 "B & K" is the course text by Barker and Kitcher. The first few excerpts are online, but you'll need to get the book!

 For ebook readers: Preface, first paragraph and Chap. 1, first section.

Syllabus.

 Read the syllabus proper (pp. 1–10) and glance over the schedule.

You are *not* required to read the appendices.

Student skills packet.

 Read the Guidelines for Reading, pp. 2–9. The other sections are not required this week.


No CT posts or assignments on the introductory materials.

I. What is Science?

To begin, we will cover some basic history of science, and discuss what makes something "science."

01 S Science history and practice

24 Aug. We will cover some basics about the Scientific Revolution, and discuss several more recent examples of scientific work that interest you.

 B & K Chap. 1 "Science and Philosophy," pp. 3–9.

 For ebook readers: "Modern Science: A Brief History" through "Images of Science," ¶ 6 or so.

Background: Akagi Mikio. (ms 2020). Philosophical methods (manuscript). 7 pages.

 Review this before attempting the "Identifying ideas" assignment.

Further learning: B & K Chap. 5 "Critical Voices," pp. 113–117.

 This reading will be required later, but offers some interesting contrast here.


 For ebook readers: Chap. 5, "The Cultural Critique."

CT posts not required.

Assignments on module 01 are due Fri. 26 Aug., 5 pm.

02 X Falsificationism

29, 31 Aug. A popular view among scientists is that what makes a theory scientific is that it is "falsifiable." We will discuss some motivations for this view, as well as some criticisms.

 Popper, Karl R. (1963). Science: Conjectures and refutations. In *Conjectures and Refutations: The Growth of Scientific Knowledge*, London: Routledge.

B & K Chap. 2 "The Analytic Project," pp. 12–22.

 For ebook readers: Chap. 2, "Demarcating Science" (including boxes "The Discovery of Insulin," "Freud and the Rat Man").


Mon–Wed module. CT posts due on Tue. 30 Aug., 6 pm.


Assignments on module 02 are due Fri. 02 Sep., 5 pm.

03 Junk science

07, 12 Sep. There is sometimes a gap between theories that the public trust in and theories that scientists find credible. This week we'll examine some methods in forensic science.

Maybe by now
you've completed
"identifying ideas."


 Kaplan, Aliza B. and Janis C. Puracal. (2018). It's not a match: Why the law can't let go of junk science. *Albany Law Review* 81: 895–939.

 This paper is longer than most of our readings, but also more concrete and less dense. Focus on Sects. I–IV, VI–VIII (pp. 895–916, 919–935).

Further learning: Haack, Susan. (2010). Federal philosophy of science: A deconstruction—and a reconstruction. *New York University Journal of Law and Liberty* 5: 394–435.


04 Pseudoscience

14, 19 Sep. The line between science and its imitators—pseudoscience or junk science—might be harder to draw than most think.

 Thagard, Paul R. (1978). Why astrology is a pseudoscience. *Proceedings of the Philosophy of Science Association* 1978: 223–234.

B & K Chap. 3 “The View from the Sciences,” pp. 50–54, 59–61.

 Skip the stuff about reductionism, pp. 54–59.


 For ebook readers: Chap. 3, “The Sciences on Their Own Terms” through “The Ideal of Unified Science” (including box “Understanding Animals”), but skip ¶¶ 8–17 about reductionism.

II. What Do Scientists Do?

In this unit, we'll examine some more concrete discussions of scientific practice. Both how it works, and how it (sometimes) doesn't.

05 Explanation: laws and mechanisms

21, 26 Sep. A traditional view of science holds that scientific explanations invoke “laws of nature.” But attention to the biological and behavioral sciences reveals that something else seems to be happening there...



 Bechtel, William and Adele Abrahamsen. (2005). Explanation: A mechanist alternative. *Studies in the History and Philosophy of Biological and Biomedical Sciences* 36: 421–441.

Further learning: Cartwright, Nancy. (1999). Fundamentalism versus the patchwork of laws. In *The Dappled World: A Study of the Boundaries of Science* (pp. 23–34), Cambridge: Cambridge University Press.

Further learning: Mitchell, Sandra D. (2000). Dimensions of scientific law. *Philosophy of Science* 67: 242–265.

o6 Classification: concepts and definitions

28 Sep., 03 Oct. An under-appreciated aspect of science is the engineering of new concepts (and the re-engineering of old concepts). This week we'll focus on scientific treatments of life.

-  Cleland, Carol E. (2012). Life without definitions. *Synthese* 185: 125–144.
 Skip from end of Sect. 2.1 (p. 131) to the top of p. 137.

Further learning: Ludwig, David. (2014). Disagreement in scientific ontologies. *Journal of General Philosophy of Science* 45: 119–131.



Further learning: Stotz, Karola and Paul Griffiths. (2004). Genes: Philosophical analyses put to the test. *History and Philosophy of the Life Sciences* 26: 5–28.

o7 s Null hypothesis significance testing

05 Oct. We'll take a moment to learn about one of the most common statistical techniques in science, and how it is often abused.

B & K Chap. 3 “The View from the Sciences,” pp. 61–66.

-  For ebook readers: Chap. 3, “The Ineradicability of Causation” (including box “Smoking and Lung Cancer”).


-  Cohen, Jacob. (1990). Things I have learned (so far). *American Psychologist* 45: 1304–1312.
 Skip the section entitled “Simple Is Better” (pp. 1305–1307); do your best with the rest. I won't test you on statistics; the idea is just to get a general grasp of how it works.

Further learning: Rouder, Jeffrey N., Richard D. Morey, Josine Verhagen, Jordan M. Province, and Eric-Jan Wagenmakers. (2016). Is there a free lunch in inference? *Topics in Cognitive Science* 8: 520–547.

Further learning: Benjamin, Daniel O., James O. Berger, Magnus Johannesson, et al. (2018). Redefine statistical significance. *Nature: Human Behavior* 2: 6–10.

o8 x The replication crisis

10, 12 Oct. Replication is supposed to be a crucial part of the scientific process, but it's often neglected. Now it seems many famous results don't replicate. What's the problem? How can we fix it?

-  Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science* 349: 943/aac4717 1–8.
 Pashler, Harold and Christine R. Harris. (2012). Is the replicability crisis overblown? Three arguments examined. *Perspectives on Psychological Science* 7: 531–536.

NB. Short module.
CT posts not required.

Mon–Wed module.
CT posts due on
Tue. 11 Oct., 6 pm.

Further learning: Maxwell, Scott E., Michael Y. Lau, and George S. Howard. (2015). Is psychology suffering from a replication crisis? What does “failure to replicate” really mean? *American Psychologist* 70: 487–498.

Further learning: Gilbert, Daniel T., Gary King, Stephen Pettigrew, and Timothy D. Wilson. (2016). Comment on “Estimating the reproducibility of psychological science.” *Science* 251: 1037-b.

Further learning: Anderson, Christopher J., Štěpán Bahník, Michael Barnett-Cowan, et al. (2016). Response to comment on “Estimating the reproducibility of psychological science.” *Science* 251: 1037-c.


09 S

17 Oct.

Preregistration

We'll finish our exploration of statistics and replicability by discussing one popular proposal for reforming science.

NB. Short module.
CT posts due on
Sun. 16 Oct., 6 pm.

 Nosek, Brian A., Charles R. Ebersole, Alexander C. DeHaven, and David T. Mellor. (2018). The preregistration revolution. *PNAS* 115: 2600–2606.

III. Science in a Social Context

So far we've mostly discussed science as an impersonal enterprise, and scientists as cogs in the scientific machine. In the final unit, we'll focus a bit more on the relation between science and society.

10

19, 24 Oct.

Scientific racism


Sometimes troubling things are done in the name of science. This week we'll discuss why we have Institutional Review Boards. **Content warning** for intense and upsetting historical racism.

B & K Chap. 5 “Critical Voices,” pp. 130–134.

 For ebook readers: Chap. 5, “Science as a Social Endeavor,” ¶ 15–end (the box is optional).

Reverby, Susan M. (2021). Ugly history: the U.S. syphilis experiment. TED-Ed. 8 June (video, 5 minutes). Available at <https://youtu.be/ZV7RzS8QRXE>.

 Content warning: unusually sickening historic racism.

 Gould, Stephen Jay. 1981. “American Polygeny and Craniometry before Darwin: Blacks and Indians as Separate, Inferior Species.” In *The Mismeasure of Man* (New York: Norton), pp. 54–73. Reprinted in Sandra Harding (ed.), *The “Racial” Economy of Science: Toward a Democratic Future* (Bloomington, IN: Indiana University Press, 1993), pp. 84–115.

 Look at the whole paper but focus on the section about Morton, pp. 99–end.

 Also: it's now considered offensive to refer to the Khoekhoe people as “Hottentots.”

 Content warning: historic racism.

Further learning: Henrich, Joseph, Steven J. Heine, Ara Norenzayan. 2010. “The weirdest people in the world?” *Behavioral and Brain Sciences* 33: 61–135.

👤 The main article is just pp. 61–83; the rest is critical commentary.

Further learning: Morning, Ann. 2008. “Reconstructing Race in Science and Society: Biology Textbooks, 1952–2002.” *American Journal of Sociology* 114: S106–S137.

11

Scientific revolutions

26, 31 Oct.

Is science rational? Do scientists respond to evidence? Thomas Kuhn’s influential theory raises some questions about how scientists actually change their minds.

Maybe submit a proposal for your final paper/project.

📖 B & K Chap. 4 “Science, History, and Society,” pp. 78–103.

👤 For ebook readers: Chap. 3, beginning to end including boxes.

Further learning: Kuhn, Thomas S. (1970). The nature and necessity of scientific revolutions. In *The Structure of Scientific Revolutions*, 2nd ed. (pp. 92–110), Chicago: University of Chicago Press.

12

Sexism in scientific theory

02, 07 Nov.

Many people believe that it’s good for scientists to be diverse, but does the diversity of scientists affect which theories we believe in?

B & K Chap. 5 “Critical Voices,” pp. 106–121.

👤 For ebook readers: Chap. 5, “A Mixture of Challenges” through “The Ecological Critique” (including boxes “A Sea Change in Primatology,” “The Dynamic Genome: Mobility and Control,” and “The Transformation of Agriculture”).

📖 Martin, Emily. (1991). The egg and the sperm: How science has constructed a romance based on stereotypical male-feminine roles. *Signs* 16: 485–501.

Abumrad, Jad and Robert Krulwich. 2008. “Why So Many Sperm?” Radiolab. WNYC. New York: WNYC, November 21 (audio, 23 minutes).


radiolab.org/story/91647-why-so-many-sperm/.

👤 As a complement to Martin, listen to the third segment about active processes in human female reproduction; it starts around 16:35 with some geese squawking.

Recommended: Fine, Cordelia. (2008). “Will Working Mothers’ Brains Explode? The Popular New Genre of Neurosexism.” *Neuroethics* 1: 69–72.

13 Social values in science

09, 14 Nov. Do social values have any place in science, or do they compromise the scientific process? Elizabeth Anderson argues that social values help us to find the “whole truth.”


 Anderson, Elizabeth. (1995). Knowledge, human interests, and objectivity in feminist epistemology. *Philosophical Topics* 23: 27–58.


Further learning: Longino, Helen E. (1990). Values and objectivity. In *Science as Social Knowledge: Values and Objectivity in Scientific Inquiry* (pp. 62–82), Princeton: Princeton University Press.

14 The credit economy

16, 28 Nov. We will discuss the motivations of individual sciences in the “credit economy,” and how selfish incentives can make science more efficient but also incentivize fraud. We will also discuss the process of publication.

B & K Chap. 5 “Critical Voices,” pp. 125–130.

 For ebook readers: Chap. 5, “Science as a Social Endeavor,” ¶¶ 1–14 (including box “New Methods of Inquiry and Government”).

 Huebner, Bryce and Liam K. Bright. (2020). Collective responsibility and fraud in scientific communities. In Bazargan-Forward, Saba and Deborah Tollefsen (Eds.), *The Routledge Handbook of Collective Responsibility* (pp. 358–372), New York: Routledge.

Further learning: Dang, Haixin and Liam K. Bright. (2021). Scientific conclusions need not be accurate, justified, or believed by their authors. *Synthese*. DOI: 10.1007/s11229-021-03158-9.

15 Science and politics

30 Nov., 05 Dec. We will consider how science should be constrained by collective decision-making, how political influences can distort the scientific literature, and how political in-groups can interfere with understanding science.

B & K Chap. 6 “Science, Values, and Politics,” pp. 136–139, 141–150, and box pp. 157–160.

👉 Skip the sections on pp. 139–141 and pp. 150–156.

👉 For ebook readers: Chap. 6, read “The Aims of the Sciences”; skip “Values and Choices”; then read “The Autonomy of the Sciences” through “Powers behind the Lab” (including boxes “Payoffs from Genetic Sequencing” and “Lysenko and ‘Planned Science’”) and read box “Climate Change Controversies.”

👉 Mason, Sharon E. (forthcoming). Climate science denial as willful hermeneutical ignorance. *Social Epistemology*.

Recommended: Nguyen, C. Thi. (2018). Escape the echo chamber. *Aeon*. 09 April.

<https://aeon.co/essays/why-its-as-hard-to-escape-an-echo-chamber-as-it-is-to-flee-a-cult>.

👉 An interesting companion to Mason: this easy-to-read piece discusses the differences between ‘epistemic bubbles’ and ‘echo chambers.’

16 S Well-ordered science

07 Dec. To conclude the semester, we will consider Kitcher’s ideal of “well-ordered science,” and how the scientific enterprise can best serve the world’s needs.

👉 **B & K Chap. 6 “Science, Values, and Politics,” pp. 150–161.**

👉 Only seven new pages; you’ve already read the box, pp. 157–160.

👉 For ebook readers: Chap. 6, “What Do ‘We’ Want to Know” through “Deciding What We Know” (including boxes “Disease Research and Global Health” and “Deliberative Polling”).

NB. Short module.

CT posts due on

Tue. 06 Dec., 6 pm.

12 Dec.

Last weekly assignments and final papers/projects due Monday at 5 pm.

See me if you need an extension.

12 Dec.

Final exam, 2:00–4:30 pm.

HNRS 20803

Understanding Science

Syllabus Appendices

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Appendix A: Assignment Guidelines

Most of the points you earn will be through written assignments. Opportunity assignments must be about the most recently completed module, so you cannot submit those assignments about topics we discussed many weeks ago. Before composing an assignment, please review the guidelines below.

It is your responsibility to set goals and manage your time so that by the end of the semester, you have the grade you want.

Submission

Please submit assignments in the appropriate dropbox in TCU Online.

- ☞ Click on the “Activities” tab under the course title and select “Assignments” in the drop-down menu.
- ☞ Select the appropriate dropbox (e.g. “Identifying ideas”) to upload your file.
- ☞ Please submit files readable by MS Word (e.g. .docx, .doc, .odf, .rtf); Google Docs can export to these formats. If you submit PDF (.pdf) files I will accept them but I will resent you (they’re harder to archive and comment on). I reserve the right to reject work submitted in other formats for senseless, authoritarian reasons.

I ask you to please observe a **naming convention** for your filenames. It will take you a minute or two to figure out, but it will save me several hours during the semester. Your filename should be your **surname/last name** in all caps, then a space, followed by your preferred **given name**, capitalized normally. You may retain spaces and accents marks in your name as you prefer. After your name (and a space), your filename should contain an **assignment code**. After the code you can label your files however you want.

The **assignment code** is two characters. The first character designates the assignment you’re turning in—‘i’, ‘a’, ‘r’, or ‘f’ respectively for Identifying ideas, argument maps, reflection papers, or a final paper/project. The second character is the number of the module that corresponds to the assignment content. The second character can be omitted for the final paper/project.

Examples:

- | | |
|--|--------------------------------|
| ➤ AKAGI Mikio i1.docx | (Identifying ideas, module #1) |
| ➤ NOSRAT Samin i2.docx | (Identifying ideas, module #2) |
| ➤ OCARROLL Mary a2.docx | (Argument map, module #2) |
| ➤ Ó SÉAGHDHA Darach a6.rtf | (Argument map, module #6) |
| ➤ McCARTHY Melissa a10 Science.doc | (Argument map, module #10) |
| ➤ van FRAASSEN Bastiaan r5 Realism.doc | (Reflection paper, module #5) |
| ➤ TOULOUSE-LAUTREC Henri r12.docx | (Reflection paper, module #12) |
| ➤ TUNSTALL KT ra.docx | (Reflection paper, module #1) |
| ➤ Björk r12.doc | (Reflection paper, module #12) |
| ➤ GUÐMUNDSDOTTÍR Björk f.doc | (final project) |
| ➤ DAVIS Angela f Awesome paper final.pdf | (final paper) |

SURNAME (ALL CAPS) Preferred given name (Normal cap) code optional other stuff after the code

Please omit apostrophes. Hyphens are fine. You may observe capitalization complications, e.g. “McGregor” in all caps is “McGREGOR” (with a lowercase ‘c’) but “Macpherson” is “MACPHERSON.” If you use a patronymic or matronymic instead of a surname, you may put it in all caps or omit it, as you prefer.

Short presentation



Length: ≤ five minutes.

Due: beginning of class on any week; sign up on the class schedule.

Topic: Describe an outside source or event and its connection to class topics.

Instructions Prepare and give a short presentation in order to build up the class's background knowledge. I encourage you to select topics that you already know about, or in which you already have some interest. Presentations should last **no more than five minutes**. Each presentation is worth **3 points**, and you can earn credit for up to three during the semester. To make a short presentation, sign up on the class schedule (on TCU Online, in the content area, under "Class resources").

Option A: scientific study The default topic in this class will be a **scientific study**. If you present about a scientific study, you may use a popular article as a source, but it is best if you take a look at the original study, too. Please tell us::

- ☞ What is the research question addressed by the study?
- ☞ What procedures did the experimenters use? There may be more than one experiment per study.
- ☞ What happened in the experiment(s)?
- ☞ What conclusions did the researchers draw?

Whether you present on a scientific study or some other topic, please answer the question:

- ☞ What connections can you make between your topic and the views discussed so far in class?

Option B: other topic Instead of presenting on a scientific study, you can also **create your own topic**. Bring in an example of a connection between topics related to class and something outside of class (an event in the news, a story or television show you found, or whatever). Feel free to present on anything that interests you and has some connection to our discussions in class. Whether you present on a scientific study or some other topic, please answer the question:

- ☞ What connections can you make between your topic and the views discussed so far in class?

Conventions

- ☞ Presentations should be no more than five minutes long.
- ☞ Please prepare a **visual aid**, such as a single PowerPoint slide or a one-page handout (no longer!). PowerPoint slides can also be emailed to Dr. Akagi by 3:00 pm the day of your presentation, so that they can be incorporated into the slides for class.

Identifying ideas

- **Length:** ≤ 1 page.
- **Due:** 5 pm on Friday after discussion (usually two Fridays after lecture).
- **Topic:** Identify three concepts, three claims, and one argument from the latest module.

Rationale When thinking about abstract topics, it is often important to distinguish between different kinds of ideas. In this assignment you will demonstrate that you can identify and name different kinds of idea.

Prep Review the differences between **concepts**, **claims**, and **arguments** in the “Philosophical Methods” reading from week 1.

Instructions Under the first heading on your page, list **three concepts** from the week’s reading or lecture. Under a second heading, list **three claims**. Finally, under a third heading, articulate **one argument** as briefly as possible (ideally in one sentence). You do not need to define, describe, or explain any of these items; just list them. Prominent concepts, claims, and arguments (that we talked about a lot) are best.

If you are unsure about whether your selections are appropriate, please ask me and I will be happy to advise you, but I will not make selections for you; judging appropriately is part of the assignment.

Rubric for Identifying ideas

Basic requirements

4 pts. Assignment lists three concepts, three claims, and one argument. Items are properly labeled as such.

Penalties

none

Bonus points

none

Conventions

- ☞ It is nice to include citations *with specific page references* (i.e. to relevant pages in a reading, not the pages of the whole reading).
- ☞ You may use direct quotes, but often it is clearer to lightly rephrase things in your own words.
- ☞ Claims should be expressed so that they can be understood without extra context (e.g. there should be no pronouns or demonstratives that refer to things outside the sentence); this skill will come in handy later.

Argument map



Length: about 1 page.

Due: 5 pm on Friday after discussion (usually two Fridays after lecture).

Topic: Map an argument from the latest module, distinguishing premises and conclusions.

Rationale This is an unusual and challenging assignment, but it allows you to practice skills that are essential for critical reasoning and reading comprehension. The rules of the assignment are not arbitrary; they are rules for thinking clearly about arguments.

Preparation Review the advice for argument maps (handout on TCU Online: in the “Content” area, in “Course Documents” folder). I will grade this assignment in light of the rules and guidelines described there.

Instructions Select an **argument** that is prominent in one of the week’s readings. If you are unsure about whether your selection is appropriate, please ask me and I will advise, but I will not select an argument for you; judging appropriately is part of the assignment.

Construct an argument map of your chosen argument, identifying the **conclusion** at the top of the page and at least two **premises** underneath it, observing the rabbit rule and holding hands. An example:

Brains are gross.

because...

- Brains are squishy and moist.
- If something is squishy and moist, then it is gross.

Note that argument maps can be submitted along with **commentaries** (see separate instructions below).

Advice I strongly recommend starting with a basic map (containing no subpremises). You may move on to more complex maps after you pass a basic map assignment. This recommendation is meant to scaffold your learning, and to save you work and frustration.

Note that premises and conclusions are kinds of claims, so each line should be expressed as a complete declarative sentence (e.g. “Brains are squishy and moist,” but not simply “squishy and moist”). Each claim should be **clear and precise**. You must be selective about which details you include. Do not embroider your description unless it adds necessary clarity. Do not use complicated words or phrases unless you have to. The use of nonsensical language will count against your grade. Pay special attention to **quantifiers** (e.g. *all, every, each, many, some, one, none*) and **modal** terms (e.g. *necessarily, must, possibly, might, could, will, sufficient*).



Collaboration Since this is an unusual and difficult assignment, I encourage you to help each other, especially at first. *However*, each student is responsible for submitting their own assignment, which should not be too similar to any other submitted assignment. E.g. Hille may help Ada on her map, but Hille and Ada cannot submit the same map (or maps with only minor changes in wording). Perhaps if Hille helps Ada on her map, then Ada can help Hille with a map for a different argument.

Rubric for argument map

Basic requirements

8 pts. for a well-formed argument map that observes the cardinal rules (no internal reasoning, the rabbit rule, holding hands) and is mostly faithful to the source text. Argument maps for this class should typically express valid reasoning (with rare exceptions). See additional instructions.

Penalties

- 1 for an argument that is subtly unfaithful to the source text.
- 2 for argument that is substantially unfaithful to the source text (does not stack with penalty above).

Bonus points

(Bonus points can be earned *only if* the basic requirements are met.)

- +2 for a map that includes one sub-argument.
- +1 for a map that includes two or more sub-arguments (stacks with bonus above).

Conventions Maps can conform to any of the styles described in the “Advice” handout (e.g. bullets, boxes, &c.).

☞ Please include a citation *with page references*.

☞ You may use direct quotes in your map, but often it is clearer to lightly rephrase things in your own words.

☞ Claims should be expressed so that they can be understood without extra context (e.g. there should be no pronouns or demonstratives that refer to other claims, even if they are claims elsewhere in the map).

☞ Additional bonus points can be earned by submitting a commentary with your argument (see below), but I strongly recommend that you practice basic argument maps first. Commentaries are extra work, and do not earn you points unless the basic requirements of the map are satisfied.

Argument map commentary



Length: 100–300 words (no more!). Please include an accurate word count.

Due: 5 pm on Friday after discussion (usually two Fridays after lecture).

Topic: Discuss an argument from the latest module.

Rationale Argument maps are supposed to aid reading comprehension and critical thinking. In this assignment you can practice using argument maps to build these skills.

Instructions First, complete an **argument map** (see instructions above). The argument represented by the map is the “target argument.” You may supplement your map with commentary for extra bonus points. Commentaries should be brief (100–300 words, not counting citations or the map of the target argument).

I strongly recommend that you practice basic argument maps first. Commentaries are extra work, and do not earn you points unless the basic requirements of the map are satisfied.

In order to earn points, a commentary must be **substantial**. For example, a substantial commentary might:

- ▶ provide clarification about technical terminology used in the argument map, or your choice of words.
- ▶ explain the “logic” of the target argument (by citing valid argument forms; see “Philosophical Methods”).
- ▶ express your views about the quality of the target argument, e.g. whether the premises are true, or whether you find it compelling.
- ▶ describe an objection to the target argument.

Advice Your description should be comprehensible to an educated but non-specialist reader. That means you must clarify special terminology where appropriate, e.g. by offering **definitions** (of technical terms or terms of art) or making **distinctions** (between what the author means and what she might be mistaken for meaning). It may help to review the “Guidelines on Writing” from the student skills packet; ignore the advice on introductions and conclusions.

I recommend challenging yourself in this order:

- ☞ First, pass at least one basic argument map with no sub-arguments or commentary.
- ☞ Next, pass a more complex argument map with sub-arguments.
- ☞ Next, try an argument map with a commentary, but not an objection.
- ☞ Finally, try an argument map with a commentary that describes an objection.

On objections For additional bonus points, you may describe an original **objection**. An objection is a reason that you don’t have to accept the conclusion of a target argument; it is distinct from what might be called a *mere counterargument*. An objection must explain why the target argument is unsound (e.g. the target argument relies on a false premise, or is not logically valid). A mere counterargument is an argument against the conclusion of a target argument, but that does not engage with the target argument’s reasoning (i.e. if the conclusion of a target argument is p , then the conclusion of a mere counterargument is *not- p* , but no explanation is given as to where the target argument goes wrong).

Note that unlike a counterargument, an objection need not disagree with the conclusion of a target argument. You can object to a target argument because you are not satisfied by its reasoning, but still accept its conclusion (perhaps there is a better argument for the target argument's conclusion).

To describe an objection properly, you must explain how the objection disrupts the target argument. For example, you might show that one of the **assumptions is false**, or that the **conclusion does not follow** from the premises (the easiest way to do this is by describing a counterexample, e.g. by describing a case where the premises are all true but the conclusion is false).

If the objection is a strong one, then the argument cannot be saved by a small alteration (e.g. replacing a premise with a similar one that is worded slightly differently). Implicit premises are often the easiest to challenge. Your objection may have limitations—e.g. you may rely on a controversial premise. It is best to acknowledge these limitations frankly rather than ignoring or hiding them.

It may help to think of an objection as a kind of *meta-argument* (an argument about another argument, i.e. the target argument). The conclusion of the objection is that the target argument is *unsound*. You must support your objection with strong reasons, just as you would any other argument.

Rubric for argument map commentary

Bonus points

+1	for a map that is accompanied by a commentary (less than 300 words, not inclusive of citations; a word count is provided). See instructions above.
+2	for a map that is accompanied by a commentary that describes an objection (≠ a mere counterargument) (stacks with bonus above).
+1–2	for exceptional commentary (see below).

Conventions For commentaries, prose conventions apply:

- ☞ Do not bother writing an introduction or a conclusion for commentaries, and don't bother naming your source in the main text (but do cite it!).
- ☞ Please provide full citations, with page references wherever possible. Note that bibliographic information for course readings can be copied directly from the schedule of readings.
- ☞ You must include an accurate word count for this assignment. The word limit is strict! Only the main commentary text counts against the word total (so headers, footers, and citations do not count, nor does the map portion of the assignment; substantive footnotes do count against the word limit).
- ☞ It may help to review the "Guidelines on Writing" from the student skills packet. Ignore the advice on introductions and conclusions.

Exceptional work This bonus is given rarely (only a few times per semester across a whole class). For grading purposes, "exceptional" work exhibits substantial insight or sophistication in critical thinking, abstract thought, or connections to material beyond class (or between modules). Exceptional work *does not* need to conform to arbitrary grammatical standards of academic English, but it *does* need to exhibit clarity, precision, and proper use of technical terminology (which is different from highfalutin grammar).

Reflection papers



Length: Approx. 500–750 words.

Due: 5 pm on Friday after discussion (usually two Fridays after lecture).

Topic: Describe a personal reaction to an idea from the reading.

Instructions Select an idea (i.e. a concept, claim, or argument) that is prominent in the week’s reading. If you are unsure about whether your selection is appropriate, please ask me and I will advise, but I will not select a topic for you; judging appropriately is part of the assignment.

Describe the idea clearly and precisely in your own words, and also describe a personal reaction. Many types of personal reactions are appropriate, including (but not limited to):

- **Agreement** or **disagreement** with a claim or argument in the reading. You should back up your (dis)agreement with an argument, e.g. by describing an example or counterexample, or by identifying a flawed assumption or inference in the author’s argument, or a compelling consequence of the author’s claims.
- **Interpretive questions** about the reading—e.g. what does the author mean by “X”? Or why does she say one thing here and seem to contradict herself there? Or how would the author’s claim apply to some specific situation? If you pose an interpretive question, try your best to answer it, too.
- **Illuminating connections** between multiple readings, or between the reading and an outside source or your personal experience.
- **How you’ve changed your mind** about something based on what an author said. Please explain why, citing factors beyond what is in the reading.

Note that the main point of this paper is to describe **your reaction** to the idea you selected. You must describe the idea well, but your reaction should be the focus of your reflection paper. Avoid the temptation to summarize an entire reading rather than a single idea (or a small number of related ideas). And avoid the impulse to spend most of the paper on summary with a quick reaction at the end, rather than focusing on your reaction.

Replies I will generally provide feedback on reflection papers that includes comments, connections, critical thinking questions, or worries. For bonus points, you may submit a brief reply to my feedback (no more than about 300 words) that explains your thinking in more detail, or that expresses comments, connections, or worries of your own about my feedback. It is *not* necessary in replies to address every comment in my feedback; you may be selective.

Replies are due at the next regular deadline (usually within a week). Unlike argument maps and reflection papers, you may submit reply and another opportunity assignment at the same time.

Advice Your discussion should be comprehensible to an educated but non-specialist reader. That means you must clarify special terminology where appropriate, by offering **definitions** (of technical terms or terms of art) or making **distinctions** (between what the author means and what she might be mistaken for meaning).

Rubric for reflection papers

Basic requirements

3 pts. for a thoughtful reflection on a concept, claim, or argument from the relevant module.

Penalties

-1 for focusing almost exclusively on summary rather than your own perspective.

Bonus points

+1 for an exceptional reflection.

+3 for a reply to instructor comments (submitted a week later).

+1 for an exceptional reply.

Conventions The paper should be about 500–750 words, but the word limit is not strict. Replies should be no more than about 300 words, but again the word limit is not strict.

☞ Do not bother writing an introduction or a conclusion for these papers, and don't bother naming your source in the main text (but do cite it!).

☞ Please provide full citations, with page references wherever possible. Note that bibliographic information for course readings can be copied directly from the schedule of readings.

☞ Please include an accurate word count for this assignment (but note that the length guideline is not strict).

☞ It may help to review the “Guidelines on Writing” from the student skills packet. Ignore the advice on introductions and conclusions.

Exceptional work This bonus is given rarely (only a few times per semester across a whole class). For grading purposes, “exceptional” work exhibits substantial insight or sophistication in critical thinking, abstract thought, or connections to material beyond class (or between modules). Exceptional work *does not* need to conform to arbitrary grammatical standards of academic English, but it *does* need to exhibit clarity, precision, and proper use of technical terminology (which is different from highfalutin grammar).

Final paper/project proposal



- Length:** Approx. one page.
Due: 26 October by email. See me if you need an extension.
Topic: Propose a topic for the final paper or the final project.

Instructions Briefly describe a topic for your final paper or project. If you are writing a paper, your proposal should specify (A1) your media source, (A2) the syllabus reading(s) you'll discuss in detail, and (A3) how you see them as related. If you're doing a creative project, describe (B1) what you'll create, (B2) the syllabus reading(s) to which it is most relevant, and (B3) how you see them as related. Note that you should only submit a final paper *or* a project, not both (though the project should be accompanied by a brief interpretive paper).

The proposal should only be a few paragraphs long, and should be submitted to me by email. *Please write your proposal in the body of the email, not in an attachment*; this helps me to reply more promptly. Also note that you are not bound to this proposal; you can always change your mind and I'm happy to talk through ideas with you.

Final paper



- Length:** Approx. 2500 words. Please include an accurate word count.
Due: 5 pm on Monday, 12 December. See me if you need an extension.
Topic: Describe an argument from the reading and relate it to an external source.

Instructions Select a **media source** not on the syllabus that **relates significantly** to a target argument from class, and provide a critical discussion of the source, the target argument, and the relation.

☞ The **media source** may come from any sort of media: academic papers, articles in traditional newspapers or magazines, articles in online outlets or blogs, podcasts, YouTube videos, short stories, films, television shows, newscasts, threads on social media, etc. It might be easier to use a group of related sources (e.g. a few videos from a YouTube channel). If you're not sure whether a source is suitable, please discuss it with me in advance.

☞ A source **relates significantly** to the class material if either (a) you can use an argument from class to evaluate the media source (explaining why the source is somehow good or bad), or (b) you can use the source as a focal example to critically discuss the class material (explaining why an argument from class is somehow good or bad, or adapting an author's view to a new kind of case).

For example, you might use Cleland's account of scientific 'definitions' to explain why a film misrepresents scientific attitudes, or you might use an example from a news story to explain why Huebner and Bright's account of fraud is unsatisfying, or you might explain why a story from a podcast illustrates Kuhn's claim that normal science tolerates anomalies.

I encourage you to be creative in your choice of sources and relations, and to choose a topic that especially interests you. If you're having trouble understanding what I'm looking for, I keep a list of examples on my website at www.mikioakagi.net/teaching/current/.

Paper components Your paper must include (in any order):

- ☞ a concise presentation of relevant information about the source;
- ☞ a concise summary of an argument from class (this summary should be in prose, not an argument map, but it should include all the detail necessary in an argument map including implicit premises. It may be helpful to construct a map for yourself); and
- ☞ a critical discussion of the significant relation.

Be sure to include what you think. Does the source support or undermine a view we discussed in class? Does a view we discussed in class support or undermine a claim or implication in the source? Is it more complicated than that? If so how? Be sure to support your critical discussion with arguments. Take care not to misrepresent your source or the class material, but also do not include more detail or discussion than is necessary. You must be judicious in choosing what to include.

Rubric for final paper

Proposal

1 pt. for a good-faith proposal submitted by the deadline.

Basic requirements

15 pts. for a paper that expresses a significant relation between a syllabus source and an outside source (see instructions above). The paper must focus on your own take, not on collecting and reporting information.

Bonuses and penalties

+5 for a description of a target (syllabus) argument (including implicit premises!).

-1 for an incomplete description of a target (syllabus) argument.

+5 for a description of your original argument (including implicit premises!).

-1 for an incomplete description of your author (original) argument.

-5 for focusing almost exclusively on summary rather than your own view.

+1-5 for exceptional work.

Conventions The paper should be about 2500 words, but this is not a strict requirement. It a loose guideline meant to help you gauge whether you are working too much, or need to think more deeply.

- ☞ Please number your pages. This helps me to give specific feedback.
- ☞ Please provide full citations, with page references wherever possible. Note that bibliographic information for course readings can be copied directly from the schedule of readings.
- ☞ Please include an accurate word count for the final paper (but note that the length guideline is not strict).
- ☞ It may help to review the “Guidelines on Writing” from the student skills packet.

Exceptional work This bonus is given rarely (only a few times per semester across a whole class). For grading purposes, “exceptional” work exhibits substantial insight or sophistication in critical thinking, abstract thought, or connections to material beyond class (or between modules). Exceptional work *does not* need to conform to arbitrary grammatical standards of academic English, but it *does* need to exhibit clarity, precision, and proper use of technical terminology (which is different from highfalutin grammar).

Final creative project



Length: Project and a paper of approx. 1000 words. Please include an accurate word count.

Due: 5 pm on Monday, 12 December. See me if you need an extension.

Topic: Create a creative work related to ideas from class.

Instructions Instead of a final paper, you may make a final **creative project** that **relates significantly** to a topic from the course. The project must be accompanied by a short paper that explains its relevance to specific readings or works.

☞ The **creative project** must bear some significant relation to the course material (it effectively takes the place of a media source in the Final Paper option), and should accomplish something that cannot be accomplished in a paper. For example, it *may not* be an informative website that expresses only what could be expressed in a paper, but less well. It *may* be a video essay about the relation between a class topic and a popular film (using clips or stills from the film).

The project may be in any medium or genre. For example, you may produce a short audio documentary, a brief film, a video essay, a brief work of fiction or poetry, a short play, a website, a mixtape, &c. Or you may envision a more ambitious work, and submit a proposal or pitch for such a work; e.g. you might describe a curated exhibition that does not happen, pitch a full-length play or feature film you do not produce, &c. I can help you to come up with a suitable project that is ambitious enough, but not too ambitious.

☞ A source **relates significantly** to the class material if either (a) you can use an argument from class to evaluate the media source (explaining why the source is somehow good or bad), or (b) you can use the source as a focal example to critically discuss the class material (explaining why an argument from class is somehow good or bad, or adapting an author's view to a new kind of case).

Paper components Your project should be accompanied by a short paper describing its significance to class material. This short paper need not be as polished or complete as a final paper; it mostly serves as a way for you to clarify the relevance of your project to the course (since not all creative projects speak for themselves), and helps me to evaluate your project. The paper should, however, include proper citations.

Rubric for final project

Proposal

1 pt. for a good-faith proposal submitted by the deadline.

Basic requirements

15 pts. for a project that expresses a creative take on a syllabus source, accompanied by a brief interpretive paper.

Bonuses and penalties

- +5 for a description of a target (syllabus) argument (including implicit premises!).
- +5 for a clear statement of your artistic perspective/goals/techniques in the interpretive paper.
- 1 for an incomplete description of your artistic perspective/goals/techniques in the interpretive paper.
- 5 for focusing almost exclusively on summary rather than your own perspective or on connections.
- +1-5 for exceptional work.

Conventions The paper should be about 1000 words, but this is not a strict requirement. It a loose guideline meant to help you gauge whether you are working too much, or need to think more deeply.

- ☞ Please number your pages. This helps me to give specific feedback.
- ☞ Please provide full citations, with page references wherever possible. Note that bibliographic information for course readings can be copied directly from the schedule of readings.
- ☞ Please include an accurate word count for the accompanying short paper (but note that the length guideline is not strict).

Exceptional work This bonus is given rarely (only a few times per semester across a whole class). For grading purposes, “exceptional” work exhibits substantial insight or sophistication in critical thinking, abstract thought, or connections to material beyond class (or between modules). Exceptional work *does not* need to conform to arbitrary grammatical standards of academic English, but it *does* need to exhibit clarity, precision, and proper use of technical terminology (which is different from highfalutin grammar).

Appendix B: Online Discussion



You will prepare for class each week by discussing the readings online. Online discussion nudges you to think carefully about the reading, and allows you to seek help from your classmates. Post comprehension questions, critical comments, and reply to each other.

You get one point for each post you make (including replies), unless the post merely repeats what has been posted before, or (dis)agrees with earlier posts without adding anything. **You must also make at least one “critical thinking” post per week by Sunday at 6 pm.** You lose one point each module you fail to make a critical thinking post by the deadline. You can get up to 40 points for online discussion, but I recommend aiming for about 30. If you post at least twice per week, including a critical thinking post by the deadline, you’ll be in good shape.

Guidelines for online discussion



Successful discussion posts Good posts will generally include references to an assigned text (please include page numbers! This helps others engage with you) and will usually be about 3–6 sentences long. Longer posts do not get you extra points, and a clear, organized post is more impressive than a rambling post. Most discussion posts should be about the current module’s reading, but they can be about any topic related to the course.

A post earns a point if it adds something new, but not if it just agrees (or disagrees) with another post without adding a new argument or observation. To earn multiple points in a module, make different observations or reply to different posts.

Successful posts can take a number of forms:

- Asking how to understand a difficult passage, or answering such a post.
- Asking for help with technical or unusual vocabulary, or answering such a post.
- If you looked up some vocabulary or reference on your own, you might share your findings.
- You can offer personal reflections on how a reading makes you feel, or whether you find it convincing.
- Critical thinking posts (see below).



Forum access Forums are accessed via TCU Online. Click on the “Activities” tab under the course title, then click “Discussions” in the drop-down menu. There will be a forum called “Weekly Reading Responses” that contains a topic for each week. Each topic is labeled with a week number and a topic title corresponding to the Schedule of Readings (p. 19). If all goes as planned, the top-most topic listed will always be for the current or upcoming week. New topics will become available immediately after finishing the previous module. If the correct topic is not displaying, contact me immediately and I will fix it as soon as possible.

Click the “**Start a New Thread**” button to start a new discussion thread in the weekly topic, or you can reply to others. To reply, first click the title of the thread you would like to reply to, then click the “**Reply to Thread**” button. If you are the first to post, start a new thread. A field will appear in which you can compose your post. When you are finished, click the “**Post**” button. You may subscribe to threads by checking a box, so that you receive notifications if anyone replies to the thread.



Critical thinking posts At least one of your posts for each module should be a **critical thinking** post that exhibits evidence of critical or integrative thinking about the current class topic. These posts should reflect that you have thought critically about your reading (see “Guidelines for Reading” in the student skills packet). A post does not count as a critical thinking post if it merely summarizes the reading, poses a question that can be answered through minimally diligent reading (e.g. “What is Popper’s first name?”), or expresses a personal reaction *with no accompanying argument or reasoning* (e.g. “Socrates is totally a jerk” or “I liked Kuhn’s view more than Popper’s view”). There is a **one-point penalty** each time you fail to make a critical thinking post by the weekly deadline.

The general rule for critical thinking posts is just: say or ask something substantive, that’s not about basic comprehension. (Comprehension questions and answers make for good posts, but they don’t count as critical thinking posts.) If you want more specific guidance, critical thinking posts will generally fall into one of three categories:

- **Objections** to a claim or argument in the reading, e.g. counterexamples, or criticism of an author’s assumptions or inferences.
- **Interpretive questions** about the reading—e.g. what does the author mean by “X?” Or why does she say one thing here and seem to contradict herself there? Or how would the author’s claim apply to some specific situation? Interpretive questions should **not** resemble questions on a reading comprehension quiz (e.g. “Which three theories does Popper criticize as unfalsifiable?”). If you pose an interpretive question, try your best to answer it, too. If it is difficult to come up with a satisfactory answer, explain why.
- **Illuminating connections** between multiple readings, or between the reading and an outside source or your personal experience. For example, you might compare concepts across authors (e.g. “Does Popper mean the same thing by ‘pseudoscience’ that Kaplan and Puracal mean by ‘junk science’?”), or note an inconsistency between authors (e.g. “If Kuhn is right about normal science, then Popper must be wrong”).

Or you may reply to a critical thinking post with a **helpful suggestion**—defending the author from another student’s objection, seeking the best answer an interpretive question, or expanding on an illuminating connection. If you’re making a good faith effort but not getting the hang of it, I will let you know before it affects your grade. Or you can come talk to me.



Feedback on posts You may **vote up** a post (click the ⊕ icon to the left of the post) to indicate that you found it interesting or thought-provoking. (Let’s borrow a norm from Twitter that up-votes do not have to mean you agree with a post—just that you found it valuable!) I will not generally give specific feedback on posts, but I read them all and adjust my plans for class accordingly. I may post occasionally, but mostly I want you to talk with each other.



Post where others will see Points earned from online discussion are for the semester, not for any specific module, so there is no benefit to posting comments in an old module, where it’s less likely to be seen by your classmates. Post in the current module or the upcoming module so others will see.



Assessing online discussion Since the discussion forums are supposed to be a space for you to ask questions and discuss freely, there is no penalty for making factual or interpretive errors. (On the other hand, I will generally not correct errors on the discussion board, and I may or may not do so in class—you should correct each other!) You should feel free to ask honest questions and seek the help of your classmates.

Here's how the grading works:

- ☞ You **earn one point** for each post you make. More precisely, you get a point for each time you make a new observation, pose a different question, or reply to a post by someone else.
- ☞ Posts **earn no points** if they are insubstantial (e.g. repeat posts, small corrections of previous posts, or agreement/disagreement that adds no further argument or observation. It is fine to make these kinds of posts; they just don't earn points.
- ☞ You **lose one point** for each week you don't make a "critical thinking" post by the deadline.
- ☞ You can earn up to **40 points** through online discussion throughout the semester, though I recommend aiming for about **30 points**. If you post at least twice per week, including a critical thinking post by the deadline, you'll be in good shape. But if you habitually fail to make critical thinking posts by the deadline, your grade will suffer.
- ☞ Total online discussion points will be updated regularly in the gradebook on TCU Online, usually once a week over the weekend. If you have questions about your weekly point totals and penalties, you can write me to ask.

Appendix C: Taking Care of Yourself during a Global Pandemic



We have made progress controlling the COVID-19 pandemic, but it is not yet safe to return to “normal” life. COVID can damage your body even if it does not threaten your life, and some in our community are susceptible to more serious illness. We should all take care to protect each other, especially in class, at work, and in essential public spaces.

If you are not yet vaccinated, I urge you to get a vaccine (unless you have some specific medical exception such as allergies to components of all available vaccines). The vaccines with FDA emergency authorization are safe for almost everybody and highly effective: they substantially reduce your risk of infection and (for breakthrough infections) your risk of serious illness. Vaccines are more effective than immunity from previous infections. Nevertheless, vaccines do not offer perfect protection, and vaccines alone are not sufficient to stop the spread of the SARS-CoV-2 virus. Only about 60% of Texans are fully vaccinated, and each new wave of the disease presents substantial dangers to everyone, including to those who have been immunized.

If you are trying to manage your risk in daily life, remember the following guideline. As long as community spread remains high, safe gatherings must generally observe at least three of the following four precautions:

- ☞ everyone is vaccinated;
- ☞ everyone is wearing a mask;
- ☞ people from different households are at least two meters (six feet) apart;
- ☞ people are outside where there is good airflow.

In addition, until the infection rate goes down it is advisable for us as a community to

- ☞ wear masks when indoors (ideally N95 or similar);
- ☞ wash hands frequently (with soap, for at least twenty seconds, or with sanitizer that is at least 60% alcohol);
- ☞ quarantine and/or self-isolate (anyone who has symptoms or a positive COVID test, or who has been recently exposed to someone with symptoms or a positive COVID test).

I will do my best to protect you by following safe practices. Please protect each other by doing the same.

I know this is a difficult time for many of you. If you feel overwhelmed, try to focus on what you can control now in your everyday life and please reach out for help if you need to—to friends and family, to me, or to professional counselors. More articles and resources:

- “Taking care of your mental health in the face of uncertainty” (AFSP)
afsp.org/taking-care-of-your-mental-health-in-the-face-of-uncertainty/
- “Expert offers practical advice to manage your coronavirus anxiety” (*UVA Today*)
news.virginia.edu/content/expert-offers-practical-advice-manage-your-coronavirus-anxiety
- “It’s important to take breaks during this coronavirus health crisis” (*Inside Higher Ed*)
www.insidehighered.com/advice/2020/03/13/its-important-take-breaks-during-coronavirus-health-crisis-opinion
- TCU Counseling & Mental Health Center *Need to Talk?* helpline (817) 257-7233 (available 24/7)
- TCU Counseling & Mental Health Center *Let’s Talk* consultations (817) 257-7389 (Mon–Thu, 10 am–4 pm)

Appendix D: Using Zoom



In special circumstances, classes may be conducted remotely using Zoom. You may also use Zoom to attend office hours remotely. Please download the client to your personal computer or use the web interface. You can find user resources on Zoom at it.tcu.edu/zoom/ (including a download link for the desktop client and instructional videos).

Note that Chat is easier to use on the desktop and web versions of Zoom than on mobile, and nonverbal feedback is unavailable in some mobile versions. If possible, please use Zoom on a desktop, laptop, or in your browser.



Selective presence I encourage you to participate in class through **video and audio**; it helps to create a sense of community and presence, and it helps your classmates get to know you. However, I recognize that you may have reasons to keep your camera off, including a desire for more privacy or a slow internet connection. You may wish to **mute your audio** (your mic) when you are not speaking; this helps to cut down background noise (if you're in a noisy location) and to avoid loud and distressing audio feedback loops.

The controls for video and audio are in the bottom left-hand corner of the window. You can set your default preferences in the settings, so that your audio is muted when you sign on (this setting specific to each copy of the software—e.g. it must be set separately on your desktop, your tablet, &c.).

Pro-tip: you can also arrange your settings so that you can quickly unmute your audio. Hold the spacebar to do this on desktop or browser versions, and release it to re-mute your audio. On mobile versions you can swipe right to access a button that unmute your audio only while its held.



Chat During class meetings, I encourage you to make use of the **chat** feature to make comments, ask questions, &c. Sometimes it's easier than raising your hand (see below). To access chat in the desktop or web clients, click Chat at the bottom of the window. To access chat in the mobile app, tap Participants, then tap the Chats button in the bottom left-hand corner. Please send your messages to "Everyone" or to me (though I suppose you can simulate distracting side-conversations with directed chats). I'll do my best to follow the conversation in chat, but if I seem to have missed a message (yours or someone else's), feel free to bring it to my attention.



Nonverbal feedback I also encourage you to use the **nonverbal feedback** features built into Zoom. You can communicate with me (and your classmates) by selecting a status:

- raise hand
- yes
- no
- slow down
- speed up
- ...and others.

To access these features, click or tap Reactions at the bottom of the screen. Note that nonverbal feedback features might not be enabled for mobile apps.



Audio feedback If you're having problems with audio feedback on Zoom, check out this advice:

blog.zoom.us/wordpress/2014/03/20/troubleshooting-audio-feedback-zoom. I am happy to help you if I can, but I might not be your best resource here. The thing that helps me most is to use headphones or earbuds. Over-ear headphones are better for your hearing, but if you experience disorientation from wearing headphones over prolonged periods you might choose to wear an earbud in one ear.

Hardware Various configurations are acceptable:

- ☞ **Device:** a laptop or desktop computer is preferred over mobile devices, because it provides easier access to Zoom's chat and nonverbal feedback features.
- ☞ **Speaker/headphones:** essential; you must be able to hear people during meetings. Headphones are best because speakers can contribute to audio feedback loops. For sound, a set of earbuds with a built-in microphone (the kind that comes with many phones) would be perfect.
- ☞ **Microphone:** desirable but not essential; a built-in device mic or headphone mic is great.
- ☞ **Camera:** desirable but not essential; a built-in webcam or front-facing camera would be great. It's nice for me and your classmates to see your face during class, but you may have good reason to keep your camera off (e.g. limited bandwidth or privacy at home).
- ☞ **Internet access:** high speed internet access is desirable. If you have connectivity problems, you might find it easier to communicate via chat rather than a microphone. At the very least you can connect via "phone" and listen to the class while following along with slides on TCU Online (though this is far from ideal). If you need to connect this way, please let me know in advance so that I can put slides on TCU Online before class.

Appendix E: Detailed Course Policies

Basic course policies can be found in the Syllabus Proper (pp. 9–10). Here you can find expanded course policies, including general university policies.

Safety



Campus life will be different this year

The health and safety of students, faculty, and staff is Texas Christian University's highest priority. Safety protocols may change during the semester and may result in modifications or changes to the teaching format, delivery method, or the course schedule (e.g., altering meeting times or frequency; changing beginning or ending dates for a term; or partially or completely moving from a face-to-face classroom teaching to an online teaching or remote learning format). Any changes in teaching format, delivery method, or course schedule will not impact the credit hours for the course.



Health and wellness Have you gotten the COVID-19 vaccine? Let TCU know.

Fill out the vaccine survey by scanning the QR code:



Are you feeling unwell? Let TCU know. If you are exhibiting symptoms that may be related to COVID-19 (fever or chills, dry cough, shortness of breath, etc.) or are concerned that you may have been exposed to COVID-19, you must self-quarantine and consult with the Brown Lupton Health Center at 817-257-7949 for further guidance.

In addition, you must notify the Campus Life Office immediately at 817-257-7926 or use the TCU COVID-19 Self-Report Hotline, 817-257-2684 (817-257-COVI). Campus Life will inform your professors that you are unable to attend class, and provide any

assistance and support needed. Click here for detailed information concerning COVID-19 symptoms: <https://www.cdc.gov/coronavirus>.

If you are unwell, but are not exhibiting potential COVID-19-related symptoms, please notify your instructor as soon as possible that you are ill and will not be attending class.



Face masks Face masks are currently required in TCU classrooms, per the TCU

Campus Readiness Task Force: Face Mask Policy. Students not complying with classroom face mask requirements may be referred to Dean of Students Mike Russel.

If TCU lifts the face mask requirement before the end of Fall 2021, the instructor may continue to require face masks in their classrooms. At that point, the instructor will notify the students of their decision and update their syllabus accordingly.



Emergency response Please review

TCU's L.E.S.S. is More public safety video to learn about Lockdown, Evacuate, and Seek Shelter procedures.

TCU's Public Safety website provides maps that show our building's rally point for evacuation and the seek shelter location.

In the event of an emergency, call the TCU Police Department at 817-257-7777.

Download the Frogshield Campus Safety App to your phone.

Technology policies



Email Only the official TCU student email address will be used for course notifications. It is your responsibility to check your TCU email on a regular basis.



Lecture slides I am happy to make pdf versions of lecture slides available. Slides for a particular lecture will be posted only by request (unless someone requires them as accommodation for disability). Requests should be made by email. Any slides I've posted will be available on TCU Online, in the "Content" area (near the readings). Please do not distribute these files without my permission.



Using digital course materials TCU students are prohibited from sharing any portion of course materials (including videos, PowerPoint slides, assignments, or notes) with others, including on social media, without written permission by the course instructor. Accessing, copying, transporting (to another person or location), modifying, or destroying programs, records, or data belonging to TCU or another user without authorization, whether such data is in transit or storage, is prohibited. The full policy can be found at <https://security.tcu.edu/polproc/usage-policy/>.

Violating this policy is considered a violation of Section 3.2.15 of the Code of Student Conduct (this policy may be found in the Student Handbook), **and may also constitute Academic Misconduct or Disruptive Classroom Behavior** (these policies may be found in the Undergraduate Catalog). TCU encourages student debate and discourse; accordingly, TCU generally interprets and applies its policies, including the policies referenced above, consistent with the values of free expression and First Amendment principles.



TCU Online TCU Online will be used to manage content for this course. Enter the

area for this course by logging into your homepage and clicking the tile with the course name on it. Once inside, **find readings and other course documents** by clicking on the "content" tab near the top left. There are sections for each week of the course. The syllabus can be found in the "Overview" section. Other important documents can be found in the "Course resources" folder. Find Zoom links for class in the calendar; look in the lower-right part of the course home page. **Access the discussion forums** by clicking the "Activities" menu and selecting "Discussions." This is where you will make your online discussion posts. **Submit assignments** by clicking the "Activities" menu and selecting "Assignments." **Check your grades** by clicking the "Assessment" menu.

To get started with TCU Online:

- Access via my.tcu.edu > Student Quick Links > TCU Online; OR log in at <http://d2l.tcu.edu>. Enter your TCU network credentials (the same you use for MyTCU).
- For information about logging into TCU Online, view these instructions.
- If you have not yet taken the TCU Online Student Orientation Tutorial, please do so now. To access it, click on the "Orientations" semester OR view all courses in your My Courses widget visible upon logging in to TCU Online. Click on the "Student Orientation Tutorial" to enter the orientation course. Follow the instructions in the course. You can return to this tutorial at any time.

Getting help with TCU Online If you experience any technical problems while using TCU Online, please do not hesitate to contact the D2L HELP DESK. They can be reached by phone or chat 24 hours a day, 7 days a week, 365 days a year.

- Phone: (877) 325-7778
- Chat: Chat is available within TCU Online in the Help menu on the navigation bar.

If you are working with the HELP DESK to resolve a technical issue, make sure to keep me updated on the troubleshooting progress. If you have a course-related issue (course content, grades) please contact me.

Personal settings and notifications As a student, you should set up your account settings, profile, and notifications. To do this you will login to TCU Online and select your name on the top right of the screen. In the Profile area, you can upload a photo of yourself and add personal information. In the Notifications area, you can add your phone number to receive text messages when grades are given as well as reminder texts for upcoming assignments and quizzes.

Student success tools for TCU Online

Pulse is a phone app which gives you access to the course calendar, assignments, grades, and announcements. This app provides a graph that can help you manage your time. Based on the number of assignments and events on the course calendar for your classes, the graph will display busy times for class work in the upcoming week. You can use this app to manage your daily workload, and it includes the ability to view and access course materials offline. You can download Pulse from the Google Play or Apple Store. You can learn more and download Pulse here.

Anti-discrimination and Title IX



Student access and accommodation

Texas Christian University affords students with disabilities reasonable accommodations in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. To be eligible for disability-related academic accommodations, students are required to register with Student Access and Accommodation and have their requested accommodations evaluated. If approved for accommodations, students are required to discuss

ReadSpeaker includes a number of tools that can enhance your understanding and comprehension of course materials. ReadSpeaker can create an audio version of content that you can listen to while on a page within a course or that you can download to listen offline. ReadSpeaker can also read Microsoft Office files and PDFs. There are additional tools and features to assist you with reading and focusing in TCU Online, tools that provide support for writing and proofing text, and tools that can read non-TCU Online content aloud. You can learn more about how to use ReadSpeaker tools here.




"Netiquette" Guidelines for respectful behavior (p. 5) apply online as well as in class. All members of the class are expected to follow rules of common courtesy in email messages, discussions, and chats. If I deem any of them to be inappropriate or offensive, I may forward the message to Associate Dean of the Honors College and appropriate action will be taken, not excluding expulsion from the course. Please take a moment and read the basic information about netiquette.

Participating in the virtual realm, including social media sites and shared-access sites sometimes used for educational collaborations, should be done with honor and integrity. Please review TCU's guidelines on electronic communications (email, text messages, social networks, etc.) from the Student Handbook.

their official TCU Notification of Accommodation with their instructors. Accommodations are not retroactive and require advance notice to implement. The Office of Student Access and Accommodation is located in The Harrison, Suite 1200. More information on how to apply for accommodations can be found at www.tcu.edu/access-accommodation, or by calling (817) 257-6567.

Audio recording notification: Audio recordings of class lectures may be permitted by the instructor or


as an approved disability accommodation through Student Access and Accommodation. Recordings are not to be shared with other students, posted to any online forum, or otherwise disseminated.


 **TCU's non-discrimination policy** TCU is committed to providing a positive learning, living, and working environment free from unlawful discrimination, harassment, sexual misconduct, and retaliation. In support of this commitment, in its policy on Prohibited Discrimination, harassment, sexual misconduct and retaliation, TCU has a range of prohibited behaviors, including unlawful discrimination and harassment and related sexual and other misconduct based on age, race, color, religion, sex, sexual orientation, gender, gender identity, gender expression, national origin, ethnic origin, disability, predisposing genetic information, covered veteran status, and any other basis protected by law. **The Office of Institutional Equity (OIE)** is responsible for responding to all reports of discrimination, harassment, sexual misconduct and retaliation.

Please use the following links to review TCU Policy 1.008 Prohibited Discrimination, Harassment, Sexual Misconduct and Retaliation or to review TCU Policy 1.009 Responding to Reports of Prohibited Discrimination, Harassment, Sexual Misconduct, and Retaliation.

To make a report, you may call OIE at 817-257-8228, email oe@tcu.edu, visit us at The Harrison, Suite 1800 or click here: [Make a Report](#).


To learn about the Campus Community Response Team (CCRT) and Report a Bias Incident click here: <https://inclusion.tcu.edu/campus-community-response-team/>.

 **Title IX** TCU's Title IX Coordinator works within OIE. Andrea Vircks-McDew serves as TCU's Title IX Coordinator. You may call 817-257-8228 to make a report, email oe@tcu.edu or a.vircks@tcu.edu, or make a report here. Additional Title IX resources and information are available at <https://www.tcu.edu/institutional-equity/title-ix/index.php>.

 **Mandatory reporters** All TCU employees, except confidential resources, are considered Mandatory Reporters. Mandatory reporters are required to immediately report to OIE any conduct that raises Discrimination, Harassment, Sexual Misconduct (Title IX or Violence Against Women (VAWA)) or Retaliation. Mandatory reporters cannot promise to refrain from forwarding the information to OIE.

Dr. Akagi is a mandatory reporter.

Confidential on-campus resources

 If you would like to speak to someone confidentially about discrimination, harassment, or sexual misconduct, the following resources are available.

- **Campus Advocacy, Resources & Education**
care.tcu.edu | 817-257-5225
- **Counseling & Mental Health Center**
www.counseling.tcu.edu | 817-257-7863
- **Religious & Spiritual Life**
www.faith.tcu.edu | 817-257-7830

Religious observations and holidays

“Students who are unable to participate in a class, in any related assignment or in a university required activity because of the religious observance of a holy day shall be provided with a reasonable opportunity to make up the examination or assignment, without penalty, provided that it does not create an unreasonable burden on the University.” For more information, please visit the [TCU Policy for Religious Observations & Holidays webpage](#).

Other resources and information



University life Universities are large, complicated institutions whose inner workings are not easy to understand. University life and work are governed by complex norms that often seem natural those familiar with them, but that are not intuitive to newcomers and rarely communicated explicitly. This puts many of you in a tough spot. I sympathize! I promise to do my best to answer any questions you may have—in class or in private—*without judgment*. I, too, was once a confused student, and I do not come from an academic family.

There are many topics that you may wonder about. Honestly, your Honors Advisor will probably give the most helpful advice. But you are welcome to ask me, if you like, about anything, including:

- Any weird terminology
- Email etiquette and proper forms of address
- How TCU is organized (colleges, departments, Deans, &c.)
- Academic writing (journal articles, edited volumes, studies, meta-analyses)
- How to take notes, in class and when reading
- How to avoid plagiarism
- What are disability accommodations
- What is Title IX and why is it important



Student Perception of Teaching Near the end of the term you will receive an email asking you to complete your “Student Perception of Teaching” (SPOT) survey for this course. I appreciate your thoughtful and reflective feedback to help make this course successful for future students. You can fill out the SPOT by clicking on the link in your email or in TCU Online when SPOT surveys open.



Academic misconduct (Sec. 3.4 from the TCU Code of Student Conduct): Any act that violates the academic integrity of the institution is considered academic misconduct. The procedures used to resolve suspected acts of academic misconduct are available in the offices of Academic Deans and

the Office of Campus Life and are listed in detail in the Undergraduate Catalog and Graduate Catalog. Specific examples include, but are not limited to:

- **Cheating** Copying from another student’s test paper, laboratory report, other report, or computer files and listings; using, during any academic exercise, material and/or devices not authorized by the person in charge of the test; collaborating with or seeking aid from another student during a test or laboratory without permission; knowingly using, buying, selling, stealing, transporting, or soliciting in its entirety or in part, the contents of a test or other assignment unauthorized for release; substituting for another student or permitting another student to substitute for oneself.
- **Plagiarism** The appropriation, theft, purchase or obtaining by any means another’s work, and the unacknowledged submission or incorporation of that work as one’s own offered for credit. **Appropriation includes the quoting or paraphrasing of another’s work without giving credit therefore.** Assignments may be checked upon submission with plagiarism-detection software such as Turnitin.
- **Collusion** The unauthorized collaboration with another in preparing work offered for credit. All written work submitted for this course must be the sole work of the author.
- **Abuse of resource materials** Mutilating, destroying, concealing, or stealing such material.
- **Computer misuse** Unauthorized or illegal use of computer software or hardware through TCU IT or through any programs, terminals, or freestanding computers owned, leased or operated by TCU or any of its academic units for the purpose of affecting the academic standing of a student.
- **Fabrication and falsification** Unauthorized alteration or invention of any information or citation in an academic exercise. Falsification involves altering information for use in any

academic exercise. Fabrication involves inventing or counterfeiting information for use in any academic exercise.

- **Multiple submission** The submission by the same individual of substantial portions of the same academic work (including oral reports) for credit more than once in the same or another class without authorization.
- **Complicity in academic misconduct** Helping another to commit an act of academic misconduct.
- **Bearing false witness** Knowingly and falsely accusing another student of academic misconduct.



Support for TCU students

Many resources exist on the TCU campus that may be helpful to students:


- Academic advising (817-257-7486, Jarvis 104)
- Brown-Lupton Health Center (817-257-7938 or 817-257-7940)
- Center for Digital Expression (CDeX) (cdex@tcu.edu, Scharbauer 2003)
- Center for Writing (817-257-7221, Reed Hall 419)
- Counseling & Mental Health Center (817-257-7863, Jarvis Hall 2nd floor)
- Dean of Students (817-257-7926, the Harrison 1600)
- Mary Coats Burnett Library: Reference Desk (817-257-7117)
- Office of Religious & Spiritual Life (817-257-7830, Jarvis Hall 1st floor)
- Student Access & Accommodations (817-257-6567, The Harrison 1200)
- Student Success (817-257-8345, Samuelson Hall, West Entrance)
- Substance Use and Recovery Services (817-257-7100, Jarvis Hall 2nd floor)
- Transfer Student Center (817-257-7855, BLUU 2003)
- Veterans Services (817-257-5557, Jarvis Hall 219)
- TCU Police (817) 257-8400 Non-emergency | (817) 257-7777 Emergency | www.police.tcu.edu




TCU mental health resources



Please also be aware of the various mental health resources on campus.

- The **Counseling Center** (Samuelson Hall, M–W 8–8pm; Th & F 8–5 pm) provides appointments with on-campus psychiatrists, psychologists, or licensed counselors, included in tuition, and offers support groups such as a Stress Meditation. To schedule an appointment, call 817-257-7863. Walk-ins are welcome M–F 10:00–11:30 and 1:00–3:00.
- The **Wellness Center** (Rec Center, Lower Level) provides wellness education programs to organizations on campus and helps students figure out which campus wellness resource is best for their situation. Also assists students with physical and nutritional wellness.
- **Religious & Spiritual Life** (Jarvis Hall, First Floor) provides pastoral care, an open multi-faith meditation room, and support groups, such as a Grief Group and “Alphabet Soup” for LGBTQ students. Email faith.tcu.edu.
- **Alcohol and Drug Education** (Samuelson Hall) provides one-on-one appointments with an alcohol and drug education counselor and offers support groups such as the Drug and Alcohol Recovery Group and the Ripple Effect. To schedule an appointment, call 817-257-7940.
- The **Health Center** (M–F 8am–5pm) provides appointments with physicians and certified nurses, fills prescriptions, and offers services such as men’s and women’s specialized health, immunizations, and STI testing. To schedule an appointment, call 817-257-7940.
- **Campus Life** (Sadler Hall 2006) assists students when mental health severely impacts their academics and has a Dean on call in case of emergencies. To schedule an appointment, call 817-257-7926 or email campuslife@tcu.edu.

 **TCU mission statement** To educate individuals to think and act as ethical leaders and responsible citizens in the global community.

 **Honors College mission statement** Dedicated to enriching the intellectual life of TCU, the John V. Roach Honors College seeks to empower, inspire, and motivate high-achieving students to become leaders in our global society.


To accomplish the mission, the TCU Honors College will:

-  Promote self-discovery, critical thinking and conscientious understanding of world cultures through rigorous academic endeavors and creative inquiry in the context of big questions, great ideas, and relevant issues that transcend the curriculum.
-  Offer unique residential, curricular, and co-curricular opportunities, fostering a community of scholars for whom vigorous engagement with local, national, and global communities becomes a way of life.

TCU Land Acknowledgment

As a university, we acknowledge the many benefits we have of being in this place. It is a space we share with all living beings, human and non-human. It is an ancient space where others have lived before us. The monument created jointly by TCU and the Wichita and Affiliated Tribes reminds us of our benefits, responsibilities, and relationships. We pause to reflect on its words: *This ancient land, for all our relations.*

We respectfully acknowledge all Native American peoples who have lived on this land since time immemorial. TCU especially acknowledges and pays respect to the Wichita and Affiliated Tribes, upon whose historical homeland our university is located.

 **Attribution** The active disability icon is available at accessibleicon.org, and was designed by Tim Ferguson-Saunders, Brian Glenney, & Sara Hendren. The Creative Commons logo, the Zoom logo, and TCU-related emblems are property of their respective owners. Other icons throughout this document were found on flaticon.com; they were designed (variously) by Freepik, Kiranshastry, Pixel perfect, Dave Gandy, Gregor Cresnar, Becris, Chanut, Catalin Fertu, Eucalyp, Icongeek26, mynamepong, Roundicons, Smashicons, and Those Icons.

Appendix F: Detailed Learning Outcomes and Action Steps

This course is designed around the following learning outcomes and action steps, consistent with requirements of the TCU Core Curriculum and the TCU Honors College curriculum.

Primary learning outcome

Students will be able to assess philosophical and scientific arguments about science in light of diverse philosophical and methodological perspectives and to formulate their own such arguments in writing.

Curriculum learning outcomes

Humanities (HUM) Students will be able to analyze representative texts of significance and to practice critical analysis of work at the center of the humanities. More specifically, students will be able to analyze philosophical texts and to practice critical thinking in the form of the careful identification, description, and evaluation of arguments. *TCU Core Curriculum, Human Experiences and Endeavors (HEE)*

Citizenship and Social Values (CSV) Students will demonstrate a capacity for informed participation in civic discourse and decision-making. More specifically, students will demonstrate a capacity for informed participation in civic discourse about science, and decision-making (personal or public) about scientific practices and institutions. *TCU Core Curriculum, Heritage, Mission, Vision, and Values (HMVV)*

Cultural Visions (CV) Students will be able to describe similarities and differences between cultures (where “cultures” are defined broadly as “systems of shared beliefs, norms, values, and behaviors”); to identify their own culturally embedded beliefs, norms, values, or behaviors; and to explain how their understanding of cultural diversity is shaped by their own cultural assumptions. *John V. Roach Honors College*

Student action steps

Students in this course will

- ☞ Explore and evaluate philosophical and scientific texts in terms of multiple social backgrounds and ideological perspectives (CV, HUM, CSV).
- ☞ Discern, articulate, and critically assess diverse arguments in philosophical and scientific texts (CV, HUM).
- ☞ Compare and contrast theoretical and scientific perspectives on science and the relation between science and society (CV, CSV).
- ☞ Identify and apply theoretical and scientific perspectives in developing informed and culturally-sensitive opinions and criticisms of mores, values, theoretical views, and standpoints (CV, CSV).
- ☞ Articulate and explain the effects of various theoretical and scientific perspectives on the analysis and assessment of situations in news media, entertainment media, or personal experience (CV, CSV).
- ☞ Respond thoughtfully and respectfully to differing opinions (CA, CSV).
- ☞ Express ideas precisely and critically, both orally and in writing.

Connection table for action steps and assessments

Action steps	Curriculum attributes	Assessments
In this course, students will...		
Explore and evaluate philosophical and scientific texts in terms of multiple social backgrounds and ideological perspectives.	Cultural Visions (Honors) Humanities (HEE) Citizenship & Social Values (HMOV)	Online discussion Classroom discussion Reflection papers Final paper/project Final presentation
Discern, articulate, and critically assess diverse arguments in philosophical and scientific texts.	Cultural Visions (Honors) Humanities (HEE)	Classroom discussion Argument maps Final paper/project
Compare and contrast theoretical and scientific perspectives on science and the relation between science and society.	Cultural Visions (Honors) Citizenship & Social Values (HMOV)	Online discussion Classroom discussion Argument maps Final paper/project
Identify and apply theoretical and scientific perspectives in developing informed and culturally-sensitive opinions and criticisms of mores, values, theoretical views, and standpoints.	Cultural Visions (Honors) Citizenship & Social Values (HMOV)	Classroom discussion Respectful behavior Reflection papers Argument maps Final paper/project
Articulate and explain the effects of various theoretical and scientific perspectives on the analysis and assessment of situations in news media, entertainment media, or personal experience.	Cultural Visions (Honors) Citizenship & Social Values (HMOV)	Classroom discussion Short presentations Reflection papers Final paper/project
Respond thoughtfully and respectfully to differing opinions.	Cultural Visions (Honors) Citizenship & Social Values (HMOV)	Classroom discussion Respectful behavior Arg't map commentaries Reflection papers Final paper/project
Express ideas precisely and critically, both orally and in writing.		Classroom discussion Arg't map commentaries Reflection papers Final paper/project