

## **GEO 371T / GEO 391 BROADER IMPACTS: DESIGNING AND COMMUNICATING FOR CONSEQUENTIAL SCIENCE**

**Spring 2022**  
**TTh 12:30-2:00PM**  
**JGB 3.120**

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<b>Office Hours:</b>	Tuesdays 1:45 - 2:45 PM or by appointment
<b>Appointments:</b>	<a href="https://calendly.com/apapendieck">https://calendly.com/apapendieck</a>

### **FORMAT**

Due to current university COVID guidance, the first four meetings of this class will be fully online. After that, the course will shift to face-to-face meetings.

In general, this course has the following *rhythm*:

- Friday-Monday: Reading and thinking about things at your own pace
- Monday night: Post to Canvas discussion forum is due
- Tuesday-Thursday: Discuss in Canvas forums, Zoom and in the classroom

### **COURSE WEBSITE**

All readings, materials, assignments and the overall course plan will be made available on Canvas.

### **COURSE OVERVIEW**

This course is designed to give undergraduate and graduate student scientists from multiple disciplines the opportunity to think critically and systematically about their science in broader social and ethical contexts. Students will explore the social and ethical role and value of science in society by discussing selected readings on the history and philosophy of science (HPS) and science and technology studies (STS) as well as case studies of social and ethical issues related to science and technology. The course will examine common criteria and frameworks by which scientific researchers and their research are evaluated (e.g., NSF Merit Review Criteria), and students will learn to use these frameworks for design and evaluation. Students will design and carry out an independent inquiry into an ethical issue of science in society, ultimately producing a short research-based commentary-style article suitable for a journal or media outlet with a broad audience. They will also design and present a brief proposal for a broader impacts activity, and they will develop components of their professional portfolio.

By thinking and writing about how and why they do research, students will learn how to articulate their own scientific interests per broader public and institutional discourses about science, and they will develop a more sophisticated understanding of funder- and stakeholder-

specific notions of “broader impacts,” “economic impact,” “intellectual merit,” “equity,” “diversity,” “inclusion,” “engagement,” “education” and “mentorship.” Students will come away with a clearer sense of who they can be as a scientist, a set of principles and tools for conducting socially consequential research, and a language for conveying themselves and their research in a clear and compelling way. The writing projects will be focused on enhancing students’ ability to write well in practical genres necessary for positioning themselves as professional scientists and change makers, including research proposals, diversity statements, teaching statements and personal statements for program applications.

## **FLAGS**

### ***Ethics***

This course carries the Ethics flag. Ethics courses are designed to equip you with skills that are necessary for making ethical decisions in your adult and professional life. You should therefore expect a substantial portion of your grade to come from assignments involving ethical issues and the process of applying ethical reasoning to real-life situations.

### ***Independent Inquiry***

This course carries the Independent Inquiry flag. Independent Inquiry courses are designed to engage you in the process of inquiry over the course of a semester, providing you with the opportunity for independent investigation of a question, problem, or project related to your major. You should therefore expect a substantial portion of your grade to come from the independent investigation and presentation of your own work.

### ***Writing***

This course carries the Writing Flag. Writing Flag courses are designed to give students experience with writing in an academic discipline. In this class, you can expect to write regularly during the semester, complete substantial writing projects, and receive feedback from your instructor to help you improve your writing. You will also have the opportunity to revise one or more assignments, and you may be asked to read and discuss your peers’ work. You should therefore expect a substantial portion of your grade to come from your written work. Writing Flag classes meet the Core Communications objectives of Critical Thinking, Communication, Teamwork, and Personal Responsibility, established by the Texas Higher Education Coordinating Board.

## **READINGS AND RESOURCES**

No text purchase is required. All course readings and resources will be distributed via Canvas. A preliminary schedule of topics and activities are outlined below, and readings and resources will be adjusted (added, removed, changed) to suit the progress of the class. All adjustments will be announced via Canvas. It is critical that you read the announcements so that you can adapt appropriately.

## **COMMUNITY AND PARTICIPATION**

### ***Participation and Attendance***

You will be expected to make every effort to participate in online activities and meetings. This class depends upon incremental work, discussion and feedback. If you have problems participating, please email me or send me a message in Canvas.

If you know you will be absent, please notify me at least 1 week in advance, preferably earlier, so that course activities can be adjusted and—if necessary—an alternative mode of participation can be arranged.

### ***Community Norms***

*Respectful:* We are respectful of each other’s individual pathways to this class, of our different histories and how they may influence our experience of issues and events. We respect each other’s time, creativity, feedback and courage.

*Responsible:* In talking, writing and giving feedback, we work hard to “respond” or “answer back” to each other in ways that can be heard, and to strive for meaningful response even in disagreement. We work to accommodate productive tensions.

*Confidential:* As we cultivate a classroom that is safe and that promotes intellectual growth and risk-taking, we will inevitably talk about things which we have not thought about before, engage in sensitive discussions not intended to be made public, and try out ideas and positions that may not be fully baked and ready for consumption. To borrow a restaurant ethic, we will keep this important thinking, talking and sharing “back of house,” behind the scenes, like the sometimes messy work of cooks in a kitchen.

*Caring:* We keep each other’s best interest in mind, we work hard for each other, and we watch out for each other.

### ***Media Engagement***

In this class, you will be encouraged to engage with, think about, write for and act via public and social media spaces. This is because these spaces are important for broader impacts and consequential scientific practices. However, publishing work or disseminating your views in these spaces will never be mandatory. If you are concerned about engaging a particular community or media space, please let the instructor know and make alternative arrangements.

### **ASSIGNMENTS**

Below is a description of the assignments for this class. Assignments are due on their due date. If you have trouble meeting a due date, please notify me before the due date via e-mail, providing a reason and proposing an alternate date. Unauthorized late assignments will forfeit 10% of the total assignment score for every day they are late.

#### **Weekly Reflections and Class Participation 35%**

You will be expected to review text, video and audio resources presented each week, and to participate in class discussions and reflections in the Canvas discussion forums and via Zoom. You will normally be required to provide comments and feedback on the writing and reflections of your peers. Forum-based discussions will be used to guide and enrich live discussions during class time.

#### **Empirical Investigation of an Ethical Issue 35%**

Building on readings and discussion in class, you will conduct a research project on an issue of

social and ethical significance related to a particular scientific field, technology, or to general scientific practice. You will (1) frame a research question about an ethical issue, (2) develop a method to assemble a data corpus that reveals current ethical thinking or context for the issue, and (3) describe your findings in a paper that either argues for a specific position, puts different positions in dialogue or frames a useful debate. Your paper will be written in a genre suitable for communication to a broad audience, for instance, as a substantive blog post or a “commentary” or “perspectives” article in a high impact scientific journal such as Science or Nature. In addition, you will work with the instructor to present a brief overview of the issue and your study, and you will help lead a class discussion. The final paper is due on the date of the final exam, and should not exceed 3000 words.

### **Broader Impacts Activity** **20%**

This assignment is designed to engage you in the development of an activity that will broaden your impact as a scientist. Building on your investigation, you will identify and articulate a “change making goal” in terms of your understanding of scientific impact, engagement, outreach, equity, diversity or social change, and design an activity, program or product that contributes to the goal. You will also identify data or artifacts that you can collect that will help you describe and evaluate the activity in its eventual implementation. You will share your designed activity with the rest of the class for feedback.

### **Portfolio Elements: Situating Yourself & Research** **10%**

You will develop language and set of concepts to help you write “professional portfolio elements” that show who you are or aspire to be as a scientist, researcher or professional.

Through this activity, you will develop two elements of your professional portfolio that reflect how you view your scientific role in society. The goal is to help you produce thoughtful, sophisticated documents that you can use to advance your academic and professional career and pursue your goals as a scientist.

Your professional portfolio may include any of the following elements:

1. Professional Positionality Statement
2. Statement on Diversity and Equity
3. Statement on Teaching
4. Personal Statement (per graduate school or fellowship application requirements)
5. Professional Bio
6. Professional Website or Social Media Profile
7. Blog Post
8. Broader Impacts Project Website
9. Educational Module
10. Researcher as an Instrument Statement
11. Pathway Story
12. Other documents as agreed upon with instructor

## **FINAL EXAM**

There is no final exam. The final draft of your Issue Investigation paper and a Broader Impacts reflection are due in place of the final.

## **COURSE PLAN**

Unless otherwise specified, both Tuesday and Thursday sessions will be “synchronous” face-to-face meetings. You will also work asynchronously on a weekly basis to review resources and materials, and respond via discussion forums. Following is a *preliminary* course plan that is intended to give you a sense of the overall timeline. Going forward, the *working course plan* on Canvas will supersede this plan. Adjustments to the course plan in Canvas will be made as work progresses. All changes will be announced via Canvas and it is your responsibility to read announcements and adapt as necessary.

<b>Wk</b>	<b>Day</b>	<b>Date</b>	<b>Focus</b>
1	T	Jan 18	<b>Course Overview</b>
1	Th	Jan 20	<b>Getting to Know Each Other, Goals and Stakeholders in Science</b>
2	T	Jan 25	<b>Introduction: Science, Society, Values and Impact</b>
2	Th	Jan 27	<b>Introduction: Science, Society, Values and Impact</b>
3	T	Feb 1	<b>Science as Paradigm, Practice and Institution</b>
3	Th	Feb 3	<b>Science as Paradigm, Practice and Institution</b>
4	T	Feb 8	<b>Science Communication and Scholarly Practice</b>
4	Th	Feb 10	<b>Science Communication and Scholarly Practice</b> Guests: Anton Caputo & Monica Kortsha, Jackson School Communications
5	T	Feb 15	<b>Science Mentorship and Formal Education</b>
5	Th	Feb 17	<b>Science Mentorship and Formal Education</b> Guest: TBD
6	T	Feb 22	<b>Informal Learning and Participatory Science</b>
6	Th	Feb 24	<b>Informal Learning and Participatory Science</b> Guest: Dr. Kevin Nguyen, Sonoma State University
7	T	Mar 1	<b>Open Science and Infrastructure</b>
7	Th	Mar 3	<b>Open Science and Infrastructure</b>
8	T	Mar 8	<b>Big Goals: Diversity, Equity and Inclusion and Justice</b>
8	Th	Mar 10	<b>Broader Impacts Design and Evaluation</b>
	Tu	Mar 15	<i>No Class - Spring Break</i>
	Th	Mar 17	<i>No Class - Spring Break</i>

9	T	Mar 22	<b>Issue presentations and discussion</b>
9	Th	Mar 24	<b>Issue presentations and discussion</b>
10	T	Mar 29	<b>Issue presentations and discussion</b>
10	Th	Mar 31	<b>Issue presentations and discussion</b>
11	T	Apr 5	<b>Issue presentations and discussion</b>
11	Th	Apr 7	<b>Issue presentations and discussion</b>
12	T	Apr 12	<b>Issue presentations and discussion</b>
12	Th	Apr 14	<b>Issue presentations and discussion</b>
13	T	Apr 19	<b>Issue presentations and discussion</b>
13	Th	Apr 21	<b>Issue presentations and discussion</b>
14	T	Apr 26	<b>Professional Portfolio and Positioning</b>
14	Th	Apr 28	<b>Professional Portfolio and Positioning</b> Guest: Jennifer Jordan, Jackson School Career Center, plus TBD
15	T	May 3	<b>Broader Impacts Presentations</b>
15	Th	May 5	<b>Broader Impacts Presentations</b>
	T	May 3	<i>No Class - Spring Break</i>
	Th	May 5	<i>No Class - Spring Break</i>
	Sa	May 14	<b>Final Work Due (No Final Exam)</b>

### **GRADING PROCEDURES**

Your grade for each assignment as well as your final grade will be determined by the following scheme:

A 94-100	A- 90-93	B+ 87-89	B 84-86	B- 80-83	C+ 77-79
C 74-76	C- 70-73	D+ 67-69	D 64-66	D- 60-63	F below 60

### **UNIVERSITY POLICIES**

#### **ACADEMIC INTEGRITY:**

Each student in the course is expected to abide by the University of Texas Honor Code: *“As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.”* Plagiarism is taken very seriously at UT. Therefore, if you use words or ideas that are not your own (or that you have used in previous class), you must cite your sources. Otherwise you will be guilty of plagiarism and subject to academic disciplinary action, including failure of the course. You are responsible for understanding UT’s Academic Honesty and the University Honor Code which can be found at the following website:  
[http://deanofstudents.utexas.edu/sjs/acint\\_student.php](http://deanofstudents.utexas.edu/sjs/acint_student.php)

### **Q DROP POLICY:**

If you want to drop a class after the 12th class day, you’ll need to execute a Q drop before the Q- drop deadline, which typically occurs near the middle of the semester. Under Texas law, you are only allowed six Q drops while you are in college at any public Texas institution. For more information, see:  
<http://www.utexas.edu/ugs/csacc/academic/adddrop/qdrop>

### **SHARING OF COURSE MATERIALS:**

No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class unless you have the instructor or creator’s explicit, written permission. Unauthorized sharing of materials promotes cheating. It is a violation of the University’s Student Honor Code and an act of academic dishonesty. I am well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure in the course.

### **CLASS RECORDINGS:**

Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

### **UNIVERSITY RESOURCES FOR STUDENTS:**

Your success in this class is important to me. We will all need accommodations because we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we will develop strategies to meet both your needs and the requirements of the course. There are also a range of resources on campus:

**Services for Students with Disabilities.** This class respects and welcomes students of all backgrounds, identities, and abilities. If there are circumstances that make our learning environment and activities difficult, if you have medical information that you need to share with me, or if you need specific arrangements in case the building needs to be evacuated, please let me know. I am committed to creating an effective learning environment for all students, but I can only do so if you discuss your needs with me as early as possible. I promise to maintain the confidentiality of these discussions. If appropriate, also contact Services for Students with Disabilities, 512-471-6259 (voice)

or 1-866-329- 3986 (video phone). <http://ddce.utexas.edu/disability/about/>

**Counseling and Mental Health Center.** All of us benefit from support during times of struggle. You are not alone. There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is often helpful. If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support.

<http://www.cmhc.utexas.edu/individualcounseling.html>

**The Sanger Learning Center.** Did you know that more than one-third of UT undergraduate students use the Sanger Learning Center each year to improve their academic performance? All students are welcome to take advantage of Sanger Center's classes and workshops, private learning specialist appointments, peer academic coaching, and tutoring for more than 70 courses in 15 different subject areas. For more information, please visit <http://www.utexas.edu/ugs/slc> or call 512-471-3614 (JES A332).

**Behavior Concerns Advice Line (BCAL).** If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit

<http://www.utexas.edu/safety/bcal>. Please sign up for text alerts at

<http://www.utexas.edu/emergency/>.

#### **EMERGENCY EVACUATION POLICY:**

Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Take valuables with you if you can gather them quickly. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors of the classroom and the building.
- If you require assistance to evacuate, inform the instructor in writing during the first week of class.
- In the event of an evacuation, follow the instructor's instructions.
- Do not re-enter a building unless the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office gives you instructions to do so.
- Please familiarize yourself with procedures in case of an active shooter: <http://www.utexas.edu/police/videos/>