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

REVISED SYLLABUS – Mar 27, 2020

Spring 2020
TTh 12:30 - 2:00PM
ONLINE COURSE
(Previous Room: JGB 3.120)

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Office Hours: Mondays 2:30 - 4:30PM via Zoom and Canvas Chat, or by appointment

OVERVIEW OF CHANGES

As UT is moving classes fully online for the remainder of the semester in response to the COVID-19 outbreak, we will be making the following adjustments and shifts in emphasis in this course:

1. The course will transition from a blended face-to-face/online course to a fully online course. In general, the assignments, weekly activities and overall grading scheme will be maintained per the original syllabus.
2. COVID-19 is a major issue of scientific and social import, and it is affecting all of us. This class is now focused on supporting you in terms of two primary goals: (1) making an immediate and positive impact as scientists and public scholars (2) helping each other as distributed learners, colleagues and changemakers.
3. Unless otherwise noted, we will now hold live, face-to-face meetings (via Zoom) during our regular class time: both Tuesdays and Thursdays from 12:30 to 2:00pm. If you anticipate problems attending these live meetings in general, or if you know that you will be missing particular sessions, please let me know.
4. While your participation in these live sessions is strongly encouraged for learning, maintaining community, and fostering good peer-to-peer feedback, attendance in these sessions will not be tied to your grade.
5. All previously scheduled in-class presentations should now be designed for "asynchronous" online discussion (e.g. using Canvas discussion forums) and should include an agenda for a follow-up discussion during "live" class.
6. We will adjust the scheduling of our in-class issue presentations to accommodate the revised semester timeline.
7. You will now have the option to complete the Broader Impacts Activity assignment as either an individual or group/whole class assignment.

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

Primary text:

MacFadden, B. J. (2019). *Broader Impacts of Science on Society* (1st ed.). Cambridge University Press. https://doi.org/10.1017/9781108377577

The text by MacFadden is available in electronic format via the UT library. We won't read the whole book. Assigned chapters from MacFadden and all other course readings and resources will be distributed via Canvas. A preliminary schedule of topics and activities is outlined below, but 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 meetings in class. 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.

Answerable: In talking, writing and giving feedback, we work hard to "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.

Caring: We keep each other's best interest in mind, and we work hard 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 20%

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. 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 5000 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_____25%
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 is due in place of the final.

COURSE PLAN

This course is an online course: unless otherwise specified, both Tuesday and Thursday sessions will be "synchronous" online meetings using Zoom. You will also work asynchronously on a weekly basis to review resourses and amterials, 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.

Wk			Topic and Resources
1	T	Jan 21	**Course Overview** Syllabus

			Canvas site
1	Th	Jan 23	Geoscience Ambassadors: www.geoscienceambassadors.net/ Story Collider: www.storycollider.org/
2	T	Jan 28	**Introduction: Science, Society, Values and Impact** MacFadden Chp 1-2 *Additional readings/resources TBD*
2	Th	Jan 30	Presentation
3	T	Feb 4	**Science Communication and Scholarly Practice** MacFadden Chp 4-5 *Additional readings/resources TBD*
3	Th	Feb 6	Presentation
4	T	Feb 11	**Diversity, Equity and Inclusion** MacFadden Chp 9 *Additional readings/resources TBD*
4	Th	Feb 13	Presentation
5	T	Feb 18	**Science Mentorship and Formal Education** MacFadden Chp 10-12 *Additional readings/resources TBD*
5	Th	Feb 20	Presentation
6	T	Feb 25	**Informal Learning and Participatory Science** MacFadden Chp 13-14 *Additional readings/resources TBD*
6	Th	Feb 27	Presentation

7	T	Mar 3	**Science as Reconfiguration (Watch out! Cyborgs!)** MacFadden Chp 15 *Additional readings/resources TBD*
7	Th	Mar 5	Presentation
8	T	Mar 10	**Issue Analysis** Equity and Diversity in the Geosciences
8	Th	Mar 12	Discussion guide
	T	*Mar 17*	*Spring Break*
	Th	*Mar 19*	*Spring Break*
9	T	Mar 24	*Extended Spring Break*
9	Th	Mar 26	*Extended Spring Break*
10	T	Mar 31	**Return to Class Meeting via Zoom**
10	Th	Apr 2	**Designing for Broader Impacts**
11	T	Apr 7	**Issue presentations and discussion**
11	Th	Apr 9	**Issue presentations and discussion**
12	T	Apr 14	**Issue presentations and discussion**
12	Th	Apr16	**Issue presentations and discussion**
13	T	Apr 21	**Issue presentations and discussion**
13	Th	Apr 23	**Issue presentations and discussion**
14	T	Apr 28	**Issue presentations and discussion**
14	Th	Apr 30	**Issue presentations and discussion**
15	T	May 5	**Professional Positioning**
15	Th	May 7	**Broader Impacts Presentations**

		May 11-12	*No Class*
		May 13-19	*Finals*

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

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

RECORDINGS:

Class recordings are reserved only for the use of members of this class (students, TAs, and the instructor) and only for educational purposes. Recordings should not be shared outside the class in any form. Violation of this restriction 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/