

Being Human in STEM

SCI 3900/HONOR 3990, Spring 2021 Syllabus

Course History

The idea of a course called [Being Human in STEM](#) came from chemistry Professor Sheila Jaswal from Amherst College in response to [Fall 2015 racial controversies](#)¹ across several American college campuses. The student protests brought to light a need for dialogue between students and faculty about inclusivity; this need was even more acute in STEM where often students perceive that their “identity should remain at the door.” Conversely, Being Human in STEM asserts that students’ identities matter. Every student deserves the space and freedom to be themselves in a STEM classroom. A course with the same purpose, Race and Gender in the Scientific Community, was already initiated at Brown University in 2014 by students, including Black women, and then adopted by the University. Amherst’s and Brown’s allied courses connected in 2016. Since then the [Being Human in STEM](#) course has been taught with the following mission:

Collaboratively designed project that aims to foster a more inclusive, supportive STEM community and develop a framework for students and faculty to understand and navigate diverse identities in the classroom and beyond.

Inspired by Amherst’s and Brown’s work, several other colleges in the Northeast (e.g. Yale University) started their own implementation of the course. Claudia De Grandi, Assistant Professor (Lecturer) of Educational Practice, co-taught the class twice at Yale University before she joined the University of Utah in 2018. Being Human in STEM had never been offered at a public university before, and Dr. De Grandi was delighted to spearhead the implementation of this course at the University of Utah.

The course was offered for the first time at the University of Utah in Spring 2020, co-taught by five instructors across the College of Science: Claudia De Grandi (Physics & Astronomy), Kelly MacArthur (Mathematics), Jon Rainier (Chemistry), Holly Sebahar (Chemistry), Anil Seth (Physics & Astronomy).

The course is supported and managed under the Center for Science and Mathematics Education (CSME) and satisfies the Diversity (DV) requirement.

Course website: <https://csme.utah.edu/beinghumaninstem/>

¹ Events that took place at the University of Missouri, Yale University, and Amherst College form key examples of racial misconduct and protest. For more on these events, see “Racial Tension and Protests,” 2015 (<https://www.nytimes.com/2015/11/11/us/racial-tension-and-protests-on-campus-across-the-country.html>); Hartocollis & Bidgood, 2015 (<https://www.nytimes.com/2015/11/12/us/racial-discrimination-protests-ignite-at-colleges-across-the-us.html>); and Dean, 2015 (<https://www.theguardian.com/us-news/2015/dec/29/college-university-campus-racism-protest-yale-georgetown-amherst-missouri>).

Course goals:

- investigate the theme of diversity and climate within STEM
- create a community of students and faculty in STEM who discuss critically these themes
- design, develop and implement interventions to improve the STEM climate at the U of U
- present the projects' results, and course findings in an end-semester symposium open to the U of U community of faculty, staff and students.

Course Description

This course combines academic inquiry and community engagement to investigate the theme of diversity and climate within STEM. Students will examine how diverse personal backgrounds shape the STEM experience at the University of Utah and nationally. The course has two components that are intertwined throughout the semester:

- *Reading and discussion:* during one of the two weekly class meetings, we ground our understanding through critical reading of primary scholarly research as well as popular literature. Example topics include: implicit bias, identity threat, antiracism, STEM and queerness, STEM and disability, intersectionality, and many others.
- *Project development:* the other weekly class meeting is devoted to the design, execution and evaluation of interventions led by the students with the goal of improving the experience of STEM students at the U.

This course relies heavily on in-class group discussion as well as group projects. Students will be asked to engage in group discussion at every class meeting. Students will establish norms for group discussion at the beginning of the semester and learn to adhere to these norms to participate in productive and open discussions, where they will be listening to everyone's opinion and participate constructively.

Course work includes weekly readings, reflective/opinion writing, in-class discussion, project development and, as appropriate, execution and quantitative assessment of new or adapted interventions. At the end of the semester, the course will end with an end-semester Symposium open to the University of Utah community of faculty, staff and students, where the students in the class will present their intervention projects' results, and other course findings.

At the end of the semester, students present their group projects to the campus community via a public event.

Course Projects

Students will work in groups to design and implement interventions aimed at improving the experience and climate for STEM students at the U. These interventions can take different forms, some examples (from past implementation of the course at other universities) are: 1) design and implement surveys to assess some aspects of the STEM climate on campus (see STEM Climate survey developed through student-faculty collaboration, Teaching in Higher Education, DOI: [//doi.org/10.1080/13562517.2019.1636219](https://doi.org/10.1080/13562517.2019.1636219)), 2) organize a student-led workshop for STEM faculty to inform them of campus relevant statistics, and best teaching practices from a student perspective; 3) establishing support groups and visibility for specific groups on campus (e.g. first-generation and low income students in STEM on campus), 4) design and implement short diversity and inclusion discussion with faculty and students in a STEM course; 5) create online resources, peer-to-peer mentoring and

informative sessions for incoming students interested in STEM. In the first implementation of the course at University of Utah in Spring 2020, students collected survey data from STEM students across campus and asked them about their positive and negative experiences with respect to inclusivity and diversity. Students discussed the results of the survey with President Watkins as part of her [U Rising podcast](#)². Students compiled a [Final Semester Report](#) that summarizes the highlights of the class as well as the main results of the survey data.

Students may develop something similar to the above, or something completely new. It will be up to them to identify the major needs, via research and data collection, and maximize the impact of their intervention.

Inclusivity

This class strives to be an inclusive community, learning from the many perspectives that come from having differing backgrounds and beliefs. As a community, we aim to be respectful to all. We reject all forms of prejudice and discrimination, including but not limited to those based on age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, and veteran status. Faculty and students are expected to commit to creating an environment that facilitates inquiry and self-expression, while also demonstrating diligence in understanding how others' viewpoints may be different from their own.

Instructors

Claudia De Grandi (Physics & Astronomy)	claudia.degrandi@utah.edu
Amanda Cangelosi (Mathematics)	cangelos@math.utah.edu
Dave Carrier (Biology)	carrier@biology.utah.edu
Sushma Saraf (Chemistry)	s.saraf@chem.utah.edu
Suresh Venkatasubramanian (School of Computing)	suresh@cs.utah.edu

Class Meeting Time:

Tuesday and Thursday 2-3:55pm, online on Zoom (Zoom link TBA on Canvas)

Tuesday: mostly devoted to Class Discussions of Readings.

Thursday: structured-time for group project and peer-to-peer feedback.

Prerequisites:

None. The course is aimed at students across STEM fields and pre-medical students. Students who don't have major status but are interested in the course, may be approved upon instructor's consent.

Online Course Format & technical requirements

The class meetings will run synchronously online on Zoom (links will be available on the Canvas course site). We will regularly have both large and small group discussions (e.g. using breakout rooms), and

² Listen to the podcast [here](#) or <https://bit.ly/3bi0MSx>

occasionally some guests. In order to participate in this course (attending the class meetings and participating) you will be required to:

- Have access to a strong and stable internet connection
- Have access to a computer with working camera and microphone
- Be computer literate to be able to easily navigate Canvas, Zoom, Google Drive (for shared files).

Electronic or equipment failure: It is your responsibility to maintain your computer and related equipment in order to participate in the online portion of the course. Equipment failures will not be an acceptable excuse for late or absent assignments.

Note: Access to some technology equipment is available to students through the Marriott Library <https://lib.utah.edu/coronavirus/checkout-equipment.php>

Zoom Etiquette: Expectations for online learning environment

The following are guidelines for participation and engagement on Zoom. We expect all students to follow these guidelines.

- Always log in with your U of U Zoom account³
- Display your name as it appears on Canvas (unless instructed differently). Feel free to add your pronouns.
- To help keep background noise to a minimum, please keep yourself muted unless you are speaking
- Please raise [your virtual hand](#) before speaking (unless instructed differently)
- You are encouraged to have your camera on, especially when you are engaging in small group discussions in breakout rooms with your classmates. Position your camera properly. If you choose to use a web camera, be sure it is in a stable position and focused at eye level, if possible. Doing so helps create a more direct sense of engagement with other participants. If you prefer not having your camera on, or have connection issues, please make sure to find alternative ways to effectively engage with the class and your classmates (e.g. speaking, typing in the chat).
- Limit distractions. You can make it easier to focus on the class discussion by turning off notifications, closing or minimizing running apps, and muting your smartphone.
- Avoid multi-tasking. You'll engage with your classmates and the material better if you refrain from replying to emails or text messages during class. There are studies that show how multitasking during class time is detrimental for your learning and affect your class performance.
- Keep the chat on-topic. Please limit the chat messages to questions/responses related to the material discussed in that moment. Feel free to be friendly and chat with your classmates before/after class or during the breaks.

³ To access your account please go to <https://utah.zoom.us/> (Links to an external site.) you'll be redirected to the University's Single Sign On page, where you will use your UNID and CIS password. If you are accessing through the Zoom app you will need to sign in with the SSO option and then you'll be redirected to the University's Single Sign On page, where you will use your UNID and CIS password.

- Be aware that your instructors will pop in and out of breakout rooms. They might not announce themselves, but don't worry, they're just there to check if you need help!
- Others? We will have a chance to discuss and suggest more guidelines during our first Class meeting of the semester and we will have a chance to revise these together throughout the semester as needed.

Class Recording

Because of the discussion format of this course, we want everyone to speak openly at any time, therefore the class meetings will not be recorded. There may be a few exceptions for instance in the case we have a special lecture by a guest, or some other kind of presentation is given in class that we want you to be able to re-watch. If and when a recording will happen will be announced.

Required Text: Ibram X. Kendi, *How to be an antiracist*, New York : Random House Publishing Group (2019). Online access to the book is available to all students through the Marriot Library. If you prefer a printed copy of the book, you can purchase a used/new copy at the [Campus bookstore](#) (\$20-25) or online (\$10-14 plus shipping). Audible versions of the book are also available on a few audiobook websites. If you wish to have a printed copy but cannot afford the cost, please reach out to the instructors, we have a limited number of copies that we can lend. (Please email Claudia De Grandi claudia.degrandi@utah.edu before or during the first week of class to inquire about borrowing a book).

Additional required readings will be available on Canvas each week.

Overview of course assignments:

Individual assignments:

- Weekly written reflections on assigned reading and commenting on each others' reflections.
- Scientific Autobiography.
- Written OpEd or Scientific/Another Identity Autobiography

Group assignments:

- "Other Voices" project: individual/pairs of students select readings and lead a group discussion
- Design, execution of intervention projects and write up of findings.
- Written and oral presentation of project proposals.
- Public presentation of projects at end-semester Symposium during Final Exam period: **Monday May 3rd 1-3pm**

Class Participation and Attendance

Attendance and in-class participation in discussions and activities is crucial to the success of this course. Participation includes actively listening, reading all required readings, and thoughtfully contributing to the weekly discussion, activities, and group work. Much of what we do in this class requires us to reflect on the implications of the material we read and discuss. Thus, your presence is

important. You will be excused up to three absences, missing more than three classes will consistently affect your final grade. Please email your instructors ahead of time if you will not be able to attend a particular class session and/or if you are experiencing an exceptional situation that prevents you from attending class.

Attendance will be tracked on Canvas using the Roll Call Attendance tool. Effectively you'll be given full credit for attendance if at the end of the semester your overall Roll Call Attendance score will be at least 90%.

Assignments and Discussion posts

- Reading assignments will be posted by Wednesday morning and due every Sunday at midnight. Together with articles, these assignments may also include watching videos, and/or listening to podcasts. You will be expected to submit a summary of the assignment and/or a post on a Discussion Board. Discussion Board posts will be an important component of the class to inform and guide our Tuesday's class discussion and to have a conversation outside of class.
- Additional assignments in preparation for the Thursday class will be due on Wednesday at midnight (not every week).
- Late submission: all assignments will be subjected to a 3% Late Penalty per each hour the submission is late.

Expected Student Workload

3 credits = average of 9 hours of work per week

- 4 hours a week in class (Tue-Thu)
- 5 hours outside of class divided roughly among:
 - Outside reading per week: 2-3 hours
 - Outside writing per week: 1-2 hours
 - Outside work on Projects: 1-2 hours
- Note: outside of class work will vary, some weeks there will be more readings and less writing, some weeks there will be more work on projects.

Final grade calculation:

Weekly Readings, Summaries and Canvas discussion: 30%

Class participation and Attendance 15%

Writing Assignments: Autobiography/OpEd: 15%

"Other Voices" project: 10%

Group Course Project (including proposal, design, implementation, oral presentation, write up and dissemination): 30%

Final Examination (Symposium): Monday May 3rd 1-3pm

Special dates: We will cancel class on March 2 to allow everyone to take a break and recharge.

Tentative List of Topics

Importance of Diversity in STEM
Experience of students in STEM
Implicit Bias
Stereotype Threat and Imposter Syndrome
White privilege
Antiracism
STEM and queerness
STEM and disability
Intersectionality and other identities

Sample of Reading Assignments

1. Sarah L. Eddy, S.L. and Brownell, S.E. (2016), Beneath the numbers: A review of gender disparities in undergraduate education across science, technology, engineering, and math disciplines, *Phys. Rev. Phys.Educ. Res.* 12, 020106.
2. Price J., (2010). The effect of instructor race and gender on student persistence in STEM fields, *Economics of Education Review*, 29 (6), 901-910.
3. Riegle-Crumb, C., King, B., & Irizarry, Y. (2019). Does STEM Stand Out? Examining Racial/Ethnic Gaps in Persistence Across Postsecondary Fields. *Educational Researcher*, 48(3), 133–144.
4. Picower, B. (2009) The unexamined Whiteness of teaching: how White teachers maintain and enact dominant racial ideologies, *Race Ethnicity and Education*, 12:2, 197-215.
5. DiAngelo, R. J. (2012). Nothing to add: The role of white silence in racial discussions. *Journal of Understanding and Dismantling Privilege*, 2(2), 1–17.
6. Mcgee, Ebony & Bentley, Lydia, The Troubled Success of Black Women in STEM. *Cognition and Instruction*, 35: 265 (2017).
7. Bian, Lin and Leslie, Sarah-Jane and Cimpian, Andrei, Gender stereotypes about intellectual ability emerge early and influence children’s interests, *Science* 355:389 (2017).
8. Steven J. Spencer, Christine Logel, and Paul G. Davies, Stereotype Threat, *Annual Review of Psychology* 67: 415 (2016).
9. Book by Kendi, I.X, (2019), How to be an antiracist.
10. Yoder, J.B, and Mattheis, A. (2016) Queer in STEM: Workplace Experiences Reported in a National Survey of LGBTQA Individuals in Science, Technology, Engineering, and Mathematics Careers, *Journal of Homosexuality*, 63:1, 1-27
11. Friedensen, R. (2018) STEM Climate for Students with Disabilities, Higher Education Today blog.
12. Hazari, Z., Sadler, P.M. and Sonnert, G. (2013), The Science Identity of College Students: Exploring the Intersection of Gender, Race, and Ethnicity, *Journal of College Science Teaching*, 42 (5), 82-91.
13. Walton, GM and Cohen, GL, A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students, *Science* 331:1447 (2011).

Policies and Resources:

1. Student Names and Personal Pronouns Statement Class rosters are provided to the instructor with the student's legal name as well as "Preferred first name" (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, we will honor you by referring to you with the name and pronoun that feels best for you in class, on lab reports, group assignments, etc. Please advise your instructor and TA of any name or pronoun changes (and update CIS) so we can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your uID card, please visit the LGBT Resource Center (lgbt.utah.edu) Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are: M, W-F 8am-5pm, and 8am-6pm on Tuesdays.
2. The Americans with Disabilities Act. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.
3. Learners of English as an Additional/Second Language If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (writingcenter.utah.edu/); the Writing Program (writing.utah.edu/); and the English Language Institute (eli.utah.edu/). Please let us know if there is any additional support you would like to discuss for this class.
4. Veterans Center If you are a student veteran, the University of Utah has a Veterans Support Center (veteranscenter.utah.edu/) located in Room 161 in the Olpin Union Building. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources. Please also let us know if you need any additional support in this class for any reason.
5. Wellness Statement Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources, contact the Center for Student Wellness (wellness.utah.edu/); 801-581-7776.
6. University Counseling Center The University Counseling Center (UCC) (counselingcenter.utah.edu/) provides developmental, preventive, and therapeutic services and programs that promote the intellectual, emotional, cultural, and social development of University of Utah students. They advocate a philosophy of acceptance, compassion, and support for those they serve, as well as for each other. They aspire to respect cultural, individual and role differences as they continually work toward creating a safe and affirming climate for individuals of all ages, cultures, ethnicities, genders, gender identities, languages, mental and physical abilities, national origins, races, religions, sexual orientations, sizes and socioeconomic statuses.
7. Office of the Dean of Students The Office of the Dean of Students (deanofstudents.utah.edu/) is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students,

and assist with the interpretation of University policy and regulations. Please consider reaching out to the Office of Dean of Students for any questions, issues and concerns. 200 South Central Campus Dr., Suite 270. Monday-Friday 8 am-5 pm.

8. Addressing Sexual Misconduct. Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
9. University Safety Statement. The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. Lauren's Promise – We will listen and believe you if you are being threatened. If you are in immediate danger call 911. Utah Domestic Violence Coalition is another good resource 800-897-5465. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.
10. We are committed to make sure all students have the support they need if they are experiencing violence, including but not limited to domestic violence, interpersonal violence, and stalking. If you are experiencing violence we encourage you to tell someone and seek help from the resources listed below.

Campus Resources

- Safe U safeu.utah.edu
- Advocacy/Mental Health wellness.utah.edu
- Contact a Victim Advocate advocate@sa.utah.edu
- University Police 801-585-2677

Area Resources

- Utah's Domestic Violence Coalition www.udvc.org
- YWCA of Utah www.ywcautah.org
- Utah Coalition Against Sexual Assault www.ucasa.org
- Rape Recovery Center Crisis Line 901-467-7273
- Love is Respect www.loveisrespect.org

11. Undocumented Student Support. Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of

your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.

We reserve the right to change the policies stated in this syllabus at some point in the semester. If we do make a change, we will announce it in class and post a Canvas Announcement about it.