

Diversity, Equity, Inclusion, and Justice in Earth and Environmental Sciences

GEOS 190/290 (CRN)

Instructor: Professor Marilyn L. Fogel, EPS

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Class Hours: Tuesday, 3:00-4:40 pm, virtual; Credits: 2

Course Description and Objectives: “Diversity and Inclusion in the Geosciences” will educate on and promote the values of diversity, equity, inclusion, and justice. Students will learn how the scientific community is affected by racial injustice and biases and what actions they might take to improve diversity in the fields of Earth and Environmental science. **This is a class designed by graduate students from EPS and Environmental Science!**

GEOS 190/290 will focus on addressing three main questions:

1. What does DEIJ mean and why does it matter?
2. What are some of the groups which are impacted by DEIJ issues and problems?
3. How can we apply and incorporate DEIJ knowledge in our scientific lives?

Expected learning outcomes:

1. Students will become familiar with the vocabulary and concepts surrounding diversity, equity, inclusion, and justice in general, as well as in the Earth and Environmental science disciplines.
2. Students will understand the unique challenges that face specific groups in the Earth and Environmental science disciplines.
3. Students will be empowered to make informed and positive changes within their departments.

Format: During class, students will discuss readings and media along with short lectures by the instructor and graduate students. Invited guests may be asked to provide additional perspective during weeks 3-8. Breakout rooms will be used to foster more in-depth discussion.

Assignments: *All students* (undergraduate and graduate) will be expected to attend every class, write a one paragraph summary of each week’s readings, and write a diversity statement. *Graduate* students will be additionally responsible for developing a plan that focuses on promoting diversity, equity, inclusion, and justice in their scientific field and writing a 5-page double spaced paper about that plan. Grading: Grades will be Satisfactory/Not Satisfactory.

Theme I: What DEIJ means and why it matters

Week 1: The value of diversity, equity, and inclusion & intersectionality

Learning Outcome: Understand why the topics of diversity, equity, and inclusion are important in the Geosciences and how these topics manifest in our daily lives. Required Media:

Applying an intersectionality lens to expand equity in the geosciences

Anne-Marie Núñez, Jessica Rivera & Tyler Hallmark

<https://www.tandfonline.com/doi/full/10.1080/10899995.2019.1675131>

Deep Biases Prevent Diverse Talent from Advancing

Korena Di Roma Howley

<https://eos.org/articles/deep-biases-prevent-diverse-talent-from-advancing>

Week 2: Challenges in achieving diversity in academia

Learning Outcome: Be able to identify the challenges currently faced in the geosciences with respect to diversity, equity, and inclusion topics. Understand what implicit biases are and how to combat them. Understand how these challenges are impacting student success, retention in geoscience fields, and feelings of belonging. Required Media:

No progress on diversity in 40 years

Rachel E. Bernard & Emily H. G. Cooperdock

<https://www.nature.com/articles/s41561-018-0116-6>

Race and racism in the geosciences. Dutt, K.

<https://www.nature.com/articles/s41561-019-0519-z>

Theme II: Specific groups impacted by DEIJ issues

Week 3: Native American/Indigenous knowledge

Learning Outcome: Develop an understanding of why the inclusion of Native American and/or Indigenous knowledge in teaching and research is beneficial. Formulate ideas on how the student can incorporate Native American Indigenous knowledge into their own teaching and research practices.

Required Media: *In the news*

Oil pipelines on native lands

Story 1: <https://prospect.org/environment/native-americans-hail-oil-and-gas-pipeline-decisions/>

Impacts of Mining on Native Lands:

https://serc.carleton.edu/research_education/nativelands/index.html

Week 4: Black inclusivity in Geosciences

Learning Outcome: Understand the obstacles that Black students, staff, and faculty face in the Earth and Environmental sciences and what steps can be taken to eliminate these obstacles. Required Media:

Code Switch Podcast, Episode 2: Being 'Outdoorsy' When You're Black Or Brown; Leah Donnella

<https://www.npr.org/sections/codeswitch/2016/06/08/480932447/the-code-switch-podcast-episode-2-made-for-you-and-me>

The Pressure to Assimilate

Montrai Spikes

<https://science.sciencemag.org/content/368/6498/1506>

Week 5: Latino/a/x/e inclusivity in the Geosciences

Learning Outcome: Understand the obstacles that Latino students, staff, and faculty face in the Earth and Environmental sciences and what steps can be taken to eliminate these obstacles. Required Media: TBD

Week 6: LGBTQIA+ inclusivity in Geosciences

Learning Outcome: Understand the obstacles that LGBTQIA+ students, staff, and faculty face in the Earth and Environmental sciences and what steps can be taken to eliminate these obstacles. Required Media:

Coming out in STEM: Factors affecting retention of sexual minority STEM students; Bryce E. Hughes

<https://advances.sciencemag.org/content/4/3/eaao6373>

Shining a Spotlight on LGBTQ+ Visibility in STEM

Jenessa Duncombe

<https://eos.org/articles/shining-a-spotlight-on-lgbtq-visibility-in-stem>

Week 7: Religion in the Geosciences

Learning Outcome: Understand the obstacles that religious students, staff, and faculty face in the Earth and Environmental sciences and what steps can be taken to eliminate these obstacles. Required Media: TBD

Week 8: Women in Geoscience

Learning Outcome: Understand the obstacles that female students, staff, and faculty face in the Earth and Environmental sciences, especially within an intersectional context, and what steps can be taken to eliminate these obstacles. Required Media:

First Authorship Gender Gap in the Geosciences

T. Pico, P. Bierman, K. Doyle, S. Richardson

<https://doi.org/10.1029/2020EA001203>

Gender differences in recommendation letters for postdoctoral fellowships in geoscience.

Dutt, K., Pfaff, D.L., Bernstein, A.F., Dillard, J.S. and Block, C.J.

<https://www.nature.com/articles/ngeo2819>

Theme III: How we can apply and incorporate DEIJ knowledge in our scientific lives

Week 9: Field safety

Learning Outcome: Understand how field experiences and safety concerns vary by group, and what measures can be taken to account for this. Required Media:

Scientists push against barriers to diversity in the field sciences

John Pickrell

<https://www.sciencemag.org/careers/2020/03/scientists-push-against-barriers-diversity-field-sciences>

A Synthesis of Instructional Strategies in Geoscience Education Literature That Address Barriers to Inclusion for Students With Disabilities

Ivan G. Carabajal, Anita M. Marshall, & Christopher L. Atchison

<https://doi.org/10.5408/16-211.1>

Week 10: Inclusive methods for teaching/ TA'ing and mentorship through diverse research perspectives (gender, race, globalism, environmental racism and justice)

Learning Outcome: Develop new pedagogical skills that will assist students in creating equitable learning environments and education materials (i.e., labs, quizzes, lectures). Learn about how to employ unconventional methods to spark conversations about DEIJ issues. Required Media:

Ten simple rules for building an anti-racist lab

Bala Chaudhary & Asmeret Berhe

<https://doi.org/10.1371/journal.pcbi.1008210>

Hostile climates are barriers to diversifying the geosciences

Marín-Spiotta, Barnes, Berhe, Hastings, Mattheis, Schneider, and Williams

<https://doi.org/10.5194/adgeo-53-117-2020>