

INCORPORATING DEI INTO AN INTRO ENVIRONMENTAL ENGINEERING COURSE

University of
Massachusetts
Amherst BE REVOLUTIONARY™

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THANKS TO COLLABORATORS!

- Janice Weldon and Hannah Wharton, Grad Student TAs
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- Dan Cannity, UMass Amherst IDEAS
- Paula Rees, UMass Amherst Engineering DEI
- Cheri Cousens, GLSD
- Ben Mosher, Emily Cole-Prescott, Kayla Larson, Amy Hunter
- Janine Burke-Wells, Mike Domach, Todd Brown
- All of my students!

THIS IS AN INTERACTIVE SESSION

- Introduce yourself to a neighbor...
- Tell them:
 - Your name and organization.
 - One goal you have for 2022.
- Listen to their introduction.

OKAY, WHAT IS THE POINT?

- More diversity = better solutions.
- Many classes focus only on technical.
- I'm training future engineers...
 - And I need your input!



UMASS AMHERST DEI CHALLENGE

- Faculty incorporated DEI into classes.
- Intended to integrate with technical content.
- One lesson/assignment through entire course.
- A panel of students provided feedback.

QUICK POLL

- What is the most important skill for an entry-level engineer?
- Discuss with a neighbor. Pick just one skill.



INTRO TO ENVIRONMENTAL ENGINEERING

- Taught widely.
- Focused on basic principles:
 - Environmental chemistry.
 - Mass balances.
 - Hydrology.
 - Chemical/biological reactions.
 - Water, air, soil/solids.

MY TEACHING APPROACH

- Frame class around one project (GLSD's Anaerobic Digesters).
- Extra learning goals:
 - Stakeholders.
 - Communicating w/ public.
 - Empathy in design.
 - Implicit bias.



TOWN MEETING PROJECT

- Students research stakeholders.
- Three “Town Meetings” throughout semester.
- Students role played as engineer or a stakeholder.
 - Engineers presented technical content to a broad audience.
- After each Town Meeting students wrote a reflection.



STUDENT REFLECTIONS (STAKEHOLDERS)

- “Another thing I learned is that a project can affect way more people than you think it would.”

STUDENT REFLECTIONS (COMMUNICATION)

- “Engineers don’t just have to collect data and solve problems, they have to sell those solutions to stakeholders and convince the public that financing those projects is a worthwhile investment.”

STUDENT REFLECTIONS (EMPATHY)

- “I learned that really gaining the trust of the public and taking a more people based approach to these projects is vitally important.”

NOT ALL RAINBOWS AND UNICORNS

- “I did not find the first Town Meeting to be particularly engaging for myself or others. It felt as though we were apprehensive about the idea.”

NOT ALL RAINBOWS AND UNICORNS

- “We spent a lot of time on this that I felt would have been better served taking notes from a lecture style and learning material from the book that would appear on homeworks and quizzes... The Town Meeting activity just felt like too much extra work.”

MY TAKE

- Students are VERY uncomfortable with this activity.
 - At first. By the end, they lean in.
- I focus on introducing consideration of stakeholders...
 - Not incorporating stakeholder concerns.
- Possibility that students are missing technical depth?



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- What is one way to improve the Town Meeting activity?

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- Look back at the most important skills we identified.
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HERE'S WHERE YOU COME IN

- What is one way to improve the Town Meeting activity?
- Look back at the most important skills we identified.
 - How can they be incorporated into classes?
- Should we keep doing these DEI activities?
 - Or focus on technical content?
- Would you be willing to lend expertise/time?
- What else am I missing?

P.S.

- Other professors would love to have all y'all come to give guest presentations, provide mentoring, and otherwise engage with them.
- As a benefit, you and your company get to talk with folks you might like to hire!



KEEP THE DISCUSSION ROLLING!

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