

# Equity education in engineering: developing and implementing equity, diversity and inclusion (EDI) content for the second-year mechanical engineering program

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## EDI Importance in Engineering

Equity, diversity, and inclusion (EDI) education is critical for engineering, as inequity in engineering projects can have long-lasting impact.

Motivations for this project were:

- Canadian Engineering Accreditation Board Graduate Attribute in equity [1];
- Institutional strategic plans focused on EDI;
- Moral and ethical drive to address inequity.

## Mech 2 Program

- Immersive 40-credit program taken by all entering MECH students (early exposure).
- Cohort-based program (integrated across multiple courses, two terms, covering wide range of Graduate Attributes).
- Unique scheduling format and integrated curriculum, with regular guest speakers.

## Strategies

Our strategies in the development of this curriculum were to:

1. Link EDI to engineering
2. Frame EDI as a professional skill
3. Have engineering instructors teach content (some evidence content taught by regular instructors may increase student buy-in [2])
4. Make content:
  - (a) Introductory (get on the same page)
  - (b) Easy to complete (low stress, asynch, etc.)
  - (c) Required (must pass EDI to pass course)

Changed course syllabi for 4 courses (2 terms):

1. Equivalent EDI weight to ¼ of 3-credit course
2. Two 1-credit courses (one per term) required passing EDI content (>50%) to pass courses.

## Resources Created/Deployed

### Module 1 - Basics

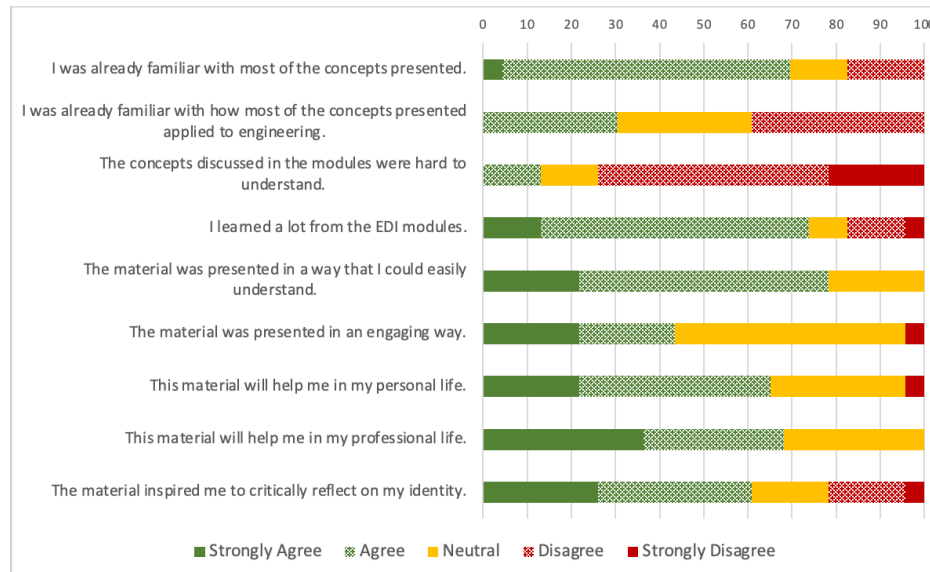
- 6 video quizzes (aims of video series, EDI basics, colonialism, bias, privilege, intersectionality, and approaches)
- One reflection on "Colonialism and the Intersection with the Engineering Industry" - speakers Curtis Rattray of the Tahltan Nation and Ska-Hiish Manuel of the Secwepemc Nation

### Module 2 - Racism

- 5 video quizzes (racism basics, racism and the engineering profession, cultural competency, equity and engineering projects, and barriers in engineering education)
- One video and reflection on "Towards becoming an anti-racist engineer" - speaker Dr. Amanda Giang (UBC MECH, IRES)

### Module 3 - SOGI

- 5 video quizzes (sex/gender/sexual orientation basics, SOGI privilege, gender diversity and engineering, masculinity, and inclusive language)



Survey Results. Post-survey results related to familiarity, usefulness, and self-reported learning (n=27).

## Discussion

Students agreed that they

- were familiar with most concepts (71%), and
- learned a lot (74%).

Possibly because applying EDI concepts in engineering contexts was new.

Students agreed the content would help in their professional lives (68%). When asked about the most impactful thing learned, >50% of open-ended responses explicitly mentioned engineering, professional life, and/or workplaces. This indicates our goal of tying EDI content to engineering was successful.

*"I think that the topics presented in EDI were relevant to engineering as a profession, and constructive for developing a well-rounded perspective."* - student survey response

*"I really liked how our own engineering professors taught us the EDI content and made the videos. I think the topics/issues covered in EDI are really important to teach young students."* - student survey response

## References

1. Engineers Canada, 2018.
2. S. Kutcher, et al., Can. J. Psychiatry, 2015.

## Acknowledgements

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