



# A Systematic Approach for Magnifying Sustainability in Civil and Environmental Engineering Curriculum

PI, Project Lead: Qian Wang, LEED AP, P.E., PMP

Co-PI: Mahbuboor Choudhury, Mohab El-hakim, Medya Fathi, Daniel Hochstein, Evangelia Ieronymaki, Yongwook Kim, P.E., Shahriar Quayyum, P.E.

Department of Civil and Environmental Engineering, Manhattan College, Riverdale, NY 10471

## Project Introduction

- ❖ Eight faculty members in six different subdisciplines of Civil & Environmental Engineering (CEE)
  - Structural (Wang, Kim, Quayyum)
  - Geotechnical (Ieronymaki)
  - Transportation (El-hakim)
  - Materials (Hochstein)
  - Water/Environmental (Choudhury)
  - Construction Management (Fathi)
- ❖ A Longitudinal and systematic training approach using the Engineering For One Planet (EOP) Framework
  - 16 participating CEE courses at different levels (Sophomore/Junior/Senior/Graduate)
- ❖ Mapped learning objectives, activities, and assessments to each course developed



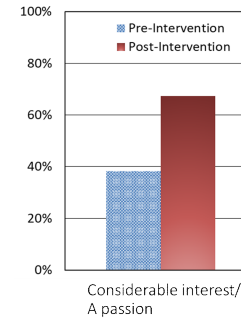
## Project Progress

- ❖ Six courses taught by seven instructors in Fall 2023
- ❖ A total of 216 students enrolled
- ❖ Diversity, Equity, Inclusion, and Justice incorporated
- ❖ Integrated teaching components/modules developed/implemented
  - Course modules;
  - Homework assignments;
  - Projects/presentations;
  - Webinars;
- ❖ Assessment plan developed and implemented (quantitative/qualitative)

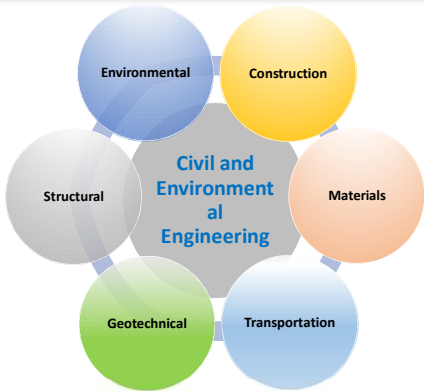
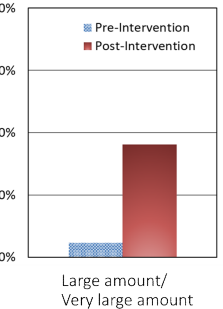
## Project Key Findings

- ❖ Survey of students (n = 193) shows
  - increased interest in sustainability (38.3% to 67.4%)
  - increased knowledge in sustainability (4.7% to 36.3%)
  - good overall quality (95.9% above satisfactory) of the modules
  - appropriate length (80.3% appropriate length) of the modules
- ❖ Interviews of students (n = 15) show
  - positive feedbacks and suggestions

Level of Interest in Sustainability



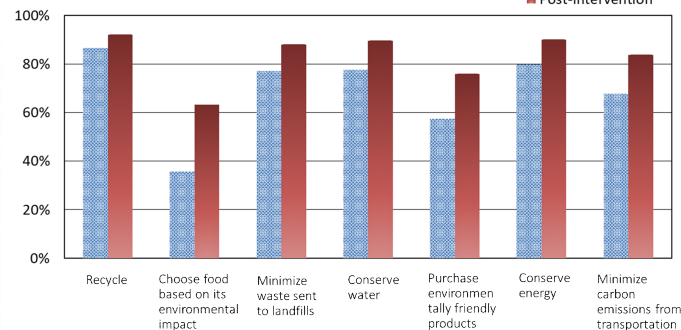
Knowledge of Sustainability Topic/Module



## Project Impact

- ❖ Curriculum improvement in CEE
- ❖ Project scaling up across the board
- ❖ The broader impacts of ASEE EOP
  - The training modules/methods will be shared
  - Presentations, seminars, and publications
  - Collaboration with other instructors
  - Outreach activities

I believe it is important to...



## Project Next Steps and Scaling Up

- ❖ Documentation of outcomes, assessments, rubrics, and final project report
- ❖ Feedbacks from mentors and industry advisor
- ❖ Fine-tune course details based on student feedbacks
- ❖ Six new courses planned for Spring 2024
- ❖ A program-level evaluation planned
- ❖ All courses will be repeated with updates
- ❖ Project report to administration
- ❖ Collaboration with other instructors

## Acknowledgements

- ❖ Lemelson Foundation, ASEE, and Manhattan College
- ❖ Mentors Dr. Adam Carberry and Dr. Jenny Mueller
- ❖ Industry Advisor Mr. Jithu Alexander, P.E.