

# Exploring Sustainable Design Awareness Through Student Mini-Ethnographies

Royce Francis<sup>1</sup> and Erica Wortham<sup>2</sup>

<sup>1</sup>Department of Engineering Management and Systems Engineering, and <sup>2</sup>Center for Innovation and Director for Co-Curricular Engagement & Interdisciplinary Programs  
The George Washington University

## Project Objective

The objective of our mini-grant is to design an undergraduate course and assignment that integrates systems thinking, engineering ethics, design justice, and the EOP sustainability framework through the lens of ethnographic design.

## Background

- We designed a mini-ethnography project assignment that conceptualized engineering design and systems as interconnected and interdependent environmental, infrastructural, economic, and community networks through which representation, sustainability, and justice are enacted.
- We explored with our students the social systems and processes that produce engineering innovations.
- Ethnographic design awareness is way of knowing via design that centers lived experience, the interconnectedness of social and natural systems and participation of diverse perspectives in building a sustainable future.
- We emphasized direct observation or participation in design or use/experience of an engineered product, system, process, or service
- Students utilized in ethnographic case study methods, personal reflection, and systems mapping
- We emphasize all students addressing the following two questions: 1) “How does this system/technology enable or inhibit sustainability?” and, 2) “Whose problems produced this system/technology?”
- For more information, see our 2025 ASEE paper: <https://peer.asee.org/55409>

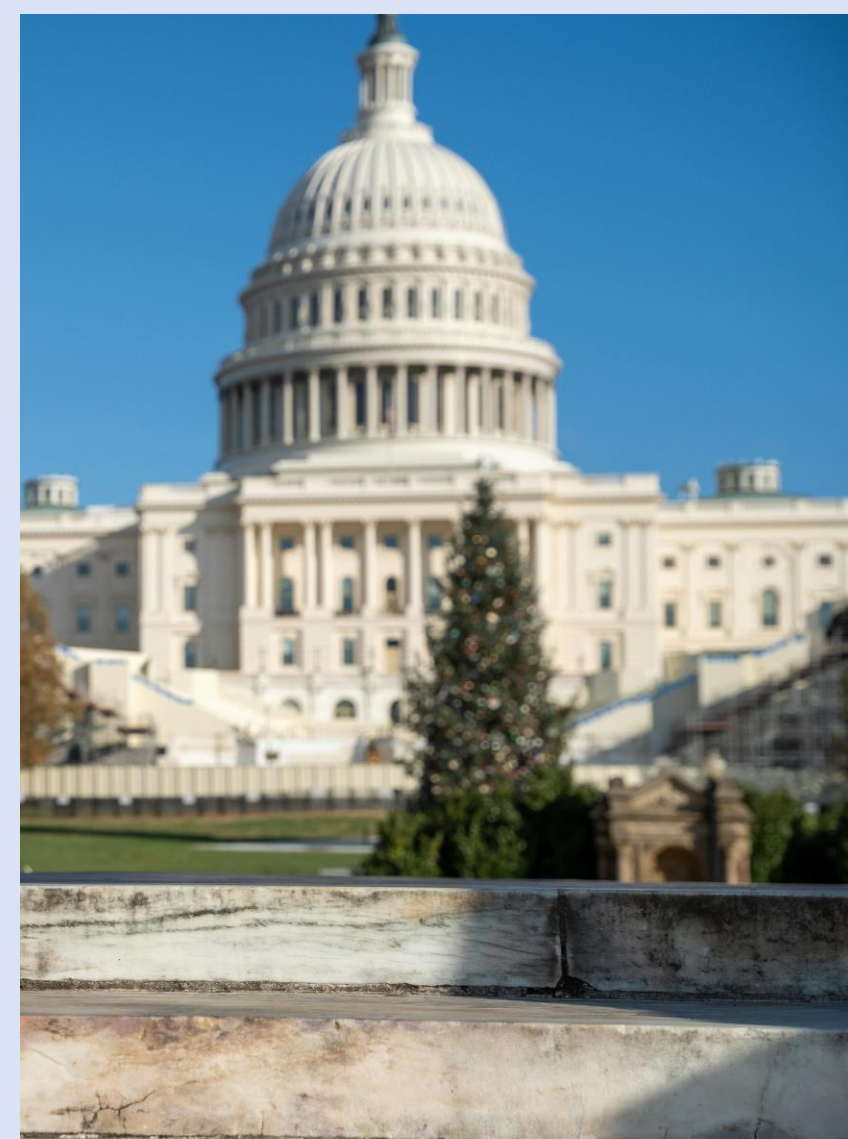
## Project Components



Mini-Ethnography Assignment



Instructional Design Workshop



GW Culture Building

## Who Did We Reach?

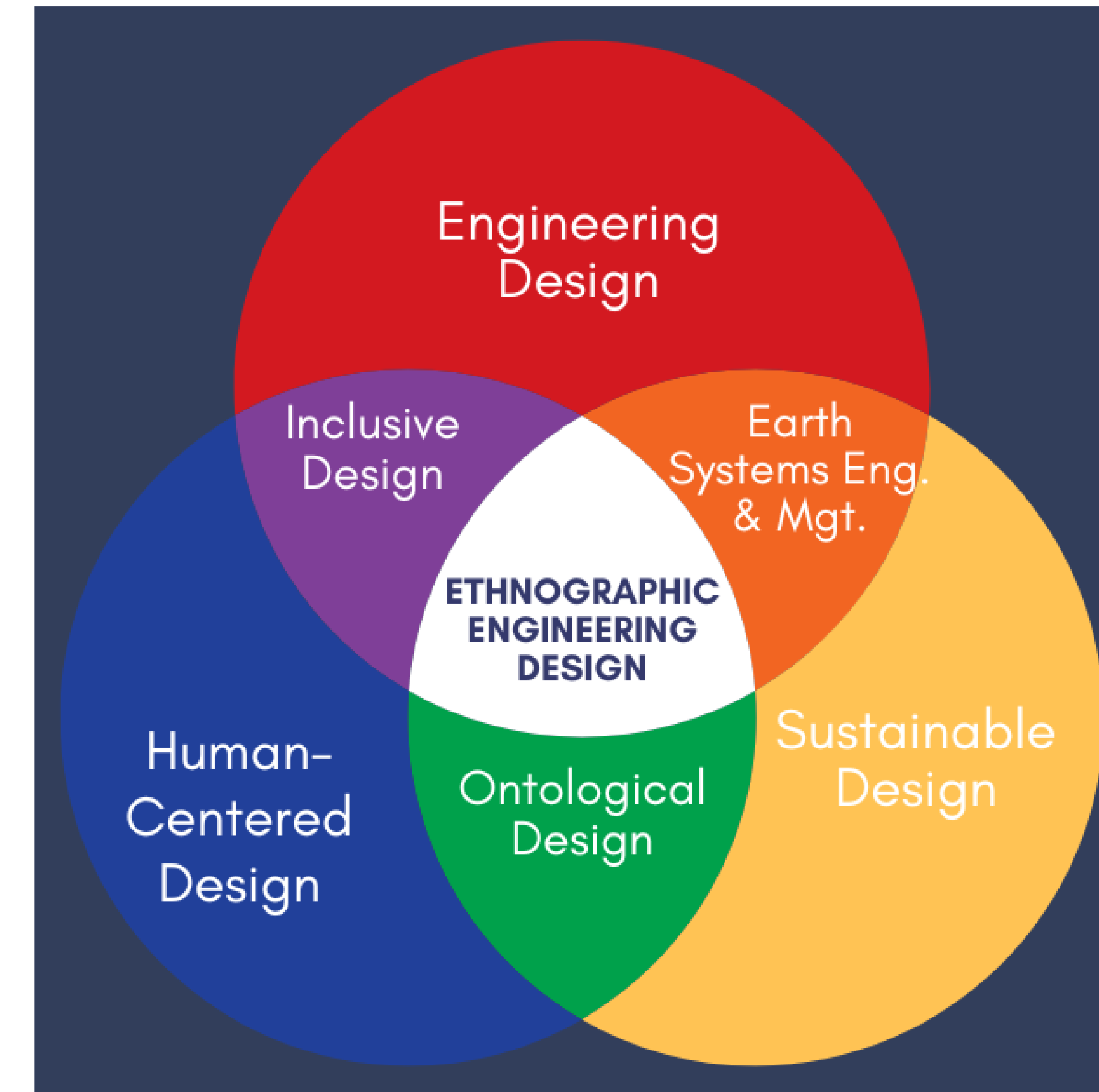
We have now taught over 30 UG and MS students in Systems, BME, CS, and the GW Sustainability Minor. The course is in its 3<sup>rd</sup> offering in the Spring 2026 Semester.

## Assignment Design

- Situated in an “Impact of Technology on Society” Course for all Engineering Majors
- The assignment employs the term “human-centered design” [HCD] in place of ethnography
- We selected a technology or a site for student exploration
- The students are given six axes that they should consider in their exploration: time, proximity, life, value, spatial dimension, economic sectors
- Students map and “reverse-engineer” aspects of the site and evaluate whether the site is “human-centered” or “enterprise-centered” or both?

## Guiding Frameworks

Design + Anthropology → Ethnographic Design Awareness



## EOP Learning Objectives

These EOP Design Thrust objectives are addressed by our assignment: Core Outcomes 1-3 and Advanced Outcomes 2-5.

## Guiding Questions

1. How do we **introduce the concept of ethnography** as a valid method of inquiry to engineering students?
2. How do we **set expectations** for participation in in-class studio-based activities and standards/quality of the artifacts produced during the course of their ethnographic projects?
3. What are some best practices for **designing our mini-ethnography assignment so that it is inclusive** of all engineering majors at our school?