

## SYLLABUS

STANFORD UNIVERSITY DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING  
**CEE 176G/276G: SUSTAINABILITY DESIGN THINKING**

Summer 2024. 3 units. Letter Grade or Credit/No Credit.

Mondays, Wednesdays 2:30 PM - 4:20 PM.

Wallenberg Hall 124.

## INSTRUCTORS

Glenn Katz [glkatz@stanford.edu](mailto:glkatz@stanford.edu)

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## SCOPE

*Application of design thinking to make sustainability compelling, impactful and realizable. Analysis of contextual, functional and human-centered design thinking techniques to promote sustainable design of products and environments by holistically considering space, form, environment, energy, economics, and health. Includes Studio project work in prototyping, modeling, testing, and realizing sustainable design ideas.*

## ENROLLMENT

*The enrollment limit for this course is 30 students. Access enrollment requires a Permission Number which will be issued upon a successful enrollment application, and consent of instructor.*

## KEY ELEMENTS OF THE SUSTAINABILITY DESIGN THINKING PROCESS

- **Empathizing:** observing, listening, and interviewing to understand a sustainability problem and needs.
- **Defining:** analyzing, diagnosing, and identifying the user problem and needs.
- **Ideating:** divergently generating, brainstorming, and refining human-centered solution design ideas using creative & innovative thinking to push, nudge and change human mindsets, behaviors and practices.
- **Prototyping:** sketching, simulating, and modeling promising solution design ideas to obtain user feedback and reactions.
- **Testing:** observing users as they interact with the prototypes, gathering insights to refine and iteratively improve the solution design idea.
- **Communicating:** composing and delivering presentations and documents that persuasively describe the form and function of the solution design idea.

## PROJECT WORK

*There will be a series of design projects in a design studio setting. Each design project will be different by theme & allotted time. Each design project requires maintaining a design journal as well as prototyping and reporting.*

*Design Project 1: Independent Project. Emphasis on learning the systematic design thinking process, & changing human behavior. Ideation and design of a single product to influence an individual's sustainability behavior & mindset. Delivery of a presentation & spec sheet.*

*Design Project 2: Team Project. Emphasis on supporting programs & initiatives that promote sustainable behaviors within a community. Ideation & prototyping of a space, service, activity or program. Involves interacting with others using interviews & surveys to identify opportunities & resources. Delivery of a presentation & spec sheet.*

*Design Project 3: Independent or Team Project. Emphasis on sustainability in the future. Design using anticipation of needs & innovative technologies in the future. Involves rapid prototyping & human-centered storytelling. Delivery of a presentation & spec sheet.*

## CANVAS

*Enrolled students will have access to the Canvas website for the course. Canvas is mainly used for the submission of assignments.*

## NOTION

*Students will create a free Notion account. Much of the class presentation material will be posted in Notion. Design journals will also be maintained in Notion.*

## SLACK FOR ONLINE COMMUNICATIONS

*Class announcements & tips will usually be posted in Slack in the class channel. Slack is also recommended for Q&A.*

## CONSULTATIONS

*Consultation hours will be announced. Participation in consultation hours may be periodically required by the instructors. Consultations are mainly offered for the purpose of discussing project progress & development.*

## COURSE PUBLICATION

*All Design Project Spec Sheets must be publication-ready. Students will be assigned editorial roles to assemble the course publication comprising the design project spec sheets & short essay reflections on personal experiences with the sustainability design thinking process.*

## *HONOR CODE*

*Students are expected to have reviewed and abide by the Stanford Honor Code.*

*<https://communitystandards.stanford.edu/policies-guidance/honor-code>.*

## *ABSENCES*

*Class attendance is required. Unexcused absences from class meetings will result in a deduction from participation points for the course. Absences due to medical reasons will be managed on a case by case basis. Students with an absence are expected to submit to the instructional team a scheduled plan to catch up with missed course material and complete delayed assignments.*