Product Design Capstone

ME 4684 + 4685

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What is ME Product Design Capstone?

Employs a user-centered design approach to develop a product that solves a real problem for real people in our community

Small class size, so instructor permission is required to enroll

1st semester: ME 4684
- 2x/week class: Product Design Engineering (in place of 5682.01)
- 1x/week lab for projects

2nd semester: ME 4685
- 1x/week lab for projects
Product Design Capstone vs. Product Design Technical Elective (5682.01)

You can enroll in either the technical elective OR product design capstone

Both contain the same ‘lecture’ class material

Product Design Capstone = 5682.01 + Hands-on Capstone Project

If you have already taken the 5682.01 elective, you can still participate in this capstone and get credit for the project & your capstone requirement. Just ask Prof. Abell for details!
How is the Product Design Capstone scheduled?

**ME 4684: 1st semester**
- 4 credits total. 1 credit may be applied to Technical Electives
- 2x/week class, 1x/week lab
- Class portion is the same content as the ME 5682.01 elective

**ME 4685: 2nd semester**
- 2 credits
- Once weekly lab
Schedule for Product Design Capstone AU 2021

Class Meetings:
Tuesday & Thursday
2:35-3:55 pm

Lab Meetings:
Wednesday
3:00-4:50 pm
What’s this capstone’s specialty?

Our focus is on the user-centered design process, and we include many topics that don’t typically make it into engineering design classes:

- **Conducting User Research**: go talk to real people!
- **Framing the Problem**: work with the people to define the opportunity at hand, and spend a significant amount of time framing the challenge
- **Open-Ended Projects**: you define the project direction & solutions
- **Entrepreneurial Mindset**: developing skills to share your work with non-technical audiences and making idea pitches
What happens in the “class” for this capstone?

- **Topics will be the same as in the 5682.01 elective, but we’ll meet separately**
- The class will give you the background and theory of user-centered product development, product architecture, manufacturing, etc.
- Includes lots of reading, some short writing, thinking, discussing, analyzing
- In-class activities & mini projects will give you the chance to explore the material at a deeper level… and build some camaraderie with your classmates
How are the projects structured?

- You get to choose many aspects of your project focus
- You get to choose your teammates (teams of 3-4 people)
- Teams start by choosing a user group or project focus—NOT a specific product to design
- Students encouraged to suggest possible project topics
- Funded by department
- Opportunity to gain additional funding from Innovation Studio
- 1st semester: focus on research, context, and problem definition
- 2nd semester: generate solutions, emphasis on iteration, lots of prototyping
What will we do during our project?

- Work with users to understand their problems, needs, motivations, context
- Define the opportunity: frame the problem as an engineering challenge to address the users' needs
- Conduct multiple iterations of concept generation, with an emphasis on visual communication
What will we do during our project?

- Prototyping: from quick, cheap mockups to more functional prototypes
- Continually solicit user feedback for continuous improvement
- Focus on entrepreneurial mindset
- Pitch your work at the Innovation Studio: communicate a technical idea to a broad audience to solicit feedback and gain funding
What projects have students done in the past?

Teams have worked with...

- **musicians** to improve transport and storage of fragile instruments
- **firefighters** to design a hose management system
- **beekeepers** to design a device to more effectively weigh beehives
- **The Cincinnati Zoo** to develop an enrichment device for Asian Elephants
- **Mid-Ohio Food Bank** to develop a rainwater collection system for urban farms
- … many more!
Example: On-the-scene shadowing of firefighters at a training exercise
Example: Problem Definition Activities
Example: Visual Idea Generation
Example: Low-Resolution Prototypes
What do past students say is UNIQUE about the Product Design Capstone?

• "It gives us a better understanding of how to solve real world problems"
• "Very user oriented"
• "It takes a very wholistic approach to design. We start from the beginning!"
• "Intense user research: YOU define the problems you are going to address"
• "The independence is awesome!"
• "You have an opportunity to choose a project that's interesting to you & your group"
• "You get to come up with your own project & explore your creativity"
What do past students say is the BEST thing about this capstone?

• "Small class size- I got to know all my classmates"
• "It’s relatively self paced. We have room to ponder and explore."
• "The ability to drive direction and delegate responsibilities independently"
• "It challenges you to go out and figure things out for yourself"
• "You get to go very in depth with the product design process"
• "We get to solve almost any problem in almost any way we want. True freedom is really refreshing”
• “Prof Abell is always available for 1-on-1 help and team meetings"
What do past students say is CHALLENGING about this capstone?

• "Not jumping ahead to solve the problem before you define it"
• "There are almost no constraints initially, so it can be daunting to figure out what you need to do to solve a problem"
• "Trying to figure out the true root cause of a user's problem"
• "It touches on a lot of different skills, including drawing"
• "Being diligent about working & meeting with your teammates"
• "Keeping things on schedule- your own schedule"
• "You are responsible for your own fate. You must manage time to be successful"
This all sounds great! How do I proceed?

Enrollment is by permission of instructor, due to class size (<30)

**Email Professor Abell directly** to express interest & request permission to enroll

- Please share why you want to join product design capstone
When will enrollment decisions be made?

Decisions will be made by April 1st

Is your course registration window before April 1st??

• Proactively enroll in your 2nd choice capstone to hold your place
• Proactively enroll in the 5682.01 Product Design elective to hold your place
• You can drop these courses later if you enroll in Product Design Capstone
Questions?

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