



# Product Design Capstone

ME 4684 + 4685

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# What is ME Product Design Capstone?

- Series lasts the full academic year
- AU semester: **ME 4684**
- SP semester: **ME 4685**
- Must start in Autumn semester
- Employs a user-centered design approach to develop a product that solves a real problem for real people in our community
- If you have already taken 5682, you are **NOT eligible** for this capstone 😞



# How is the Product Design Capstone scheduled?

## **ME 4684: Autumn Semester**

- 4 credits. 1 credit may be applied to Technical Electives
- Once-weekly lab + twice-weekly lecture
- Lecture is cross-listed with 5682.01, Fundamentals of Product Design Engineering
- Meeting times for AU 2017: Lecture M/W 5:45-7:05pm , Lab M 1:50-3:40pm

## **ME 4685: Spring Semester**

- 2 credits
- Once weekly lab (110 minutes, exact time TBA)



# So why do we have to take the lecture as part of a capstone course?

- The lecture will give you the background and theory of user-centered product development, product architecture, manufacturing, etc.
- You attend the same lecture/class meetings as 5682 students, with Prof. Lilly
- Meets twice a week, involves reading, discussion, and 3 exams
- Typically very different than other engineering courses: no math!
- The lecture been a very popular tech elec. for ~15 years & usually gets great reviews from students! (Even if you don't take this capstone, you might consider 5682/56833 as a technical elective!)



## But wait... aren't all the other ME capstones about designing products too?

- It's true, most (all?) students in ME capstones will end up designing a product of some sort! The point of capstone is to gain design experience.
- 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 choose your project direction & solutions



# How are the project structured?

- You get to choose almost all aspects of your project focus
- You get to choose your teammates (teams of 3-4 people)
- With autonomy comes responsibility!
- No funding from industry
- Teams start by choosing a user group or project focus-- NOT a specific product
- AU: focus on research, context, and problem definition
- SP: generate solutions, emphasis on iteration, lots of prototyping



# What will we do during our project?

1. Work with users to understand their problems, needs, motivations, context
2. Define the opportunity: frame the problem as an engineering challenge to address the users' needs
3. Conduct multiple iterations of concept generation, with an emphasis on visual communication (aka: drawing!)
4. Focus on a fluency of ideas: create many ideas so you can evaluate & choose the best ones to move on to prototyping



# What will we do during our project?

5. Create quick, cheap prototypes (test many ideas w/out getting attached!)
6. Continually solicit user feedback for continuous improvement
7. Create many iterations of functional prototypes
8. Conduct an evaluation of the final prototype
9. Present your work: how to communicate a technical idea to a broad audience



# 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
- **elderly persons** to develop a safe, in-home medication dispensing device
- **Mid-Ohio Food Bank** to develop a rainwater collection system for urban farms
- ... many more!



# What do current 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"
- "You spend nearly as much time researching the problem as you do solving it"
- "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 current students say is the BEST thing about this capstone?

- "Small class size"
- "It's relatively self paced"
- "The ability to drive direction and delegate responsibilities independently"
- "It challenges you to go out and figure things out for yourself"
- "It answers the question of, 'how does it work & why?'"
- "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"



# What do current 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 enroll?

- Course capacity is limited to **20 students**
- Enrollment is by permission of instructor
- To express interest, email Prof. Abell: [abell.9@osu.edu](mailto:abell.9@osu.edu)
- **Include a 300-500 word statement that outlines:**
  - Why you want to be in the product design capstone
  - What you hope to gain from this capstone experience
  - What sort of unique contributions you may be able to make to your team
  - Any past design experience (internships, student organizations, etc.)