Engineering Entrepreneurship: Products to People

Course Overview

This course is the second in the two-course sequence on Design and Entrepreneurship required in the BS in Engineering Leadership. It is intended to give students an opportunity to experience the human-centered commercialization process from start to finish in a single semester. In teams, students will go from a functional prototype to an advanced prototype and a business model that prepares them for a go/no-go decision. It requires students to conduct empirical experiments through interviews with people in the start-up’s ecosystem, to recognize the impacts of the start-up on the ecosystem, to (re-)design the product based on your findings and analyses, and to function effectively on teams. Your professors will be there as your advisors and mentors, but you and your users will be your guide. It will be hugely rewarding and a lot of fun but will take a lot of work. So let’s get going!

“Recognizing the need is the primary condition for design.”
-Charles Eames

Course Activities & Outcomes

Throughout the semester, you and your teammates will continue the design project from EL 3331. As such, you will be unleashing your creative genius on the following major activities during each of the four quadrants of designing in light of the entrepreneurship process represented in the Innovation Canvas (Explore, Ideate, Market, Design). In EL 3331, you learned primarily about product-to-market fit (customer segments and value propositions). In this course you will cycle through the quadrants again, this time with particular attention to the remaining elements of the Market quadrant, which represents the Business Model Canvas. You will learn the tools and techniques for these elements in three phases: (1) channels and customer relationships, (2) key partners, key resources, and key activities, and (3) revenue streams, and cost structures.

This semester you will:

- Know the principles and practices relating to customer relationships, channels, revenue streams, key partners, key activities, key resources, and cost structures.
- Know the principles and practices relating to a start-up’s commercial or social ecosystem.
- Apply data collection and analysis to empirical hypotheses relating to
customer relationships, channels, revenue streams, key partners, key activities, key resources, and cost structures.

- Apply data collection and analysis to empirical hypotheses relating to impact of a start-up from and on its commercial or social ecosystem.
- Refine design/redesign, using advanced analytical techniques.
- Apply principles and practices of teamwork, including establishing goals, planning tasks, meeting deadlines, and analyzing risk and uncertainty.
- Write a business plan and present a business case.
- Strengthen personal leadership character, competence, and capacity.

Each phase will include, at the minimum, the following graded assignments:

- Mentored design work
- Biweekly demo presentations
- Design review presentations and written reports
- Peer evaluations
- Prototypes
- Interviews with individuals in your target people group
- Leadership and Business assignments
- Other phase-specific deliverables

**Relationship to Program Outcomes**

- An ability to develop and conduct appropriate experimentation, to analyze and interpret data, and to use engineering judgment to draw conclusions.
- An ability to recognize ethical and professional responsibilities in engineering situations and to make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

**Grading Breakdown**

- Each week, students will have assigned reading as well as a leadership, business, and business assignments and project work.
- There isn’t a separate attendance grade. We’re all adults, so manage your schedule and communicate early.
- Team project grades are adjusted based on peer evaluations and health checks with teaching team.
- Final grades are calculated based on an average score of all assignments per category.
- A = > 90%; B = > 80%; C = > 70%; D = > 60 %; F = < 59%
Required Materials

*The startup owner’s manual: The step-by-step guide for building a great company*
Blank, S., & Dorf, B., 2012
ISBN: 978-0984999309

*Designing Your Life: How to Build a Well-Lived, Joyful Life*
Bill Burnett and Dave Evans, 2016
ISBN: 978-1101875322

*Other required materials will be provided through Blackboard*

Legalese

Academic Dishonesty
Students are encouraged to collaborate throughout the semester but all graded materials must represent the student’s individual work. (When in doubt, ask!) Academic dishonesty is the attempt to present the work of somebody else as his or her own work or attempting to pass any assignment by improper means. It is a serious offense and will not be accepted. Any misconduct will be handled according to the current university policy and reported in accordance with university regulations. For more info visit the Dean of Students or [http://studentaffairs.utep.edu](http://studentaffairs.utep.edu)

Special Accommodations
We are committed to working with students with pre-existing medical and mental health needs, as well as new needs that may arise within the semester. This includes pregnancy. If you aren’t sure, we encourage you to reach out to us as early as possible to discuss any adjustments you think may be necessary in this course. If you need to request official accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. Additionally, please visit the CASS website at [www.sa.utep.edu/cass](http://www.sa.utep.edu/cass). CASS’s staff are the only individuals who can validate and if need be, authorize official accommodations for students.

AI Use Policy
Many AI technologies or automated tools, particularly generative AI such as ChatGPT or DALL-E, are powerful tools to help optimize your work and brainstorm ideas. You’re encouraged to use AI to its fullest extent for these purposes in this course. Keep in mind, however, that AI is not perfect and is not nearly as smart as you are (yet). So, do not trust what it gives you - question everything. It is built on predicting the next likely output, i.e., statistics, not what logically should be the next output. And weigh the amount of time it will take to get a good output vs. just brainstorming on your own. Dr. K has been known to spend hours trying to get ChatGPT to give her the correct answer to something
she could do on her own in 30 min... So use it to help clean up grammar, spelling, or generate ideas for possible interview questions.

That said, you are not allowed to submit any AI-generated work in this course as your own. If you use any information or materials created by AI technology, you are required to cite it like you would any other source. Consider how this will affect your credibility as a writer and scholar before doing so. Any direct use of AI-generated materials submitted as your own work will be treated as plagiarism and reported to the Office of Student Conduct and Conflict Resolution (OSCCR). You must properly cite and give full credit to the program used upon submission of every relevant assignment. **A short paragraph describing how the tool(s) was/were used for the assignment must be included.**

For example, text generated using ChatGPT must be cited:

Chat-GPT(version). Date of query (year/month/day). “Text of your query.”

Generated using OpenAI. https://chat.openai.com/

**Submitting and Completing Assignments**

You are required to submit materials to be graded via the course’s Blackboard website as PDF files, unless otherwise indicated. The PDF file that you submit should include your Last Name along with the name of the Assignment. For example: *Mendez-Assignment2.pdf.*

**Health-related Class Absences**

In the event that you are feeling ill, you are encouraged to seek appropriate medical attention for treatment and worry about class later. Then, email your professors about your absence as soon as you are able so that appropriate accommodation can be explored. Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible so that we can work on appropriate accommodations. This every well may look like joining your team or class via zoom.

Non-health related course absences: We’re all adults, so students are expected to attend class. But life happens! Failure to attend class without communicating with Dr. K early to make arrangements to make up missed work will result in a drop in participation grade based on the activities in class that day.