

ENGR 1302

Fall 2024

TEACHING TEAM

Professor: Lucas Galey, PhD

Email: ljgaley2@utep.edu

Office Hours:

MW 12 – 2 and by

Appointment (Preferred)

Office Location: E230B

Teaching Assistant:

Samahara Quintana

Email:

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Office Hours: TTR

By Appointment

Office Location: TBD

COURSE INFO

Meeting Times:

TTR 3:00-4:20

Location: Old Main 205

Website: Blackboard



Engineering Design Experience

Course Overview

Welcome to UTEP and the College of Engineering! For many of you, this is your first or second semester at UTEP. We're delighted you're here! This course is designed to be an introduction to engineering, regardless of your prior experience, discipline, or degree. So, if you're considering studying Business or Physics, welcome! If you've spent your childhood creating things in a makerspace, on the robotics team at school, dreaming up a new business venture, or leading your school's drama club, welcome! Engineering impacts diverse disciplines and leverages skills and knowledge from all kinds of fields. In this course, we're focused on building a solid foundation of engineering skills and knowledge that you can take into whatever career path you desire, from starting a cookie decorating company from your home to working in an influential engineering firm to leading our country as a government official.

Our goal is to provide you with an opportunity to *experience* engineering through a series of hands-on projects and exercises, something more in line with how engineers apply engineering design thinking in their work. While doing so, you will have the chance to build your community on campus, understand where valuable services can be found, connect with professors, and reflect on who you are, why you're here, and what degree best aligns with your future goals. This course will take stepping outside your comfort zone, learning to interact with people, making connections and apply what you learned in high school and in other courses, and applying an engineering design process towards developing a functional prototype. Your professor and TA are here to support you every step of the way. It will be hugely rewarding and very fun. Let's get started!

Course Activities & Outcomes

This semester consists of three cycles through an engineering design process, deepening your skills and refining your design each cycle. In the first cycle, we leverage your prior knowledge and skills while exploring how you could improve a product that impacts your everyday life. In the second cycle, we begin exploring



COURSE TOPICS

- Design
- Creativity
- Real world context
- Entrepreneurial mindset
- Critical thinking
- Business acumen
- Hands-on Prototyping
- Teaming
- Sustainability

how that same product impacts your friends, family, and local environment through examining the role of sustainability on the same product. Then, in the final cycle, we begin exploring how we impact the broader world through considering the impact distributing the product through a company would have.

This semester you will:

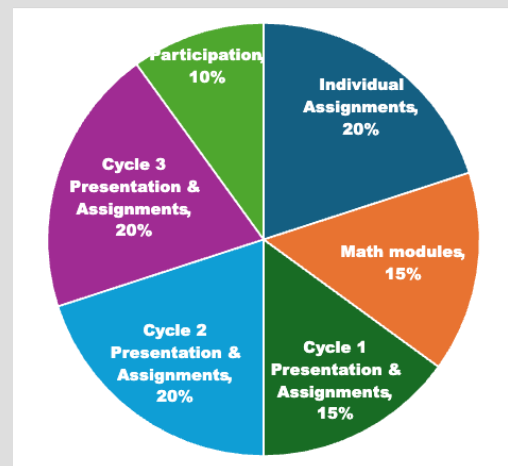
- Learn a variety of key tools and techniques for engineering design.
- Identify relevant tools to apply to increasingly complex design projects.
- Iteratively implement these techniques while engaging with users.
- Prototype and deliver your result.
- Explore offices and services on campus that may prove useful to you as a student and in completing your design project.
- Learn about cutting edge engineering research on campus via lab tours.
- Explore a variety of engineering fields and how they impact society.
- Prepare for your academic career by confirming your degree selection and meeting your academic advisor.
- Strengthen your communication skills through presentations, reports, and creation of engineering visuals.
- Make sense of the connections between engineering, math, science, and technology.
- Build a sense of belonging at UTEP and in Engineering.

Each cycle will include a combination of the following activities & assignments:

- Mentored design work
- Interviews with individuals in your target people group
- Design review presentations
- Individual and team homework assignments
- Team evaluations
- Prototypes
- Other phase specific deliverables

Grading Breakdown

- Each week, students will have assigned reading or videos, design assignments, math modules, and project work.
- There isn't a separate attendance grade. We're all adults, so manage your schedule and communicate early. However, know that you won't be able to complete some assignments if you aren't in class!
- Team project grades are adjusted based on peer evaluations and health checks with teaching team.
- Each assignment will be available on Blackboard and accompanied by a rubric that explains how it will be graded.
- Final grades are calculated based on an average score for each submission per category.
- A \geq 90%; B \geq 80%; C \geq 70%; D \geq 60 %; F < 60%



Required Materials

No extra trips to the bookstore for this class! All 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>

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. 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. CASS' staff are the only individuals who can validate and if need be, authorize official accommodations for students.

AI 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. You could easily spend hours trying to get ChatGPT to give the correct answer to something you could do on your 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 or Team Name along with the name of the Assignment. For example: *Mendez-Assignment2.pdf* for individual and *Rockbreakers-Cycle 1 Presentation.pdf* for a team assignment. All due dates and times will be posted to Blackboard. All assignments must be submitted through Blackboard with the exception of Math homework. Additional Math modules will be assigned through WeBWork, a UTEP approved math homework platform.

Attendance

We're all adults, so students are expected to attend class. But life happens! Failure to attend class without communicating with the teaching team early to make arrangements for missed work will result in a drop in participation grade based on the activities in class that day. 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 or are experiencing symptoms of the flu, cold, COVID-19 or other contagious disease. If you are feeling unwell, please let the teaching team know as soon as possible so that we can work on appropriate accommodations.

"Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success."

-Tim Brown, President and CEO of IDEO