



MECH 4366: Principles of Engineering Design and MECH 4366 Senior Design Spring 2024

Electric Vehicle

EV_ FSAE Formula Team

CRN: 25596 & 23701

Credit Hours: 3.0

Faculty Name: Methaq S Abed and Joel Quintana

Office Location: Engineering Building. A104

Email: msabed@utep.edu

Classroom: Fox Fine Arts Center - Art A458

Meeting Time: 1:30 – 2:50 pm TR

Starting Date: 01/16/2024

End Date: 05/02/2024

Dr. Abed Office Hours: Monday and Wednesday from 1:00 to 2:30 pm, any other time by appointment.

Description:

This course is a 3.0 credit hour program that aims to assess the work assigned during the semester, enhance the engineering skills of the students, and award credits for the completed design components. The course will cover three key areas - Solid Mechanics, Thermal-Fluid, and Electro-Mechanical - and will provide students with the opportunity to gain knowledge and expertise in these fields.

By enrolling in this course, students can expect to learn fundamental engineering principles and develop the confidence to work effectively in interdisciplinary teams. The benefits of gaining more knowledge in one or more of these areas will be numerous, and students will be equipped with the skills required to excel in their future careers.

The EV_formula team is divided into sub-teams as listed below:

- Integration (Preliminary Layout)
- Electrical
- Modeling and 4-motor layout
- Braking System



MECH 4366: Principles of Engineering Design and MECH 4366 Senior Design Spring 2024

- Suspension
- Ergonomic

Please refer to the list below for the required documents and tasks that need to be completed as part of the project completion:

1. Actively collaborate with team members and meet with the leader at least twice a month.
2. Submit a monthly progress report as a team.
3. Attend the PDR meeting with the entire team.
4. Attend and participate in the final design presentation.
5. Submit an individual report using the template provided.
6. Submit all necessary forms required by faculty to meet the NSPE ethics requirements, which demonstrate the student's knowledge of professional ethics rules.
7. Write a recommendation for the next step in the design or if any revisions are required.
8. Submit a Peer-to-Peer evaluation.
9. Submit the prototype as a team.

By participating in this project, individuals will gain a comprehensive understanding of basic engineering concepts and develop confidence while working with professionals from diverse backgrounds.

UTEP Advantage Edge Experience that applies to the course:

- 1- Leadership
- 2- Critical Thinking
- 3- Problem Solving
- 4- Communication
- 5- Teamwork
- 6- Global Awareness
- 7- Confidence

ABET Assessment Outcomes Expected :

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.



MECH 4366: Principles of Engineering Design and MECH 4366 Senior Design Spring 2024

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to conclude.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.