

Topics: Optimization Methods in Engineering Design

Overview: For this semester we will focus on a very hands-on exploration into several topics in optimization methods in engineering and engineering design. This will include discussion of the optimization problem, both constrained and unconstrained with a discussion of solution methods, applications and where this topic is heading in the future. The class will depend heavily on projects of different scope as well as the in-class interaction.

Course Content:

- Optimization Problem
- Matlab programming (FMINCON)
- Parametric optimization
- Numerical optimization methods
- Topological optimization
- Generative design
- Machine learning approaches

Instructor: Jack Chessa

email:jfchessa@utep.edu, contact through MSTeams is very much an option.

Office is A124. Office hours are by appointment.

Course Delivery: Due to the small size of this class we will abandon the typical lecture exam format and treat this class as more of a recitation. Please bring a laptop to class. If you do not have a laptop we can provide one through the Library. You should have access to Matlab, OneNote as well as have Altair Hyperworks 2022 installed (Hypermesh, Optistruct as well as SimLab)

Be prepared to discuss the progress you are making on the projects and assignments. This will be a significant portion of the class.

Course Grading: The grading will be based 25% on in class discussion, 50% on assignments and 50% on projects