

Syllabus

Senior Design Project 1

Course: MME 4219 - Senior Design 1

CRN:14012

Semester: Fall 2024

Course Description:

This course is an introduction to creative industrial problem solving and/or the design process in materials and metallurgical engineering. Topics include material and process selection, project planning and resource management, using technical skills to find answers, economic decision making in terms of cost evaluation and profitability, and communication skills. Weekly discussions explore issues of professionalism including engineering ethics, public safety and environmental concerns in design, codes, and standards, etc.

ABET EAC criteria defines design as...*Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and engineering sciences are applied to convert resources optimally to meet the stated needs.*

This course series (MME 4219 and 4220) is a capstone to the MME bachelor's degree. Student design teams define and investigate problems in metallurgical processing, materials selection and evaluation, quality control, etc. The students are expected to use knowledge and skills acquired in earlier course work and incorporate appropriate engineering standards and multiple realistic constraints. Some teams will work with industrial partners and mentors; others may choose to create a project based on their own interests. Laboratory time is devoted to design projects.

Prerequisites: MME 3407 and MME 3413 with a grade of "C" or better.

NOTE: This is part of a two-course series; the second course MUST be taken in Spring 2025 (MME 4220 - Senior Design Project 2).

Students should be graduating seniors (graduation date between Spring 2025 & Fall 2025)

Measurable Student Learning Outcomes:

At the completion of the course sequence (MME 4219 & 4220), students will have:

- A. a thorough understanding of how to write a technical report, plan and execute

- a technical project and communicate deliverables to peers and supervisors.
- B. an ability to design and conduct experiments, as well as to analyze and interpret data.
 - C. an ability to design or alter a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

Professor:

Dr. Shalayna Smith, PE

Office: M-201C Metallurgy, Engineering-Science Complex

E-mail: shalaynal@utep.edu

Office Hours:

Wednesday 2:00 to 3:00pm. Feel free to speak with me during office hours, in the class or email me with any questions or to schedule an appointment.

Meeting Times and Places:

Class: Wednesday, 3:00 to 3:50 pm, Room 201, Classroom Building

Lab: Friday, 9:00 to 11:50 am, Room 304, Classroom Building

Lab time is devoted to design projects and group work. The assigned classroom may be used as a meeting location for your group during lab time. If your group needs to miss a class or go off campus during lab time, please submit an email to me indicating the reason and location of your group work. For example, you need to meet your mentor, go on a tour, or get some testing performed off-site.

Deliverables and Grading:

- 15% **Final Presentation** – Group presentation which may include the problem/design the group is undertaking, background info, schedule, cost analysis and/or any other pertinent information. Selection of Journal for article submission.
- 15% **Appraisals** – Each team member will fill out a peer appraisal for all team members at various times throughout the semester.
- 10% **Outreach** – Plan and coordinate an outreach event with area STEM students showcasing your project.
- 15% **Report**– A technical report describing the project. A literature review, roles and responsibilities and budget will be due at various times during the semester.
- 40% **Assignments** – Various homework, quizzes, safety training, milestone presentations, individual group tasks and discussions assigned throughout the semester.
- 5% **Participation** – Attendance, participation.

Snapshot of Course Subject Matter:

Resumes and Interviewing
Group Communication
Engineering Ethics and Professional Engineers
Technical Report Writing
Technical Presentations

Textbook and Other Readings:

Various resources will be provided as necessary.

Group Work and Quality:

If there is a technical or communication issue within your group, I encourage you to address it as a group, using professional communication skills and notify me so that we can work together to create a productive environment. All work should be of a professional quality.

ATTENDANCE AND PARTICIPATION

Our class and lab meetings are in-person. Course attendance is a part of the grade and will affect your peer evaluations. Your participation in the course is important not only for your learning and success but also to create a community of learners. Participation is determined by the completion of the following activities:

- Participating in engaging discussions with your peers
- Participating in team activities/assignments
- Meeting with mentors/team
- Appraisals
- Attendance

Course Drop Policy:

According to UTEP Catalog, "At the discretion of the instructor, a student can be dropped from a course because of excessive absences or lack of effort. A grade of "W" will be assigned before the course drop deadline and a grade of "F" after the course drop deadline." See Policies and Regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24-hour advance notice via email.

Etiquette and Netiquette:

As we know, sometimes communication can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean, especially online, given the lack of body language and immediate feedback. Therefore,

please keep these etiquette and netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider the audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

Scholastic Integrity:

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one's own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Community Standards for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

GUIDANCE ON ARTIFICIAL INTELLIGENCE

The use of generative AI tools such as Chat GPT is permitted in this course for the following activities, which must be noted or cited when turning in work:

- Editing
- Brainstorming
- Marketing/Advertising Assignments

However, you may not use AI tools to complete the following activities:

- Technical Report
- Technical Presentation

Some AI technologies or automated tools, particularly generative AI such as ChatGPT or DALL-E, can be beneficial during the early brainstorming stages of an activity, and you are welcome to explore them for that purpose. However, keep in mind that AI-generated ideas are not your own and may hinder your ability to think critically and creatively about a problem. It is also important to remember that these technologies

often “hallucinate” or produce materials and information that are inaccurate or incomplete—even providing false citations for use.

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 Community Standards.

PLAGIARISM DETECTING SOFTWARE

Some of your course work and assessments may be submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used to review assignment submissions for originality and will help you learn how to properly attribute sources rather than paraphrase.

ALTERNATIVE MEANS OF SUBMITTING WORK IN CASE OF TECHNICAL ISSUES

I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. If you are experiencing difficulties submitting your work through Blackboard, please contact the UTEP Help Desk. You can email me your backup document as a last resort.

Copyright Statement for Course Materials:

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated – in other words do not post any of the course materials on the internet.

Class Recordings:

The instructor may record the class/lectures/presentations on some occasions, students are not permitted to record. Our use of such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP’s acceptable-use policy. A recording of class sessions will be kept and stored by UTEP, in accordance with FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, which include your fellow students, teaching assistants, or graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. You may not share recordings outside of this course. Doing so may result in disciplinary action.

Accommodations Policy:

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other

beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting accommodations based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

Course Resources: Where you can go for assistance.

UTEP provides a variety of student services and support. Please refer to the QR code below for a listing of campus resources or visit https://www.utep.edu/advising/student_resources/student-success-resource-hub.html.



Important Dates:

- 18/20-Sept Elevator Pitch Presentations
- 19/20-Sept Career EXPO – shortened lab
- 02-Oct Literature Review Presentations
- 25-Oct Roles, Timeline (Fall & Spring), Budget and Deliverables Presentations
- 26-Oct Orange & Blue Day (Extra Credit)
- 26-Nov Outreach must be completed by this date
- 27-29-Nov No Class Meetings
- 06-Dec Final Report Due (Dead Day)
- 11-Dec Final Presentations: 1:00pm-3:45pm, Location IDR B 2.204