

Syllabus

Senior Design Project 2 : MME 4220

Course Description:

Students will continue progress with the group design project and present their work in a report, poster and final presentation. The project will integrate the understanding of the scientific and engineering principles underlying the four major elements of the field: structure, properties, processing, and performance related to material systems appropriate to the field. Students will apply experimental, computational and/or statistical methods to solve materials problems including selection and design with realistic constraints.

This course is an introduction to creative industrial problem solving and/or the design process in materials and metallurgical engineering. Topics may include material and process selection, project planning and resource management, using technical skill to find answers, economic decision making in terms of cost evaluation and profitability, and communication skills. Weekly discussions may 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 the engineering sciences are applied to convert resources optimally to meet the stated needs.*

This course series 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; while others may work with a faculty mentor. Laboratory time is devoted to design projects.

Prerequisites: MME 4219 and MME 4316 with a grade of "C" or better.

NOTE: This is part of a two-course series; the first course MUST have been taken in Fall 2022 (MME 4219 – Senior Design Project 1).

Students should be graduating seniors (graduation date between Spring 2023 & Fall 2023)

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*

Phone: 915-747-6904

Office Hours:

Wednesday 11:30 to 12:30pm. Feel free to speak with me during office hours, in the class or email me with any questions or to schedule an appointment through MS Teams.

Meeting Times and Places:

Class: Wednesday, 10:30 to 11:20 pm, Room 209, Liberal Arts Bldg.

Lab: Friday, 1:30 to 4:20 am, Room 206, Liberal Arts Bldg. and Various Rooms

Lab time is devoted to design projects and group work. You will be expected to “Check-in” to lab and will receive exit tickets. Lab locations will be variable and determined each week through blackboard when necessary.

Deliverables and Grading:

The “Semester Work Plan” developed in the first week will contain goals that will be assessed at both the individual and group levels.

25% **Assignments** – May include attendance, homework, quizzes, milestone presentations and discussions assigned throughout the semester.

20% **Appraisals** – Self-appraisals, peer appraisal and team appraisals will be used to determine this portion of the grade.

5% **Outreach** – Plan and coordinate an outreach event with area STEM students.

20% **Poster Presentation** – A technical poster describing your project, to be

displayed and presented at the annual MME Industry Advisory Board meeting (tentatively scheduled for 4/28). Be prepared to discuss the poster with IAB members, MME students and faculty. Grade determined by IAB judging rubric.

10% **Final Presentation** – Group presentation which discusses the outcome of the problem/design the group tackled.

20% **Report**– A technical report describing the project. Including background, design iterations, experiments/testing, conclusions, and findings for the project. A draft will be due at the time of each milestone presentation and will count as 5% of the grade.

Course Outline of Selected Topics:

Engineering Ethics and Professional Engineers
Technical Report Writing
Technical Presentations
Project Summaries
Special Topics – based on class feedback and project topics

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.

Course Drop Policy:

According to UTEP Curriculum and Classroom Policies, "When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of "W" before the course drop deadline and with a grade of "F" after the course drop deadline." See academic 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 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 ones' 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 Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

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 an accommodation 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:

Technology Resources

- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- [University Writing Center \(UWC\)](#): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [History Tutoring Center \(HTC\)](#): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

Individual Resources

- [Military Student Success Center](#): Assists personnel in any branch of service to reach their educational goals.

- [Center for Accommodations and Support Services](#): Assists students with ADA-related accommodations for coursework, housing, and internships.
- [Counseling and Psychological Services](#): Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.

Important Dates:

18-Jan	First Day of Class
20-Jan	Group Work: Semester Work Plan; No Lab Check-In
1-Feb	Census Day
17-Feb	Milestone 1 Presentations and Draft Report 1
24-Mar	Milestone 2 Presentations and Draft Report 2
26-Apr	Draft Posters Due (digital version to edit/review in class)
28-Apr	Poster Presentation to IAB
3-May	Final Report Due
12-May	Final Presentations: 10:00am-12:45pm, Location TBA