

Syllabus

Senior Design Project 2

MME 4220

Course Description:

Students will develop a group design project for a client 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 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 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 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. 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 2021 (MME 4219 – Senior Design Project 1).

Students should be graduating seniors (graduation date between Spring 2022 & Fall 2022)

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 12:30 to 1:20pm. 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, 1:30 to 2:20 pm, Room 103, Quinn Hall

Lab: Friday, 10:00 to 12:50 am, Room 206, Liberal Arts Bldg.

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, get some testing performed off-site.

Deliverables and Grading:

15% **Assignments** – Various homework, quizzes, presentations and discussions assigned throughout the semester.

10% **Appraisals** – Each team member will fill out a self-appraisal and a confidential peer appraisal for each team member.

15% **Outreach** – Plan and coordinate an outreach event with area STEM students (may be virtual or in-person).

20% **Poster** – Summary of the work completed for you project to be displayed at the annual MME Industry Advisory Board meeting on “Dead Day”

(tentatively scheduled for in-person). Be prepared to discuss the poster with IAB members and faculty.

20% **Final Presentation** – Group presentation which discusses the outcome of the problem/design the group tackled.

20% **Article** – A journal “ready” article that could be submitted to a publication regarding your group project.

Course Outline of Subject Matter:

Resumes and Interviewing
Project Management
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 problem within your group, I encourage you to try to address it as a group before bringing it to me. If the issue persists, I will help your group resolve the situation in a professional manner.

All work should be of a professional quality.

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.

Health & COVID-19 Precaution Statement:

Stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you should report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

If you are not coming on campus due to illness, you should contact me as soon as possible so we can arrange necessary and appropriate accommodations.

Stay home if you are sick!

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.

Tentative Schedule:

The schedule will be based on guest speaker availability, projects and student input and will be announced in class.

Important Dates:

1/21	No Lab Scheduled
1/28	Assignment Due: Group Updates (15 minutes each)
2/2	Census Day – Last day to register for classes.
2/25	Assignment Due: Group Updates (15 minutes each)
3/4	Outreach Due
3/14- 3/18	Spring Break – no classes
3/25	Cesar Chavez – no classes
4/1	Drop Deadline
4/1	Assignment Due: Group Updates (15 minutes each)
4/15	“Spring Study Day” – no classes
4/22	Draft Article and Appraisals Due
5/6	Poster Due – Dead Day
5/11	Final Presentations and Articles Due – 4:00 pm – 6:45 pm