

Syllabus

Metallurgy and Materials Design and Practice

MME 4419

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 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 is the capstone class to the MMBME 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. Design project teams make written and oral progress reports, as well as a final written report, presentation and poster. Laboratory time is devoted to design projects.

Prerequisites: MME 3407 with a grade of "C" or better; MME 4303 and IE 3326.

NOTE: Students must enroll in both the Lecture (CRN 21106) & Lab (CRN 24671) sections of MME 4419.

Students should be graduating seniors (graduation date between Spring 2019 & Fall 2020)

Measurable Student Learning Outcomes:

At the completion of this course, 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-201H Metallurgy, Engineering-Science Complex

E-mail: shalaynal@utep.edu

Phone: 747-6904

Office Hours:

Monday and Wednesday before or after class. 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: Monday & Wednesday, 9:00 to 10:20 am, Room 318, Education Bldg.
Lab: Wednesday, 3:00 to 6:20 pm, Room 306, Liberal Arts.

Lab time is devoted to design projects. LA 306 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:

- 20% **Proposal Presentation** – Group presentation which discusses the problem/design the group is undertaking, background info, schedule, cost analysis and any other pertinent information. Selection of Journal for article submission
- 10% **Status Presentations** – Update on project status, compare to schedule, roadblock, questions done every other week.
- 20% **Appraisals** – Towards the end of the semester each team member will fill out a self-appraisal and a confidential peer appraisal for each team member. (see attachments)
- 20% **Final Presentation** – Group presentation discussing the outcomes and recommendations of the project.
- 20% **Final Report (Journal Article)** – Report discussing all work performed on project, conclusions and findings. Report should be formatted as per the guidelines of the selected journal.
- 10% **Poster** – Summary of Project to shown during final presentation and displayed in the Metallurgy hall.

Course Outline of Subject Matter:

- Resumes and Interviewing
- Project Management
- Project Proposal and Review
- 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 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.

Cheating/Plagiarism:

Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper or reference without giving credit to the source of that information or wording; it is also not acceptable. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/acadintg.htm> for further information.

Disabilities:

If you have a disability and need accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

Tentative Schedule:

Date	Topic
1/23	Syllabus and Introduction
1/23	LAB – Resume Reviews and Topic Selections
1/28	Proposal Overview
1/30	Discussion Topics
1/30	LAB – Group Work
2/04	Discussion Topics
2/6	Proposal Presentations
2/6	LAB – Proposal Presentations
2/11	Technical Reports
2/13	Discussion Topics
2/13	LAB – Group Work
2/18	Discussion Topics
2/20	Status Report A
2/20	LAB – Group Work
2/25	Discussion Topics
2/27	Status Report B
2/27	LAB – Group Work
3/4	Discussion Topics
3/6	Status Report A
3/6	LAB – Group Work
3/11	Discussion Topics
3/13	Status Report B
3/13	LAB – Group Work
3/18	Spring Break – No Class

3/20	Spring Break – No Class
3/20	LAB – Group Work - Spring Break – No Class
3/25	Discussion Topics
3/27	Status Report A
3/27	LAB – Group Work
4/1	Discussion Topics
4/3	Status Report B
4/3	LAB – Group Work
4/8	Discussion Topics
4/10	Status Report A
4/10	LAB – Group Work
4/15	Discussion Topics
4/17	Status Report B
4/17	LAB – Group Work
4/22	Discussion Topics
4/24	Status Report A
4/24	LAB – Group Work
4/29	Discussion Topics
5/1	Status Report B and DRAFT Report due
5/1	LAB – Group Work
5/6	Peer and Self Appraisals Due
5/8	Discussion Topics
5/8	LAB – Group Work
5/15	Final Presentations, Posters and Final Reports Due