

INTRODUCTION to MME DESIGN

Course Description: This course is designed to introduce you to the metallurgical and materials engineering profession, including the role and responsibilities of the metallurgical/materials engineer today. This course will introduce you to some of the methods that we use in picking the right material for a particular application, testing material properties, manufacturing metals and other materials, investigating why products or materials sometimes fail, and developing new and improved materials. Along the way, you will gain experience in analyzing data and authoring professional reports. We will explore effective procedures for solving simple metallurgical and materials engineering and design problems, using mathematics, common software applications, basic measuring systems and devices, microscopes and laboratory instruments, computational tools, and statistical concepts. The laboratory portion will provide hands-on, practice-oriented experiences in metallurgy laboratories, both on campus and in nearby industries. The lab experiences will also introduce you to some of the advanced equipment that you will be learning during future course work, including the x-ray diffractometer, scanning electron microscope, non-destructive testing, etc. Safe practices and ethical behavior in lab work will be emphasized.

Instructor: Dr. Christopher Bradley

Email: cbradley2@utep.edu (*preferred method of communication*)

Office: Metallurgy Suite, Room M201-C

Office Hours: TR 10:30-11:30am (*If you need to meet with me, please email me so that we can make other arrangements as needed*).

TA: Zayra Dorado

Email: zdorado@miners.utep.edu (*preferred method of communication*)

Office: TBD

Office hours: TBD

Required Textbook: *"Fundamentals of Materials Science for Technologists: Properties, Testing and Laboratory Exercises"* 3rd ed. by Larry Horath.

Grading:

Assignments (In-class and Take Home)	10%			
Lab	15%	5%	5%	5%
		Attendance	Lab reports	Worksheets
Project Reports	15%			
Project Presentations	15%			
2 Exams and weekly quizzes	35%	(10 Quiz minimum, lowest grades dropped)		
Final Exam (Comprehensive)	10%			

Honesty and Professionalism: Any instance of cheating or plagiarism will be reported to the Dean of Students for appropriate action (which includes failure of this course and/or dismissal from the University).

Classroom Etiquette: Part of being a professional is arriving on time and being prepared to participate. Another part is respecting the other people in the class, including the speaker. If you come late to class or must leave early, please do so quietly. Cell phones are to be silenced during class. If you must answer the phone, please leave the class, and return discreetly when the call is over. ***Notetaking will be done by you, not your cell phone. If you are caught taking photographs during class, your phone will be confiscated and returned after class is finished.***

Assignments: Homework and class assignments are to be handed in on engineering paper which means assignments turned in on standard paper, notepads, index cards, etc. will ***not*** be accepted. Assignments that require graphical representation will need to be performed using Excel which will be printed out and attached to your assignment. All assignments will require you to ***show all work*** where necessary to receive full credit for the problems. Late homework will ***not be accepted*** unless otherwise cleared by me, do not assume that I will accept a late assignment(s) without penalty.

GENERAL COURSE OBJECTIVES:

- Developing the problem-solving and design skills of engineering
 - The role of analysis in engineering
 - Dimensions and units
 - Analysis methodology
 - Problem solving using common engineering concepts.
 - Using spreadsheet software to analyze data and create professional graphics.
- Engineering ethics, including honesty and “data ethics”
- Statistical analysis of data and drawing conclusions from experiments
- Writing concise and professional scientific and engineering reports
- Developing and delivering a powerful presentation
- Planning your career path in metallurgy and materials engineering
- Enforcing laboratory/workplace/chemical safety principles to ensure safe work environments and establish fun hands-on activities.

As part of this classroom experience, students should expect to actively participate in discussions, give presentations on a variety of topics and do what every good engineer does instinctively – **Ask Many Questions!**

COURSE DROP POLICY: The student withdrawal deadline with a ‘W’ is November 3. Student-initiated drops are permitted after this date, but the student is not guaranteed a grade of W. The faculty member of record will issue a grade of either W or F. To drop this class, please contact the [Registrar’s Office](#) to initiate the drop process. If you cannot complete this course for whatever reason, please contact me. If you do not, you are at risk of receiving an “F” for the course.

TECHNOLOGY REQUIREMENTS: Some course content is delivered via the Internet through the Blackboard learning management system (LMS). Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. If you encounter technical difficulties beyond your scope of troubleshooting, please contact the Help Desk as they are trained specifically in assisting with the technological needs of students.

NETIQUETTE:

- Always consider the audience. Remember that members of the class and the instructor will be reading any online postings.
- Respect and courtesy must always be provided to classmates and to the instructor. 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 F2F 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.

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 accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services \(CASS\)](#).

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 Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more [HOOP: Student Conduct and Discipline](#).

COVID-19 PRECAUTIONS

Please 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 accommodation. If you have tested positive for COVID-19, you are encouraged to 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.

COURSE OUTLINE (Tentative!):

Week #	Chapter #	Topics	Important:
Week 1 Aug 28 – Sept 1	1	Introduction to Materials Technology	EH&S Lab Safety Training
Week 2 Sept 4 – Sept 8	2	Ferrous Metals	EH&S Lab Safety Training Deadline 9/8
Week 3 Sept 11 – Sept 15	3	Non-ferrous Metals	
Week 4 Sept 18 – Sept 22	3	Misc Metals and Alloys	
Week 5 Sept 25 – Sept 29	4	Heat Treatment	Exam 1: Tuesday
Week 6 Oct 2 – Oct 6	5	Polymers and Elastomers	
Week 7 Oct 9 – Oct 13	7	Ceramics and Glass	
Week 8 Oct 16 – Oct 20	9	Composites	
Week 9 Oct 23 – Oct 27		Unit Conversions	Exam 2: Tuesday
Week 10 Oct 30 – Nov 3	13	Mechanical Behavior	
Week 11 Nov 6 – Nov 10	14	Intro to Materials Testing	
Week 12 Nov 13 – Nov 17	15,17,20,21	Materials Testing (Tensile/Compression/Hardness/Impact)	
Week 13 Nov 20 – Nov 24	16, 22	Creep/Fatigue Testing	University Closed: Nov 23 and 24
Week 14 Nov 27 – Dec 1	23	Non-Destructive Testing	
Week 15 Dec 4 – Dec 8	--	Engineering Ethics	No Lab: Dec 8
Week 16 Dec 11 – Dec 15		Finals Week	December 12 10:00am – 12:45pm