



Fall 2019 Syllabus

Materials Science LAB – MEC*K263; CRN 33699; Room B108, Tuesday 8:00-9:40 AM

PROF Michael Gentry

Room C-154 ph: 215-9728

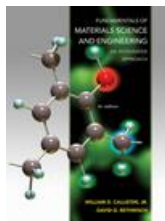
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Office Hours M,W

Online Discussions: Available for all learning topics – this is the primary class communication method

Required Textbook:



Fundamentals of Materials of Science and Engineering, An Integrated Approach, 4th edition, Callister Jr., William D. and Rethwisch, David G. ,
John Wiley and Sons Publishers, 2012
ISBN-10: 1118061608 | ISBN-13: 978-1118061602

Laboratory Manual:

Johnson, Cornelius A., *Metallography Principles and Procedures*, Leco Corporation, Form No. 200-860]
Handouts

Course Description:

LAB (MEC K263): In this lab, students will be exposed to selected experiments demonstrating the effects of processing, including heat treatment, on the properties of engineering materials. Standard materials tests are also performed.

Lab Outcomes:

- Students will demonstrate the ability to use appropriate mathematical and computational skills needed for engineering technology applications.
- Students will illustrate an ability to think critically and identify, evaluate and solve complex technical and non-technical problems; demonstrate creativity in designing problem solutions; and conduct and interpret experimental data and outcomes.
- Students will recognize the need to be lifelong learners.

Lecture & Lab Performance Criteria:

The above outcomes will be assessed using these performance criteria:

- Mathematical and computational skills-
 - ✓ Ascertain problem conditions by identifying known and unknown quantities in formulating a problem for solution
 - ✓ Demonstrates the correct selection and application of pertinent formulae, principles and concepts.
 - ✓ Pursue solutions in a methodical, logical manner with results correctly explained with sufficient detail and properly documented
 - ✓ Submit problem solutions with a minimum of computational errors, identifying and selecting the correct dimensional units
- Critical thinking-
 - ✓ Show the ability to evaluate the credibility of sources of information

- ✓ Demonstrate the ability to refine generalizations, establish rational & pertinent assumptions, and avoid oversimplifications
- ✓ Exhibit the ability to generate, analyze / evaluate, and assess multiple engineering problem solution options
- ✓ Produce documentation that reflects organization and application of engineering principles in specifying solution to an engineering problem
- Lifelong learning-
 - ✓ Demonstrate an awareness of what needs to be learned; formulate questions based on research need
 - ✓ Develop a research plan appropriate to the investigative method
 - ✓ Identify, retrieve and organize information
 - ✓ Use a variety of methods and emerging technologies to keep current in the field

Procedure:

The lab course will consist of a lecture followed by a lab. The lab will consist of open discussion, which the student is encouraged to ask questions and relate their own experiences. The discussions will be conducted around the reading assignments and the homework/laboratory problems.

Lab Course Evaluation: Lab Course evaluation will be based on Lab Reports and Online Assignments. The final grade for this course will be determined by the following percentages:

➤	70%	Lab Reports
➤	30%	Online Lab Assignments
	100%	Total

Lab Reports: Lab Reports are to be submitted via Blackboard Learn on the date indicated. Late Lab Reports will not be accepted unless you have made prior arrangements with the instructor. Lab Report will be graded on professionalism, accuracy, style and completeness. The details for each Lab Report will be posted in Blackboard Learn and distributed in class.

Online Lab Assignments: Ten Online Assignments will be administered. The assignment covers material relevant to the labs. The assignments will be posted on Blackboard Learn. Each assignment is open book and open notes and will have an expiration date by which it must be completed.

Grading Policy: Grades will be assigned according to the following scale:

94 -100	A
90 - 93	A -
87 - 89	B +
83 - 86	B
80 - 82	B -
77 - 79	C +
73 - 76	C
70 - 72	C -
67 - 69	D +
63 - 66	D
60 - 62	D -
Below 60	F

Class Participation and Discussion: Each student is expected to attend every class. This course is designed in such a way that a student should get more from the in-class activities than from the textbook alone. If you miss a class, you are responsible for obtaining notes, handouts and assignments. Course material including syllabus, course content, lectures, notes and is located in Blackboard Learn. Attendance will be taken at each class meeting. If you cannot attend a lecture due to extraordinary events, notify the instructor in advance of the class you will

miss. Unless special arrangements have been made with the instructor in advance, the due date for assignments and quizzes will not change. Note: 1 – 2 % bonus points may be earned if no more than one (1) class is missed.

Online Communication: The primary method of online communication (between all students and the instructor) for this class will be **forums** in **discussion boards**. Any private communications (between one student and the instructor) should use the **Blackboard messaging** capability called “**Messages**”. The Blackboard email tool will not be used in this class. Email outside of Blackboard should only be used for emergencies. You may use my email addresss for any such emergencies

Classroom Policies: Use of **cell phones**, pagers, texting, surfing the Internet or playing computer games **are Not Permitted** during class! Language and behavior that is disrespectful, or disruptive, to others is unacceptable. Students should refer to their Student Handbook for examples of such behavior as well as additional school policies.

Instructor Assistance: Seeking help from the instructor outside of class is encouraged if you are having difficulty understanding course material. You are encouraged to seek assistance during class as well as during office hours and other times by appointment.

Course Withdrawal: A student who simply stops submitting work will receive the grade earned on that work, usually a failing grade. To receive a "W" grade instead, apply for a withdrawal through the registrar's office by the date listed in the academic calendar. A "W" will be entered on the student transcript but will not be included in the calculation of the GPA.

Academic Integrity: Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to success in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all times with honor.

Students are expected to do their own work in this class. Working together to better understand the material is acceptable. Submitting duplicate work will adversely affect the assignment grade. Actively participating in class discussions and discussion boards both to ask and answer questions is expected of all students. Posting of detailed instructions for “how to” responses to questions is encouraged but posting of a complete solution is not.

Sharing of raw data is acceptable. Sharing of completed calculations graphs and tables is not.

Disabilities Statement: If you are a student with a disability and believe you will need accommodations for this class, you must contact the TRCC’s Disabilities Counseling Services at (860) 892-5751 or (860) 383-5240. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. Please note that the instructor cannot provide accommodations based upon disability until the instructor has received an accommodation letter from the Disabilities Counselor.

Materials Science LAB (MEC*K263) Course					
Date	Week #	Online LAB ASSIGNMENTS Due Dates	Course Topic	Reading	Online Lab REPORTS Submission Dates
1/22	1		➤ Lab Overview Measurements Error Analysis ➤ Material Properties		
1/29	2		➤ Lab #1: Hardness Testing	Handouts	
2/6	3		➤ Lab #2 Sectioning	Handouts	Lab #1 draft
2/13	4	Assignment #1	➤ Lab #2: Specimen Mounting	Handouts	Lab #1 final
2/21	5		➤ Lab #3: Grinding Polishing	Handouts	Lab #2 final
2/28	6	Assignment #2	➤ Lab 3 Continued	Handouts	
3/6	7	Assignment #3	➤ Lab # 4: Tensile Testing	Handouts	Lab #3 final
3/13	8	Assignment #4	➤ Lab #5 (continued) ➤ Lab #6: Torsional Testing	Handouts	
3/21			➤ No Class Spring break		
3/28	9	Assignment #5	➤ Lab #6 (continued) ➤ Lab #7: Etching	Handouts	Lab #5 final
4/3			➤ No Class		
4/10	10	Assignment #6	➤ Lab #7 (continued) ➤ Lab #8: Optical Microscopy Examination	Handouts	Lab #6 final
4/24	11	Assignment #7	➤ Lab #8 (continued)	Handouts	Lab #7 final
4/27	12	Assignment #8	➤ Lab #9a: Heat Treatment Testing – Part I ➤ Lab #10a: Jominy Test – Part I	Handouts	Lab #8 final
5/1	13	Assignment #9	➤ Lab #9b: Heat Treatment Testing – Part II ➤ Lab #10b: Jominy Test – Part II	Handouts	Lab #9b draft Lab #10b draft
5/8	14	Assignment #10	➤ Lab Wrap/Clean-Up/Makeup		Lab #9 Final
5/15	15		➤ Course Review	Final Lab Reports due	Lab #10 Final

NOTES:

- This course schedule is subject to change as conditions warrant
- Detail outline of Lab Report requirements will be distributed in-class and is also available on Blackboard Learn
- Online Lab Assignments are Open-Book and Open-Notes