Engineering Department
Course Syllabus: ENGR 141,
Materials Science and Engineering Laboratory,
Fall 2024 1-Unit

C-ID Descriptor ENGR 140L

Instructor Contact Information

- **Professor Christopher Herwerth,**
  - **MS Mechanical Engineering**
  - **BS Mechanical Engineering**
  - **CA Professional Engineer, License No. M 34433**
- **GCC Email: cherwerth@glendale.edu**

- **Course Meeting Time: Thursdays 9:10 AM to 12:15 PM, AT-229**
- **Office Hours: Monday, Wednesday, and Friday 10:00 AM -11:45 AM**

  - I will be holding Office Hours every Monday, Wednesday, and Friday **starting Wednesday September 4 at 10 AM, through Zoom ID 7044608855 or in AT-229.** This means, I will be online providing instant feedback during this time.
  - If students cannot make these hours and would like to talk another time, they may request an appointment to chat by sending me a message through CANVAS or email cherwerth@glendale.edu.
  - Students may also message me any questions and allow 24 hours for a response.
  - Inquiries sent on Fridays may not be returned until the following Monday.
  - There are also Q&A discussion forums where other students may help answer questions before I get there to do so.
  - Students are strongly advised to exchange contact information, as peer-to-peer discussion about technical content is frequently a highly successful learning activity.

Course Description

Description: ENGR 141 engages the relationships between the internal structures of materials and their subsequent behaviors and material properties. Using experimental equipment and laboratory report writing activities, students directly observe and analyze the characteristics of engineering materials related to the lecture course ENGR 140: Materials Science and Engineering. Note: ENGR 141 Materials Science Laboratory should be taken concurrently with ENGR 140 and may be required for articulation to CSU's and UC's.

Prerequisites: CHEM 101 General Chemistry AND PHYSICS 101 Physics for Scientists and Engineers A AND ENGR 140 Materials Science and Engineering (corequisite) or equivalent.

UC and CSU Transferable

About This Class

- This course is an in-person laboratory course. We will meet on Thursdays on Campus.
- This 16-week, synchronous, in-person course officially starts Thursday September 5 and ends Thursday December 12.
- Students must log into CANVAS during the first week of this class and complete two assignments: 1. the Icebreaker discussion (self introduction) and 2. the syllabus quiz, **both before Sunday 11:59 pm, September 8.**
- Students who **do not** log in and complete both the introduction Check-in Discussion and Syllabus Quiz, or attend the first class session, will **be dropped from the course by the following Sunday 11:59 pm.**
- Syllabus Quiz: Click on the syllabus quiz **after** carefully reading the course syllabus and follow the steps to answer the questions of the quiz.
- For more information on course drops, See Refund/Payment Policy: https://www.glendale.edu/home/showdocument?id=25858 (Links to an external site.) REFUND/REPAYMENT POLICY A. Refund Policy for All Students - glendale.edu (Links to an external site.)

- Below are a few resources for students about what it means to drop a class:
    - It's okay to drop a class, really! (Links to an external site.) (Links to an external site.)
    - Should I Drop a Class? (Links to an external site.) (Links to an external site.)
    - To Drop or Not to Drop? (Links to an external site.)

Browser Compatibility:

It is highly recommended to use the most recent version of Chrome, Firefox, Edge or Safari as your browser to make sure everything works correctly in Canvas.

Student Learning Outcomes

At the conclusion of the course, students will be able to:

1. compare material properties using critical thinking skills in the engineering design process;
2. estimate the behavior of materials under various loading conditions and make engineering judgments based on industry standards;
3. communicate results of materials science tests.

Textbook(s) and Required Materials

A textbook is recommended but not required. Laboratory instructions will be provided through Canvas and students will **not** be required to purchase materials or supplies.

William D. Callister, JR and David G. Rethwisch, Materials Science and Engineering any edition, Wiley.

ISBN-13: 9781119321590 10th edition

SBN: 978-1-118-32457-8 9th edition

(Older editions are acceptable. Problems will be posted with the assignments)

Additional Acceptable Textbooks

Introduction to Materials Science for Engineers, James Shackelford

Essentials of Materials Science and Engineering, Michael Ashby, Hugh Shercliff, and David Cebon

Alternative Textbook Source **https://www.redshelf.com/ (Links to an external site.)**

Note on Materials Science Textbooks. For some reason the 10th edition of the Callister book may not be available. I will be using the 9th and 10th edition of the Callister book to create assignments and videos for Canvas. Students using other books should be successful since the material posted in Canvas will be self-contained; meaning you won't have to go to a specific book to learn about that topic. You can find that topic in the book you are using and I will give all information that you need to solve any particular problem. **I very much recommend obtaining a textbook and reading it extensively though!**

Course Communication

Email

If you ever have any questions, please email me through Canvas by clicking on "Inbox" on the left side of your homepage. Click on "Compose a new message", select this course and then select "Teachers" under the "To" field and you will find my name, **Christopher Herwerth.** This is email inside Canvas :-) I am not supposed to receive any personal email...Canvas email only, please! **I will respond to your email within 24 hours, M-F.** If you do not hear back from me within this time, please assume I did not receive your email and resend it.

Course Assignments

Important Dates

The due dates for your assignments can be found in the *Calendar* in the **global navigation links at the top of your screen**. Please review these. In addition, I will post reminders prior to the due dates in the *Announcements*.

Weekly Assignments

Each week you will need to complete the following:

- Read/Watch the daily lessons. This will be available every **Friday.**
- Take the **quizzes** available on **Fridays by 11:59 pm on the specified due date, usually Thursdays.**

- Complete the **assignments (lab activities and reports) by the due date.**

Grading

Assignments (Lab reports or lab projects)	75%
Quizzes	25%
Extra Credit	5%

A	90 - 100
B	80 - 89
C	70 - 79
D	60 - 69

*Grading breakdowns are approximate. Your grade may be rounded up with professor's judgement of level of effort and understanding. ***Doing your own work and asking questions*** **are highly valuable. The Professor is here to help.**

Notes on Grading Items:

Assignments: For this online lab course, assignments are classified as lab reports or lab activities or lab projects. Mostly these are lab reports or written explanations of the experiments. All assignments are open resource and you are encouraged to form study groups to solve them. **(75%)**

Quizzes: There may be about 10 quizzes including the Check-in Syllabus Quiz. Quizzes will be fairly easy but they must be completed on time as there will not be any make-up quizzes. The Syllabus Quiz is due on Sunday September 5 by 11:59 PM and subsequent quizzes will be due by 11:59 of the first day of the week; usually Mondays. **(25% total)**

Final Exam: There will not be a final exam for this course.

Extra Credit: All students are encouraged to meet with the Instructor for teleconferences via Zoom. You may earn up to 5 points extra credit for simply meeting with the Instructor during office hours. Office visits can be technical in nature or you can ask questions on typical engineering advising topics. **(5% maximum, usually one point for each visit and discussion)**

Course Grades & Feedback

You can view your grades using the *Grades* button in the **course navigation links.** Please check your grades regularly to make certain that I have received all your assignments. If you have a question about a grade, email me through the Canvas *Inbox* (left-side of your screen). Please do not post your personal concerns in a discussion forum.

I will be using the Canvas grading tool for your discussions and written assignments. You can see not only your grades, but also comments and feedback as well. Please always use the syllabus as the final guide for grading.

Submission Policy

Plan for success! Submit your work by the requested due date and time. Late labe reports and quizzes are generally not accepted but there will be plenty of time to work on them (at least a week for each)

Attendance/Participation/Refund Policies

- **Students who do not complete both the syllabus quiz AND the Check-in Discussion by Sunday September 8 or who do not come to the first class meeting will be dropped from the course.**
- **Students who miss three lab sessions may be dropped from the course.**
    - Any student that is added as a 'late add' student has until Sunday Sept 15 11:59 pm to complete the Check-In Assignment or be dropped.

Additional Policies and Resources

Academic Honesty

It is expected that all work submitted for grading is original, not copied from others and that the work being graded is indeed done by the student who is receiving the grade. Cheating and plagiarism are serious violations of the student conduct code. Cheating or plagiarizing will result in a zero on the assignment or test and may result in other disciplinary action taken by the College. All incidents of cheating or plagiarizing are reported to the Dean of Students. For more information, please refer to the Glendale Community College Academic (Links to an external site.) Honesty Policy.

Late Work

- **Late work will not generally be accepted for this class.**
- Students are advised to strategize with respect to time management for completing work. Generous due dates are built into this course. Submission of partially completed assignments are preferable to missing a submission deadline.

Students with Disabilities

- All students with disabilities seeking accommodations are responsible for making arrangements in a timely manner through the Center for Students with Disabilities (Links to an external site.). Please let me know right away if you will need accommodations so we can pre-plan together.
- Please let me know if you have adaptive software and hardware to assist you with taking this course or if you have any specific needs of which I should be aware. You can find more information about Disabled Students Programs and Services (DSPS) or call the office at 818-240-1000 x5905.

- Students with disabilities have the right to receive reasonable academic adjustments in order to create an educational environment where they have equal access to instruction without fundamentally altering any course, educational program or degree. (GCC Board Policy, 2000)
  Any student who feels they may need an accommodation based on the impact of a disability should contact Disabled Students Program and Services (DSP&S) at (818) 240-1000 ext. 5905 or visit the DSP&S office in the San Rafael Building, 2nd Floor. Please allow 48 hours for the instructor to process DSP&S accommodations and be aware that it may take up to one week from the first request to the DSP&S office to implement accommodations.

Non-discrimination and Equal Opportunity Policy:

“Glendale Community College District is a multicultural community of people from diverse racial, ethnic, linguistic and class backgrounds, national origins, religious and political beliefs, physical and mental abilities, gender identities, and sexual orientations. The activities, programs, classes, workshops/lectures, and everyday interactions of this district are enriched by our acceptance of one another, and we strive to learn from each other in an atmosphere of positive engagement and mutual respect.” Please see the Glendale College Catalog, page 19.

Harassment Policy:

“All forms of harassment are contrary to basic standards of conduct between individuals and are prohibited by state and federal law, as well as this policy, and will not be tolerated. The district is committed to providing an academic and work environment that respects the dignity of individuals and groups. The District shall be free of sexual harassment and all forms of sexual intimidation and exploitation including acts of sexual violence. It shall also be free of other unlawful harassment, including that which is based on any of the following statuses: race, religious creed, color, national origin,

ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, or sexual orientation of any person, or because he or she is perceived to have one or more of the forgoing characteristics." Please refer to the Glendale College Catalog, page 19.

Student Technical Support

Go to the Student Tech Support (Links to an external site.) page if you are having Canvas tech issues or check out the resources below:

- Canvas Questions ONLY: 24/7 Assistance at 1-844-600-4951
- Student Support through Live Chat (Links to an external site.)
- Student Support On-Campus (Links to an external site.)(SM 266)
- Student Canvas Guides (Links to an external site.)
- Student Distance Education Success Tips (Links to an external site.)

Student Online Services

There are many additional services to help you during this course. A few of these include:

- Free Online Tutoring (Links to an external site.), which can be accessed through the website or through Canvas.
- GCC Library (Links to an external site.) (Databases & Online Chat), which can be accessed through the website or through Canvas.

Additional services can be found on the GCC Student Services Webpage (Links to an external site.).

Tentative Schedule

	ENGR 141 Materials Science and Engineering
	Fall 2024 Tentative Schedule
Date	**Lab Experiments or Projects**
Week 1	
5-Sep	Introduction, Syllabus Quiz and Check-in Discussion, Demonstration, Report Writing
	1 - Measurement
Week 2	
12-Sep	2 - Unit Cell
Week 3	
19-Sep	3 - X-Ray Diffraction
Week 4	
26-Sep	4 - Tensile Testing of Steel
Week 5	
3-Oct	5 - Tensile Testing of Aluminum and Brass
Week 6	
10-Oct	6 - Compression Testing
Week 7	
17-Oct	7 - Hardness Testing
Week 8	
24-Oct	8 - Cold Working

Week 9	
31-Oct	9 - Impact Testing
Week 10	
7-Nov	10 - Metallography
Week 11	
14-Nov	11 - Heat Treating of Steel
Week 12	
21-Nov	12 - Precipitation Hardening of Aluminum
Week 13	
28-Nov	Holiday Dec 28-30 Campus Closed
Week 14	
5-Dec	13 - Fatigue Testing
Week 15	
12-Dec	**Final Exam Thurs Dec 12**
	Final Exam Week Dec 12 to 18