Properties of Materials
EMA 6001 Sections CAMP, 1FE2, 2FED
Class Periods:
M, W, F Period 2 (8:30 am – 9:20 am)
Location:
Section CAMP – NEB 102
Sections 1FE2, 2FED – 100% online
Academic Term: Fall 2025

Instructor:
Aroba Saleem
aroba.saleem@ufl.edu
352-294-1789
Office Hours: TBD

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
Please contact through the Canvas website

- TBA

Course Description

This is a 3-credit graduate course. Conceptual perspective for origin of materials behavior and the interrelationships of structure/property /performance. Materials selection and use of familiar material (metals, ceramics, polymers, electronic materials and composites) in electronics and structural and other engineering applications.

Course Pre-Requisites / Co-Requisites
CHM 2045 (or equivalent)

Course Objectives

This is an introductory course, designed to provide the fundamental concepts of Materials Science and Engineering. Students will be able to describe structure, properties, and applications of metallic, ceramic, polymeric and composite materials and how to select materials for a given application.

Materials and Supply Fees
N/A

Required Textbooks and Software

- Title : Fundamentals of Materials Science and Engineering: An Integrated Approach
- Author : William D. Callister and David G. Rethwisch
- Publication date and edition: ZyBooks 6th Edition
- ISBN number : 979-8-203-26676-7

PLEASE NOTE: You need to acquire the e-book version with access to zyBooks. The simplest and affordable way to acquire the e-book is via UF ALL ACCESS. This includes a UF Negotiated rate. Login at the following website and Opt-In to gain access to your UF All Access course materials - https://www.bsd.ufl.edu/AllAccess – UF All Access will provide you with your required materials digitally at a reduced price, and the charge will be posted to your student account. This option will be available starting one week prior to the start of the semester and ends three weeks after the first day of class.

Course Website
This course will use CANVAS extensively as a communication and archival tool. The students can access all relevant course information (course notes, homework, problem sets, solutions, announcements, grades, etc.) via the CANVAS entry link: https://elearning.ufl.edu/ or https://ufl.instructure.com. Please check CANVAS frequently.

Required Computer
Recommended Computer Specifications: https://it.ufl.edu/get-help/student-computer-recommendations/
HWCOE Computer Requirements: https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/

Course Schedule
Below is the intended/tentative schedule of classes and exams.

W	Class dates	Topic	Chapter
1	August 22	Course Objectives, Syllabus, Introduction	**0**
2	August 25	Introduction	**1**
	August 27	Atomic Structure and Interatomic Bonding	**2**
	August 29	Atomic Structure and Interatomic Bonding	**2**
3	September 3	Atomic Structure and Interatomic Bonding	**2**
	September 5	Structure of metals and ceramics	**3**
4	September 8	Structure of metals and ceramics	**3**
	September 10	Structure of metals and ceramics	**3**
	September 12	Structure of metals and ceramics	**3**
5	September 15	Structure of Polymers	**4**
	September 17	Structure of Polymers	**4**
	September 19	Structure of Polymers	**4**
6	September 22	Review	**1-4**
	September 24	**EXAM 1 (In person for CAMP and online for other sections)**	**1-4**
	September 26	Post exam review	**1-4**
7	September 29	Imperfections in Solids	**5**
	October 1	Imperfections in Solids	**5**
	October 3	Imperfections in Solids	**5**
8	October 6	Diffusion	**6**
	October 8	Diffusion	**6**
	October 10	Diffusion	**6**
9	October 13	Mechanical Properties	**7**
	October 15	Mechanical Properties	**7**
	October 20	Mechanical Properties	**7**
10	October 22	Review	**5-7**
	October 24	**EXAM 2**	**5-7**
	October 27	Post exam review	**5-7**
11	October 29	Deformation and Strengthening Mechanisms	**8**
	October 31	Deformation and Strengthening Mechanisms	**8**
	Nov 3	Deformation and Strengthening Mechanisms	**8**
12	Nov 5	Phase Diagrams	**10**
	Nov 7	Phase Diagrams	**10**
	Nov 10	Phase Diagrams	**10**
13	Nov 12	Phase Diagrams	**10**
	Nov 14	Phase Diagrams	**10**
14	Nov 17	Phase Transformations	**11**

	Nov 19	Phase Transformations	**11**
	Nov 21	Phase Transformations	**11**
15	Dec 1	Review	**8, 10, 11**
	Dec 3	**EXAM 3**	**8, 10, 11**
		NO FINAL EXAM	

The instructor reserves the right to make changes to the syllabus as needed. Any changes will be clearly announced on CANVAS and in class.

Course Format

You will be provided pre-class preparation materials (pre-recorded lectures and reading assignments) before class discussions. The class time will be dedicated to summary lectures and/or In-Class Exercises and Discussions.

Pre-Class Preparation Materials

Pre-Recorded Lectures will help you prepare for the class discussions and are a critical aspect of learning the content of this course. You are required to watch them and answer a few questions.

Reading assignments are another critical aspect of learning the course content.

Active Learning Activities

Attendance to Classes is not required but highly encouraged since there will be discussions and In Class Exercises. Students are encouraged to ask questions and participate. The fundamental concepts will be repeated as required.

In Class Exercises (ICE) will be given during the classes. These exercises will not be counted for credit.

Homework Problems

Homework is required for this course and will be provided via Canvas.

Exams

There will be 3 exams during the semester. The exam content may change, and the dates are tentative and will be finalized after the add/drop period.

You have one week after the test results are posted to resolve any questions about scores and grades. No changes to your exam grade will be made after that time.

Exam Conflicts with other course exams

The official UF policy on exam conflict resolution states that when two exams conflict, the course with the higher number will take priority. There will be no exceptions to this rule.

Make-up exams

Students who do not take an exam will receive a grade of 0. Excused absences must be consistent with university policies in the undergraduate catalog (https://gradcatalog.ufl.edu/graduate/regulations/) and require appropriate documentation.

Syllabus Changes

The instructor reserves the right to make changes to the syllabus as needed. Any changes will be clearly announced on Canvas.

Course Communication

E-Learning will be the primary avenue for communication and course management. All announcements for the course will be made using the announcement system on the E-Learning site. Make sure and change your E-Learning settings so that you get notifications about announcements, assignments, exams, changes, etc. in a timely manner.

Evaluation of Grades

Assignment	Percentage of Final Grade
Readings	20%
Homeworks	20%
Midterm Exams	60%
	100%

Grading Policy

Percent	Grade	Grade Points
92.0 - 100	A	4.00
88.0 - 91.9	A-	3.67
84.0 – 87.9	B+	3.33
80.0 – 83.9	B	3.00
76.0 - 79.9	B-	2.67
72.0 – 75.9	C+	2.33
68.0 – 71.9	C	2.00
65.0 – 67.9	C-	1.67
62.0 – 64.9	D+	1.33
59.0 – 61.9	D	1.00
56.0 – 58.9	D-	0.67
0.00 – 55.9	E	0.00

Academic Policies & Resources

To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies. Instructor-specific guidelines for courses must accommodate these policies.

Graduate Level Academic Policies and Regulations (Attendance and Grading policy):
https://gradcatalog.ufl.edu/graduate/regulations/

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu