



COURSE DESCRIPTION: This course covers the properties and behavior of engineering materials. Materials considered are ferrous and nonferrous metals and alloys, as well as plastics, ceramics, and composites. Material property and behavior modification through thermal and mechanical means is studied, considering such processes as heat treatment and cold work forming. Selection of materials based upon manufacturing and design requirements is emphasized. Lab activities will complement material taught in lecture.

CLASS MEETING INFO:

Section	Day	Start Time	End Time	Room
Lecture	Monday Wednesday	9:01AM	10:20AM	Pandora 102
Lab	Wednesday	10:31AM	11:50PM	Pandora 116 and others

INSTRUCTOR:

Prof. Sean Tavares, Lecture & Lab
Pandora Rm. 103
E-mail: Sean.Tavares@unh.edu

OFFICE HOURS: As posted outside Room P103, and by appointment.

REQUIRED RESOURCES: The course will use a WileyPLUS learning module. Included is an electronic textbook and access to various online materials such as videos and study materials. Instructions on obtaining the WileyPLUS software dedicated to ET 505 will be provided. The included e-textbook is:

Fundamentals of Materials Science and Engineering: An Integrated Approach, 6th Ed. by W.D. Callister and D.G. Rethwisch.

BOOK ON LIBRARY RESERVE: The following book is on reserve for use in the library:

Experimental Methods for Engineers, J.P. Holman; useful reference for labs and other topics related to experimental measurements.

CLASS FORMAT: Classes will consist of lectures and labs. The labs involve application of concepts taught in lecture and also some new material related to analytical and experimental study of material science. The modality will be in person unless circumstances (COVID related or otherwise) require a change to remote format.

COURSE MANAGEMENT: The course is administered using the myCourses (Canvas) learning management system. <https://mycourses.unh.edu>



COURSE GRADE: The course grade will be determined using the following weighting of assignment groups:

Homework	30%	Tests (2 planned)	30%
Lab Projects	20%	Final Exam	15%
Practice Problems	5%		

ASSIGNMENTS AND COURSE SPECIFIC POLICIES: The following is a brief description of the graded assignments for the course along with some course specific policies:

Lectures: Students are responsible for all material covered in class and in reading assignments. Regular attendance at lectures and participation in discussions is strongly encouraged.

Homework: Homework assignments make up a substantial component of the course grade. Submissions will be files uploaded to myCourses (unless instructed otherwise). There will be an assignment Due Date followed by a short Grace Period. Assignments received after the Due Date but before the end of the Grace Period will be subject to a 10% penalty. No credit will be given for an assignment after the end of the Grace Period.

Lab Projects: Labs will involve a combination of individual work and working in groups. The lab component will involve various combinations of making measurements, relating data to physical concepts, and developing analytical skills relevant to experimental work. Closed Toe Shoes and use of appropriate Personal Protective Equipment (safety glasses, etc.) are required in the lab. It is the student's responsibility to make up any missed lab work.

Practice Problems: These are short problems and conceptual questions designed to reinforce course material in a timely manner. Practice problems will be assigned, completed, and discussed during class time with rare exceptions. You can think of the practice problem component of the grade as points for class participation.

Tests & Final Exam: Tests will typically be given during scheduled lecture time and/or lab periods. (Part or all of one or more tests may be given in take-home format.) If a student needs to miss a test for any reason, the instructor must be notified prior to the session in which it is given. If an exam is missed without prior notification the student will receive a grade of zero. In extreme circumstances and if no prior notification is possible, the student must contact the instructor within 24 hours of the missed test or exam and submit in writing why the scheduled test period was missed. See the section on Accommodations if you have circumstances that may require modified testing.



REQUIREMENTS FOR ASSIGNMENTS: For homework assignments, lab reports, practice problems/quizzes, tests, and final exam:

- (1) Show your problem-solving process. Briefly describe the concepts, assumptions, and other resources you are using.
- (2) Clearly identify your final answers.
- (3) Define variables clearly and use sketches or graphs where appropriate.
- (4) Submit your work in the format requested for the assignment.
- (5) Submit assignments as a single coherent file unless requested to do otherwise.
- (6) You are responsible for the content and legibility of all submitted assignments. Check to make sure the file you have uploaded corresponds to the given assignment and is easily readable. Illegible content will not be considered for grading.
- (7) Tests and final exam are required to be individual efforts. No collaboration!
- (8) Collaboration on Homework, Labs, and Practice Problems is permitted.

ET MINIMUM GRADE REQUIREMENT: Starting with students entering the ET program in the fall of 2022, the following minimum grade requirement applies:

- Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0.

More information about University Requirements for Graduation can be found at:

<https://catalog.unh.edu/srrr/academic-policies/requirements-graduation/>

RELEVANCE TO ET PROGRAM ACCREDITATION: The UNH Engineering Technology Program is accredited by the Accreditation Board for Engineering and Technology (ABET). Learning objectives for ET courses are aligned with the ABET Outcomes for baccalaureate degree programs in Engineering Technology.

This course is designed to address the following specific MET Program Criteria for Baccalaureate Level Programs described in the section entitled *II. Program Criteria*:

- f. Material science and selection;
- k. Application of industry codes, specifications and standards;



SELECTED UNIVERSITY POLICIES: The handbook of *Student Rights, Rules, and Responsibilities* is now incorporated in the Academic Catalog. This material can be found at: <https://catalog.unh.edu/>
Brief descriptions of a few specific policies are given below, along with links to more complete information.

ATTENDANCE: The official University attendance policy can be found at:
<https://catalog.unh.edu/srrr/academic-policies/attendance-class-requirements/>

ACADEMIC HONESTY: Honesty is a core value at the University of New Hampshire. The members of its academic community both require and expect one another to conduct themselves with integrity. This means that each member will adhere to the principles and rules of the University and pursue academic work in a straightforward and truthful manner, free from deception or fraud. Details of the University's policies with respect to Academic Honesty can be found at: <https://catalog.unh.edu/srrr/academic-policies/academic-honesty/>

ACCOMMODATIONS: The University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you think you have a disability requiring accommodations, you must register with the Student Accessibility Services (SAS) office. The Student Accessibility Coordinator at UNHM is Jenessa Zurek. Please reach out to the SAS office via email at jenessa.zurek@unh.edu for registration information and disability related questions. Jenessa Zurek is available through phone and email Mondays and Wednesdays from 9am-2pm.

See also: <https://manchester.unh.edu/academics/academic-services/student-accessibility-services>

CONFIDENTIALITY AND MANDATORY REPORTING OF SEXUAL VIOLENCE OR

HARRASSMENT: The University of New Hampshire at Manchester and its community are committed to assuring a safe and productive educational environment for all students and for the university as a whole. Title IX makes it clear that violence, harassment, and discrimination based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, and ability. If you or someone you know has experienced sexual or relationship violence, and/or stalking and harassment, you can find the appropriate resources below:

Reporting On Campus:

- Title IX Deputy Intake Coordinator: Lisa Enright 603-641-4336. Lisa's office is located on the fourth floor in Room 439.
- UNH Manchester Security: 603-541-4101 or located in the second-floor foyer
- Off Campus:
- Manchester Police Department - 603-668-8711, 405 Valley St. Manchester, NH, or your local police department.
- For emergencies dial 911.

Confidential Support Resources:

- YWCA, NH – 603-668-2299(24hour), 72 Concord St. Manchester, NH
- Sexual Harassment and Rape Prevention Program (SHARPP): 603-862-7233(24hour), 8 Ballard Street, Wolff House, Durham NH 03824
- The Mental Health Center of Greater Manchester: See contact information and hours above
- 24 Hour NH Sexual Violence Hotline: 1-800-277-5570
- 24 Hour NH Domestic Violence Hotline: 1-866-644-3574

See also: <https://catalog.unh.edu/srrr/sexual-misconduct-institutions-higher-education/>