EMA3000L
SML1 -25589
SML2 - 25590
SML3-25591
Class Periods: Mondays 9:35 to 11:30 AM
Wednesdays 9:35 to 11:30 AM
Fridays 9:35 to 11:30 AM
Location: Classroom location
Academic Term: Spring 2025

Instructor:

Nancy Ruzycki
nruzycki@ufl.edu
352 846 2991
Office Hours: Tuesdays (1:30-2:30 PM) and Thursdays by appointment on Zoom

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

Course Description
General undergraduate materials laboratory. (WR)
2 Credits
Attributes: Satisfies 2000 Words of Writing Requirement

Course Pre-Requisites / Co-Requisites
Prerequisite: EMA 3080C

Course Objectives

Module/Weeks	Objectives	Main Deliverable Activities	Professional Products
Safety and background for team development Week 0-1	Learn basic lab safety practices Learn to read and understand an MSDS Learn to read and use a Standard Operating Procedure Learn about effective teamwork Learn about your personality type	1.Actions and Reactions Lab Safety Training 2.MSDS reading and research 3.SOP FTIR of polymers 4.16 Personalities 5.Teamwork activity 6.Teamwork type assessment	Safety Certificate Professional Journal
Getting Started on the Big Idea Week 2	Kickoff speaker Exploring the materials	Speaker notes/questions Background on materials	Professional Journal

Entrepreneurial Mindset Week 3	Learn about attributes that exist in entrepreneurs. Learn about myths on entrepreneurs which exist and can be debunked. Learn about engineers as entrepreneurial leaders. Learn about the life of an entrepreneur.	1. Activity on Entrepreneurship 2.Activity on personal attributes. 3.Interview with entrepreneur	Professional Journal Biosketch
Engineering Design Thinking Week 4-5	Learn about parts and processes within engineering design	1.Engineering Design on-line activity. 2. Engineering Design in Class activity and presentation	Professional Journal Presentation/PPT
Sustainability Week 5-6	Learn about whole system mapping Learn about measuring sustainability Learn about greener materials, energy effectiveness and lightweighting. Learn how to involve stakeholders as positive forces in design work.	1.Whole system mapping activity 2.Measuring Sustainability 3.Using Granta software to identify green materials. 4.Using Granta software to conduct sustainable design. 5.Interviews and Surveys with Stakeholders.	Professional Journal Sustainability Activities Granta Design Activities
Project Tools for Engineering Design Weeks 7	Learn about the Inventing Green Toolkit and the business canvas Learn about scrum boards and Gantt charts for process mapping. Learn how to communicate through the design process using project management websites. Understand how GPTs can be useful for design	1.Design Activity with Business Canvas. 2.Design Activity with Scrum Boards. 3.Activities on ways of professional communication.	1.Business Canvas 2.Scrum Board design 3.Gantt Chart design 4. Mapping for design process Professional Journal

Introduction to solvable problems Week 8	Learn how to disassemble a device to be used to problem solve the process Using data to understand what is present and to make decisions. Choosing your metrics for the study (ASTMs, Research Design)	Disassembly of device Cataloging of parts Analysis of parts using a materials perspective Characterization of unknown parts using laboratory equipment Creating the solvable problem.	1. catalogue of parts and materials 2.Analysis of materials 3. Stakeholder Analysis 5.Problem brainstorming 4. Problem selection process.
Engineering Design Project Weeks 9-15	Identify areas for innovation and entrepreneurship within the solvable problem Work as a team to conduct research to design a solution Learn to use stakeholders to keep design process focused. Conduct a life cycle and social impact analysis for the product Communicate progress for design work.	Develop a team for a solution development process. Conduct a design process to improve some aspect for the solution. Consult with experts to refine and improve the design process. Communicate the findings of the design project at every stage. Identify areas for innovation and entrepreneurship within the design process.	1. Creation of project management website 2. Weekly key Learning meetings 3. Weekly team reports 4. Kanban Boards 5. Professional Journal 6. Business Canvas Design 7. LCA/Social Analysis 8. Process map 9. Interim Pitch 10. Final Pitch

Materials and Supply Fees
See UF Course Schedule for fees

Relation to Program Outcomes (ABET):
The table below is an example. Please consult with your department's ABET coordinator when filling this out.

Outcome	**Coverage***
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Medium
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
3. An ability to communicate effectively with a range of audiences	Medium
4. An ability to recognize ethical and professional responsibilities in engineering situations and make	

informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

- Fundamentals of Materials Science and Engineering, an Integrated Approach.
- Callister
- 2015, 5E
- ISBN:9780471395515

Recommended Materials
None

Required Computer
UF student computing requirement: *https://news.it.ufl.edu/education/student-computing-requirements-for-uf/*
Students

Course Schedule
Weeks -1-3 Failure Analysis
Weeks 4-6 Electronic Materials
Weeks 6-10 Electronic Materials
Weeks 10-16 Ceramic Design Challenge

Important Dates
See canvas page for assignment due dates

Attendance Policy, Class Expectations, and Make-Up Policy
Attendance is required in the laboratory time period. There is no make-ups for missed laboratory time.
Attendance at lecture is strongly encouraged.

This statement is required:
Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:
https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Professional Journal	varies	15%
In Class Activities	25 each	20%
Project Deliverables	Varies	55%
Project Presentations		10%
		100%

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history,

academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive 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, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

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 Undergraduate 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
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: https://counseling.ufl.edu, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://elearning.ufl.edu/.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; https://career.ufl.edu.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall*,* 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/;https://care.dso.ufl.edu.

On-Line Students Complaints*:* https://distance.ufl.edu/getting-help/; *https://distance.ufl.edu/state-authorization-status/#student-complaint*.