

Manufacturing Engineering

EML4321 Section 2G60

Class Periods: MWF, 6th period, 12:50 pm-1:40 pm**Location:** WEIL 270**Academic Term:** Spring 2020**Instructor:**

Hitomi Greenslet

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352-392-0812

Office Hours: MWF, 1:55 pm-2:45 pm, MAE-B 226

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

Please contact through the Canvas website

- Yifan Zhang, yifanzhang97@ufl.edu, 109 NEB, Tuesday, 1 pm – 3 pm
- Sidharth Sanadhya, sidharthsanadhya@ufl.edu, 109 NEB, Thursday, 10 am - noon

Course Description

Traditional and nontraditional manufacturing processes and equipment. Application of engineering analysis tools to manufacturing

Course Pre-Requisites / Co-Requisites

Pre-req: EMA 2322L (Design and Manufacturing Laboratory), EMA 3010 (Materials), and EML 3005 (Mechanical Design) with minimum grades of C

Co-req: N/A

Course Objectives

Upon completion of this course, students should be able to demonstrate the following:

- A descriptive and qualitative understanding of traditional and non-traditional manufacturing processes
- The use of engineering science tools such as advanced mathematics, stress analysis, vibrations, control theory, and heat transfer to analyze manufacturing processes and machines
- The ability to rapidly and accurately perform manufacturing engineering evaluations and analyses
- The ability to create computational simulations of manufacturing processes and machines

Materials and Supply Fees

None

Professional Component (ABET):

EML 4321 supports the following program outcomes as listed in the Mission Statement of the Department of Mechanical and Aerospace Engineering:

- Use of knowledge of chemistry and calculus-based physics (ME Program Outcome M1)
- Use of knowledge of advanced mathematics through multivariate calculus and differential equations (ME Program Outcome M2)
- The ability to work professionally in both thermal and mechanical systems (ME Program Outcome M4)

Mathematical sciences (15%), physical sciences (15%), engineering sciences (55%), engineering design (15%)

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. Apply knowledge of mathematics, science, and engineering	High
2. Design and conduct experiments, as well as analyze and interpret data	
3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	Medium

4. Function on multidisciplinary teams	
5. Identify, formulate, and solve engineering problems	High
6. Understand professional and ethical responsibilities	Low
7. Communicate effectively	Low
8. Understand the impact of engineering solutions in a global, economic, environmental, and societal context	Low
9. Recognize the need for and be able to engage in lifelong learning	
10. Understand contemporary issues	
11. Use the techniques, skills, and modern engineering tools necessary for engineering practice	High

*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

- Manufacturing Processes for Engineering Materials (6th Edition)
- Serope Kalpakjian and Steven Schmid
- Pearson Education, Inc., 2017
- ISBN 978-0-13-429055-3

Recommended Materials

- Fundamentals of Modern Manufacturing (6th Edition)
- Mikell P. Groover
- John Wiley & Sons, Inc., 2015
- ISBN 978-1-119-12869-4

Course Schedule

Week 1 Introduction, Chapter 4: Surface structure
 Week 2 Chapter 4: Tribology, Metrology
 Week 3 Chapter 5: Casting processes
 Week 4 Chapter 5: Casting processes
 Week 5 Chapter 5: Heat treatment
 Week 6 Course review, Exam 1
 Week 7 Chapter 6: Bulk deformation processes (Forging)
 Week 8 Chapter 6: Bulk deformation processes (Rolling, Extrusion)
 Week 9 Spring break
 Week 10 Chapter 6: Bulk deformation processes (Drawing)
 Week 11 Chapter 6: Bulk deformation processes (Die failures), Course review
 Week 12 Exam 2, Chapter 7: Sheet metal processes
 Week 13 Chapter 8: Machining processes (Mechanics of chip formation, Cutting tools)
 Week 14 Chapter 8: Machining processes (Turning, Drilling)
 Week 15 Chapter 8: Machining processes (Milling, Machine tools), Chapter 9: Abrasive processes
 Week 16 Course review

Exam schedule

Exam 1: February 14, 2020 (12:50 pm – 1:40 pm)
 Exam 2: March 25, 2020 (12:50 pm – 1:40 pm)
 Final exam: April 29, 2020 (12:30 pm – 2:30 pm)

See the attached course schedule for more detail. (Dates are subject to change—this is to serve as only a guideline).

Attendance Policy, Class Expectations, and Make-Up Policy

Class policies

- Attendance is expected and encouraged for all students, but it will not be recorded. If you need to miss a class, please make appropriate arrangements with a classmate for class notes.
- Cheating or any other form of academic dishonesty will result in failure and prosecution according to University policies.
- Students are expected to conduct themselves in a manner that does not interfere with other students' learning. Disruptive or distracting behavior is prohibited, and Prof. Greenslet reserves the right to temporarily or permanently dismiss distracting students from the classroom.
- Students are responsible for all announcements, assignments, etc., made during lectures, including changes in the scheduling of lecture topics, homework assignments, and exams. Class absence is not a valid excuse for being unprepared.
- Any changes in the schedule or assignments will be communicated to the class via e-mail using your Gatorlink (@ufl.edu) e-mail address and the course website. You are responsible for monitoring your mailbox and the website regularly for any class notices.
- Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Homework policies

Homework must be turned in at the **start** of class on the due date. Do NOT slip it under Prof. Greenslet's door. **In general, late homework will not be accepted.**

- Homework must be neat and legible and show all major steps.
- Homework must be on 8.5" x 11" paper. Multiple sheets must be stapled in the proper order. Homework must have the assignment number, your name, and the date of submission in the upper right-hand corner of the first sheet.
- Homework must have the page number in the bottom right corner of every page.
- Failure to adhere to the formatting requirements could result in loss of points.
- You may discuss the homework with your classmates; however, all students must provide the solutions themselves. Copying of homework will be treated as academic dishonesty. Use of a solution manual or any online answer source is also considered dishonest.

Exam policies

The first two exams will be held during the regular class period on dates that will be announced later. The final exam will be held at the time assigned by the Registrar. All exams will be held in the regular classroom. You must be present for all the exams when they are given.

- It is the students' responsibility to demonstrate their knowledge on exams. In order to be able to grade your work, it must be neat, be legible, and follow logical steps with all work shown. Partial credit may be given for work that can be followed and where the nature and magnitude of the mistake can be identified. No credit will be given for correct answers with insufficient indication of how they were obtained.
- Students should be aware that their work is submitted under the honor code pledge taken by UF students. The pledge is *On my honor, I have neither given nor received unauthorized aid in doing this assignment.* Students can learn more about the UF honor code at the UF Student Government website. (<https://sccr.dso.ufl.edu/>)
- Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (8)	4 each	16%
Exam 1	100	25%
Exam 2	100	25%
Final exam	100	34%

Extra Assignments		Extra credits
Total		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 requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure 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.ua.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.ua.ufl.edu/public-results/>.

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/policies/student-honor-code-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 broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

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 Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.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: <http://www.counseling.ufl.edu/cwc>, 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 support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.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://care.dso.ufl.edu>.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.