

Advanced Mechanical Metallurgy II (Dislocation Plasticity)

EMA 4935/EMA 6938 Section 433E

Class Periods: MWF, Period 3, 9:35-10:25a

Location: pending

Academic Term: Spring 2020

Instructor:

Name: Victoria (Tori) Miller

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Office Phone Number: (352) 846-3373

Office Hours: TBD based on poll of class

Course Description

3 credit hour special topics course

Course Pre-Requisites / Co-Requisites

Instructor permission is required for EMA 4935

Course Objectives

- Students will be able to utilize common analytical models to quantify the stresses and energies single dislocations and simple dislocation configurations
- Students will be able to describe the role of crystal structure in determining dislocation behavior.
- Students will be familiar with the analytical models for dislocation strengthening mechanisms and the assumptions they make.
- Students will be familiar with simulation techniques relevant to dislocations and the regimes in which they are applicable.
- Students will be able to describe dislocation plasticity as a thermally activated process and propose experiments to quantify the relevant material parameters.
- Students will write a whitepaper proposing a novel three-year research project related to course content.

Required Textbooks and Software

Course notes are developed by the instructor and will be provided in class or on Canvas.

Recommended Materials

- Introduction to Dislocations
- Hull and Bacon
- 2011, 5th edition
- 978-0-08-096672-4

Important Dates/Course Schedule

Feb 24: Class cancelled (TMS)

Feb 26: Class cancelled (TMS)

Feb 28: In-class midterm

April 22: Final draft of white paper due

Attendance Policy, Class Expectations, and Make-Up Policy

- Homework
 - Homework will be assigned approximately weekly.
 - Homework will typically be due before 5pm Fridays, unless late submission due to a schedule conflict has been preauthorized by the instructor.
 - Late assignments will be accepted until homework solutions are posted. Students will lose 10% of the total points each day the assignment is late.
 - The lowest homework assignment grade will be dropped.

- Attendance and Absences
 - Please notify me of planned absences at least 24h in advance via email.
 - Students are responsible for all missed work, regardless of the reason for absence.
 - It is also the absentee's responsibility to get all missing notes or materials.
 - Verification of an absence may be required in extreme circumstances, e.g. missing a midterm exam. Excused (but unplanned) absences must be in compliance with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation.
- "Quizzes"
 - Unannounced quizzes (approx. 5 minutes) will be given periodically, typically at the start of lecture. They will be primarily graded for completion, and we will go over the answers in class.
 - The lowest quiz grade will be dropped.
 - Students must make up quizzes for planned absences, but will receive full credit.
 - Students can make up quizzes for unplanned absences for 50% credit within 1 week of the original quiz date, no questions asked.
 - Quizzes are both a proxy for attendance/participation as well as a formative assessment.
- Extra Credit
 - Students that make a useful demo that I can use in class will receive up to five extra credit points (based on demo quality) to be assigned to the lowest homework grade. "Standard" projects will receive 3 points, with additional points awarded for exceptional work. In order to receive credit, student must provide a typed description of the class concept being demonstrated (minimum of a half page single spaced). Within reason, there is no maximum number of demos a student can submit. Extra credit will be accepted until the last day of classes. A maximum of one demo per week per student will be accepted.
 - Additional opportunities for extra credit may be announced during lecture.
- Be Nice!
 - Incivility toward students, staff, or faculty will not be tolerated.
 - If you'd like me to call you by a different name, different pronouns, etc. just let me know!

Evaluation of Grades

Assignment	Percentage of Final Grade
Homework	40% (each equally weighted)
"Quizzes"	5% (each equally weighted)
Midterm Exam	20%
Final Exam	20%
White Paper	15% (rubric will be distributed)

Grading Policy

Percent	Grade	Grade Points
93.0 - 100.0	A	4.00
90.0 - 92.9	A-	3.67
87.0 - 89.9	B+	3.33
83.0 - 86.9	B	3.00
80.0 - 82.9	B-	2.67
77.0 - 79.9	C+	2.33
73.0 - 76.9	C	2.00
70.0 - 72.9	C-	1.67
67.0 - 69.9	D+	1.33
63.0 - 66.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) 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 feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/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://www.dso.ufl.edu/sccr/process/student-conduct-honor-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://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

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