Plasma and Fusion  
ENU 4930/6937  
Class Periods: M8, W7, F8 (tentative)  
Location: TBD  
Academic Term: Spring 2020  

Instructor:
Chris McDevitt, Associate Professor  
174 Rhines Hall  
cmcdevitt@ufl.edu  
352-846-3785  
Office Hours: TBD  

Course Description
This course provides an introduction to plasma physics along with its application to fusion science.

Course Pre-Requisites / Co-Requisites
Introductory physics courses, or by instructor permission.

Course Objectives
During this course students will gain an understanding of the fundamentals of fusion energy science, basic principles of plasma physics, and how these principles are applied to fusion applications.

Required Textbook
- Introduction to Plasma Physics and Controlled Fusion  
  Francis F. Chen  
  3rd Edition  
  ISBN 978-3-319-22308-7  

Recommended Materials
Additional materials in the form of lecture notes and selected reading material will be made available throughout the semester.

Course Topics
- Thermonuclear reactions  
- Radiation losses  
- Debye shielding  
- Charged-particle collisions  
- Single-particle motion  
- Fluid description of a plasma  
- Waves in plasma  
- Equilibrium and stability  
- Kinetic theory (time permitting)

Attendance Policy, Class Expectations, and Make-Up Policy
Class attendance is encouraged, but not required. Quizzes will, however, be administered during class. 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

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage of Final Grade</th>
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<tbody>
<tr>
<td>Homework Sets</td>
<td>30%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Homework assignments will be posted on Canvas. The lowest two homework scores will be dropped. Students may work in groups. Quizzes will be given approximately weekly throughout the semester, and administered in class. These quizzes will generally focus on the material covered during the previous week’s lecture material. A midterm and final exam will also be given.

### Grading Policy

<table>
<thead>
<tr>
<th>Percent</th>
<th>Grade</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>93.4 - 100</td>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>90.0 - 93.3</td>
<td>A-</td>
<td>3.67</td>
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<tr>
<td>86.7 - 89.9</td>
<td>B+</td>
<td>3.33</td>
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<tr>
<td>83.4 - 86.6</td>
<td>B</td>
<td>3.00</td>
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<tr>
<td>80.0 - 83.3</td>
<td>B-</td>
<td>2.67</td>
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<tr>
<td>76.7 - 79.9</td>
<td>C+</td>
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<tr>
<td>73.4 - 76.6</td>
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<td>70.0 - 73.3</td>
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<tr>
<td>0 - 59.9</td>
<td>E</td>
<td>0.00</td>
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</tbody>
</table>

More information on UF grading policy may be found at: [https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](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://www.dso.ufl.edu/drc](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](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/](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/scrr/process/student-conduct-honor-code/](https://www.dso.ufl.edu/scrr/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](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/](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.


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/.
