

29:194

Plasma Physics I

Fall 2010

- Instructor:** Gregory Howes
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Office Hours: 2:30-3:30pm T, 2-4pm W, or by appointment
Department: Physics & Astronomy, 203 Van Allen Hall, Prof. Mary Hall Reno, Chair
- Catalog Description:** Physics of ionized gases, including orbit theory, guiding center motion, adiabatic invariants, ionization balance description of plasmas by fluid variables and distribution functions; linearized wave motions, instabilities; magnetohydrodynamics.
- Meeting:** Tuesday and Thursday 10:55 am - 12:10 pm
301 Van Allen Hall
- Textbook:** D. Gurnett and A. Bhattacharjee, *Introduction to Plasma Physics with Space and Laboratory Applications*
- Web Page:** <http://www.physics.uiowa.edu/~ghowes/teach/phys194/index.html>
- Exams** **Two Midterm Exams:** Tentatively on Thursday, Oct 7 and Thursday, Nov 11
Final Exam: Friday, Dec 17th, 2:15 pm
- Grading:** Homework: 20%
Two Midterm Exams: 20% each
Final Exam: 40%
- Homework:** Homework will be assigned on a regular basis with a time allotment corresponding to the level of difficulty. Longer assignments will be weighted more heavily in the homework score. Some assignments will involve a certain amount of computer work. Late homework will not be accepted. You are encouraged to work together in groups on the homework, but each student must write his or her own solutions; you may discuss how to solve the problem together, but you may not copy another student's solution.
- Topics:**
1. Introduction to plasmas
 2. Single particle motion
 3. From kinetic to fluid plasma descriptions
 4. Ideal MHD and MHD waves
 5. Cold plasma waves
- Reference books:** T.J.M. Boyd and J.J. Sanderson, *The Physics of Plasmas*
F. Chen, *Plasma Physics and Controlled Fusion*
R.D. Hazeltine and F.L. Waelbroeck, *The Framework of Plasma Physics*
N.A. Krall and A.W. Trivelpiece, *Principles of Plasma Physics*
D.R. Nicholson, *Introduction to Plasma Theory*

The College of Liberal Arts and Sciences Policies and Procedures

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall or see the Academic Handbook.

www.clas.uiowa.edu/students/academic_handbook/index.shtml

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (Operations Manual, III.15.2. Scroll down to k.11.)

Accommodations for Disabilities

A student seeking academic accommodations should register with Student Disability Services and meet privately with the course instructor to make particular arrangements. For more information, visit this site: www.uiowa.edu/~sds/

Academic Fraud

Plagiarism and any other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the departmental DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the departmental level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Academic Fraud section of the Student Academic Handbook.

www.clas.uiowa.edu/students/academic_handbook/ix.shtm

CLAS Final Examination Policies

Final exams may be offered only during finals week. No exams of any kind are allowed during the last week of classes. Students should not ask their instructor to reschedule a final exam since the College does not permit rescheduling of a final exam once the semester has begun. Questions should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit the instructor, then the course supervisor and the departmental DEO. Complaints must be made within six months of the incident.

www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety web site.