COURSE INFORMATION: Part 1 (Policies and Procedures)

PHYSICS 1302W.500, Introductory Physics for Science and Engineering II, 4 credits

This class satisfies the Physical Sciences Core and Writing Intensive requirements.

Course Prerequisites: 1301W, concurrent registration is required (or allowed) in Math 1272 or Math 1372 or Math 1572

Instructor: P Haines
Contact information:
- For enrolment-related questions: info@physics.umn.edu (main physics office)
- For questions regarding the course material, homework or all other non-urgent questions, please see me in person after class or during office hours. Due to the size of the class (300+ students), the instructor cannot answer e-mails except for urgent questions. For urgent questions: haines at physics.umn.edu

Lecture: Monday, Tuesday, Wednesday, some Fridays 4:40PM to 5:30PM in Room 125 Willey. Fridays are reserved for in-class quizzes and additional lectures, as announced.

Office hours: TW 2:30PM-3:15PM starting next week, Blegen 330. Students can also arrange a time to meet by email or in person.

Discussion and Laboratory Schedule: Tentative - check with OneStop for updates

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TA office hours: Teaching Assistants will hold office hours in Williamson 140 beginning the second week of classes. The schedule will be posted outside of Williamson 140.

EXAMS AND FINAL

Quizzes: Only those participating in all discussion sessions during the preceding weeks will be allowed to take the group part of the quiz. There will be four quizzes, February 9/10, March 2/3, March 30/31, and April 20/21, dates also listed on the Course Schedule. Locations for these will be announced in class. Each quiz will include one group free response problem (Thursday), two individual free response problems and five individual multiple choice questions (Friday). There are no make-up quizzes.

The Final Exam will be Thursday, May 11, 2017 from 1830 to 2130. The locations will be announced in class. http://onestop.umn.edu/calendars/final_exams/common.html

Make Up Final Exam: Students that have a recognized conflict can take a make up final exam on Friday, May 12 in the morning. In order to be able to take the make up, you must fill out a request form before 4pm on May 5th. The form is here: http://goo.gl/forms/Yts4LpTxR0 .

REQUIRED MATERIALS

• Eric Mazur, Principles and Practice of Physics, 1st edition, Vol. 2, Chapters 16-34.

• Access code for Mastering Physics (bundled with text at University Bookstore). To register for MasteringPhysics, go to http://www.pearsonmylabandmastering.com/northamerica/masteringphysics/students/get-registered/index.html As your login name, choose your X.500 ID (i.e. your UMN e-mail login) (unless you already have an account with Pearson).

• The Course ID is MPHAINES57138

• An iClicker 2 (College of Science and Engineering student response device)
Register your clicker at https://ay16.moodle.umn.edu/course/view.php?id=13451. In the upper left corner there is a block with the titled i>Clicker. Click on the Student Registration link in this block and follow the directions.

- Quadrille-ruled, hardbound laboratory notebook University of Minnesota 2077-S
- Important class materials are available on the School of Physics and Astronomy website (http://www.physics.umn.edu) by selecting the MyPhys tab and logging in with your University X500 name and password.
- Optional Supplemental Material: Calculus will be used extensively in this course. If you have not taken calculus before, it is recommended you look over a book designed to help with topics relevant to physics courses, for example: How to Ace Calculus by Adams, Thompson and Hass, The Competent Problem Solver for Introductory Physics: Calculus Version, UMN School of Physics and Astronomy, Mathematical Preparation for General Physics with Calculus by Davidson and Marion, So you Want to Take Physics by Cole, or Calculus Made Easy, by Thompson.

OVERALL COURSE GOALS AND OBJECTIVES

Physics 1302 is the second course of a two or three-semester sequence (1301, 1302, 2503) providing an overview of 21st Century physics from the perspective of students interested in science and engineering. Physics is the study of matter, energy and their interactions, everywhere in the knowable Universe. The primary focus of Physics 1301 is Mechanics. The primary focus of Physics 1302 is Electromagnetism. Physics 2503 explores physics principles and applications further, with an emphasis waves, optics and special relativity. 21st Century physics is a science based on principles rather than on taxonomy. Its goals are to describe the behavior of the Universe in terms of a few (and perhaps ultimately one) general principles. The goals of this course are to help you reach the educational objectives of your major by:
- Building your understanding of how natural phenomena in the Universe can be understood, and often predicted, in the context of a few basic principles;
- Improving your ability to conceptualize natural phenomena, using appropriate physics principles and mathematical models;
- Giving you practice in the use of mathematical models to make quantitative predictions about the behavior of physical systems in the Universe;
- Increasing your skill in making measurements of physical properties;
- Providing an opportunity to practice communicating technical information in an organized and readily understandable way.

There are many sources of help: come to me after lecture or during office hours, ask your TAs during Discussion Sessions or during office hours, work with your classmates. Be proactive! The difficulties will not clear up by themselves. It may require hard work to master some of the essential concepts of physics, but with enough practice, you will come to understand (and appreciate) even the most difficult concepts.
WHAT YOU NEED TO DO FOR PHYSICS 1302 (ATTENDANCE POLICY)

- Prepare for and participate in class on scheduled days; respond to questions with the iClicker 2.

- Participate in Thursday group problem sessions. **Attendance at problem-solving sessions is required.** If you have an excused absence, you must discuss with your TA making up the missed work. If you are late more than 10 minutes, you are considered absent. Your score on the next exam group problem will be reduced by 25% for each unexcused problem-solving session absence. If you are more than 5 minutes late for an Exam Group Problem, you will need to do the group problem by yourself.

- Work cooperatively with partners on lab exercises. **Attendance at lab is required.**

- Do the assigned weekly homework problems using *Mastering Physics*.

- Take four Mid-Term Exams on Thursdays/Fridays (see the Class Schedule) and one Final Exam. The Mid-Term Exams will each include a group problem that counts for 25% of the total exam score. **We will provide an equation sheet for the quizzes.** For exams, you may use a non-programmable, non-graphing calculator, but no programmable calculators, computers, tablets or phones.

GRADING

The median course grade will be in the B/B- range. The grading basis is as follows:

Lab reports and participation: 20% however you must pass lab in order to pass the course.
Homework (submitted via Mastering Physics): 10%
Clicker questions in class: 5%
Quiz Scores: best three quizzes 35% (lowest quiz score dropped)
Final Exam: 30%
Course letter grades will be assigned based on numerical grades as follows:

A grade of \( \geq 60 \) for the lab is required to pass the course.

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<td>greater than or equal to 88</td>
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<tr>
<td>A-</td>
<td>less than 88 and greater than or equal to 83</td>
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<tr>
<td>B+</td>
<td>less than 83 and greater than or equal to 78</td>
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<tr>
<td>B</td>
<td>less than 78 and greater than or equal to 73</td>
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<tr>
<td>B-</td>
<td>less than 73 and greater than or equal to 68</td>
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<td>C+</td>
<td>less than 68 and greater than or equal to 62</td>
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<td>C</td>
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<td>C-</td>
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<td>D</td>
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| F     | less than 40 or a laboratory grade less than 60%.


Because this course satisfies University requirements as a laboratory science class and as a writing intensive course, you must pass the laboratory (60% of the possible score) to receive a passing grade in the course. The laboratory grade will be based on pre-lab quizzes, well thought out predictions, collaborative skills as evidenced by effective group work and a well organized and correctly written technical communication of the physics concepts of this course in your laboratory journal and laboratory reports.

You will write several laboratory reports. The specific part of the laboratory for which you will write a report will be assigned to you by your instructor at the end of each laboratory topic (about every two weeks). Reports should be about 4 typed pages. The reports must be printed (the University supplies word processor facilities if you do not have your own) and include all necessary predictions, graphs, data tables, and calculations. Reports must be given to your laboratory instructor for grading by the deadline set by your Lab Instructor, generally one week after they are assigned. Late reports will not be accepted. Graded reports will be returned to you about one week after submission and may be revised, only with instructor permission, to achieve a higher grade. If a revised report is allowed, it must be given to your laboratory instructor by the deadline set by your Lab Instructor. Details of the laboratory grading are in your laboratory manual.

Read the relevant portions of the lab manual before attending a lab. Each lab has several parts; your TA will tell you which parts to prepare each week. All the laboratory problems have sections called Prediction and Method Questions. You should hand in your answers to these sections 24 hours before lab.

Failure to participate in the laboratory will result in a laboratory grade of 0 on the next lab report. Since the laboratory involves teamwork, no laboratory makeup will be allowed except in situations officially recognized by the University. In that case, the laboratory work must be made up by arrangement with your TA before your next scheduled laboratory period. The lab is done in the same small groups as the discussion sections, which are changed periodically. Lab data is taken cooperatively, but you are responsible for writing your own reports.

Unexcused absences or lateness by more than 10 minutes will result in a 25% penalty on the next lab report.

LIBERAL EDUCATION

The class exposes the student to physical principles and concepts, demonstrates how these principles can be applied to quantitatively describe natural phenomena, and provides the student with an opportunity to perform hands-on experiments and measurements that model how physical knowledge is obtained. The fundamental principles of electricity and magnetism are explored and the application of these physics concepts in modern technology is emphasized. The development of conceptual understanding of physical principles and their quantitative application are further deepened in the discussion section, where students practice problem solving skills. In addition, familiarity with the methods and findings of the physical sciences not only forms a crucial component of a common education, but also prepares students to be scientifically literate citizens.
Because all knowledge in the physical sciences is empirically acquired, the laboratory component of the course is essential to properly expose students to the scientific method and the ways of knowing and thinking in the physical sciences. The lab component involves the formulation of scientifically sound predictions by the student, followed by empirical testing of the hypotheses through hands-on experimentation. Since the language of the physical world is mathematical, quantitative analysis of experimental data is an essential aspect of the lab experience. Physics, like all sciences, is a social endeavor, and students are exposed to cooperative problem solving, working in small groups with other students, in both the laboratory and discussion sections of the course.

QUESTIONS AND CONCERNS

You are welcome to address your questions or concerned to the course instructor and/or the Teaching Assistants in person, by email or by telephone, including questions about exam grading. The goal of this course is to improve your knowledge and understanding of physics. If something is interfering with that goal, you need to make your concerns known to somebody who can address them.

ANNOUNCEMENTS

It is occasionally necessary to modify the course schedule, including the dates of Mid-Term Exams. Students are responsible for ALL announcements made during lecture, Discussion Session, or Laboratory Period. Every announcement will be posted on the Class Web Page. Missing an announcement is not an acceptable excuse for missing a Mid-Term or a course-related deadline. It is the responsibility of any student missing a lecture to determine what course material and announcements were missed.

DEPARTMENTAL POLICIES

ATHLETES must provide their official University of Minnesota athletic letter containing the approved competition schedule to their instructor and the staff in office 148. Away exams will be arranged with the athletic adviser traveling with the team. Accommodations will be made for official university sports only (i.e. no accommodations will be made for intramurals, club sports, etc.)

DISABILITY SERVICES: If you have accommodations for this course, please provide the staff in Williamson 145 with a copy of your accommodation letter for the current semester. Exams will be arranged according to accommodations and sent to the testing center for administration.

OTHER POLICIES: The policies described in detail by the following links are also included in this Syllabus.

- Student conduct code
  [http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html](http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html)
- Scholastic Dishonesty
  See student conduct code
- Disability Accommodations
  [http://ds.umn.edu/student-services.html](http://ds.umn.edu/student-services.html)
- Use of Personal Electronic Devices in the Classroom
  [http://policy.umn.edu/Policies/Education/Education/CLASSROOMPED.html](http://policy.umn.edu/Policies/Education/Education/CLASSROOMPED.html)
• Makeup Work for Legitimate Absences  
http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html

• Appropriate Student Use of Class Notes and Course Materials  
http://policy.umn.edu/Policies/Education/Education/CLASSNOTESSTUDENTS.html

• Grading and Transcripts  
http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html

• Sexual Harassment  
http://www1.umn.edu/regents/policies/humanresources/SexHarassment.html

• Equity, Diversity, Equal Opportunity, and Affirmative Action  
http://www1.umn.edu/regents/policies/administrative/Equity_Diversity_EO_AA.html

• Mental Health and Stress Management  
http://www.mentalhealth.umn.edu

Tutoring  
Tutors will be available in Williamson Hall near the lab space beginning the second week of classes.

Peer-assisted Learning sessions  
Led by a trained, experienced undergraduate PAL facilitator  
Reinforces lectures and text material through small group work with other motivated peers  
Concentrated focus on course concepts  
Practice in solving problems  
Meet classmates in an informal learning environment  
Efficient way to get in study time  
Research shows consistent participation in PAL (10 or more times) can improve grades by a half to a whole letter

Make-ups:  
There are no make-up quizzes. If you miss a quiz, in most cases that will be the quiz you “drop” for grading purposes. As specified by University policy, missed quizzes will result in a grade of zero except in the event of conflicts with scheduled activities of official University organizations or religious holidays, as prescribed by University regulations. The course instructor must be notified at the beginning of the semester or as soon thereafter as possible (no less than three weeks in advance) about conflicts due to scheduled, official University activities or religious holidays. Disputes concerning the validity of an excused absence will be settled in consultation with the Director of Undergraduate Studies in Physics. A make-up final exam will be given only for students with valid, verifiable conflicts of these types, or students with three final examinations in a 16-hour period if our exam is the middle of the three exams. Requests for make-ups for reasons other than those specified by University policy cannot be honored.

Other information: The official web page for the Physics 1302W.500 is:  
https://www.physics.umn.edu/classes/2017/spring/Phys%201302W.500/index.html

General course information, lecture notes, and other items will be made available through this class web site. Minnesota privacy laws require that tests and other materials are returned in a manner that ensures that no one else can see your grades. Papers will be handed out at the first discussion section after grading is completed.

CHEATING: Don’t do it!
All work that you turn in for a grade must be your own. The following behaviors are considered to be cheating:

a. Using the clicker of another student
b. Copying all or part of a lab report, data table or fabrication of data (see Intro, pg. 3 of Lab Manual)
c. Copying all or part of a homework assignment or exam
d. Any other matter covered by the University statement below.

Your TAs are observant. They notice duplication in lab reports and quiz problems.

**Mandatory Statement about academic integrity:**
The University expects the highest standards of honesty and integrity in the academic performance of its students. Any act of scholastic dishonesty is regarded as a serious offense, which may result in expulsion. Scholastic dishonesty is defined as submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing, altering, forging, or misusing an academic record; taking, acquiring, or using test materials without faculty permission; acting alone or in cooperation with another to obtain dishonestly grades, honors, submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing, altering, forging, or misusing an academic record; taking, acquiring, or using test materials without faculty permission; acting alone or in cooperation with another to obtain dishonestly grades, honors, awards, or professional endorsement. Aiding and abetting an act of scholastic dishonesty is also considered a serious offense with the same possible consequences. Students may not make commercial use of their notes of lectures or University-provided materials without the express written consent of the instructor. (See the Senate policy at http://www.policy.umn.edu/Policies/Education/STUDENTRESP.html.) Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.