

Introductory Physics I [PHY 141] Spring 2008 Syllabus

Instructor

Douglas Young

Instructor Contact Information

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Instructor Office Hours

TR 1:00-2:30

Required Texts

Ranking Task Exercises in Physics: Student Edition: 1/e,
by T O'Kuma, D Maloney, and C Hieggelke
ISBN: 013144851X

and either of the two listed below:

Physics, Volume I (Paperback), 3rd ed. by James S Walker
ISBN: 0131963929

or

Physics (Hardcover), 3rd ed. by James S Walker
ISBN: 0131584715

Meeting Rooms and Times

Section 001: MWF 11:00-11:50 SEB 144

Section 002: MWF 12:00-12:50 SEB 144

Corequisites

Basic Physics Lab I [PHY 121L]

Prerequisites

Students are expected to be able to:

- Read and write at the college level.
- Manipulate and solve: algebraic, trigonometric, quadratic, polynomial, exponential, and logarithmic expressions

Course Objectives

At the end of this course, students will:

- Be able to solve quantitative problems by applying physical principles.
- Be able to analyze a physical system and make qualitative predictions about the behavior of the system.
- Have developed an understanding of how the physical world around them operates.
- Know typical terminology used in the sciences (i.e. force, energy, power, torque, temperature, etc.), what the dimensional units for these terms are, and how these terms are related.

Tentative Schedule of Topics

Topic	Walker Section #s
Introduction to Physics	1.1-1.8
One-Dimensional Kinematics	2.1-2.7
Vectors	3.1-3.6
Two Dimensional Kinematics	4.1-4.5
Newton's Laws of Motion	5.1-5.7
Applications of Newton's Laws of Motion	6.1-6.5
Test I	
Rotation	10.1-10.4
Rolling & Torque	11.1-11.6
Inelastic Collision & Linear Momentum Conservation	9.1-9.5
Work, Power, & Kinetic Energy	7.1-7.4
Elastic Collisions	9.6-9.8
Angular Momentum	11.7
Test II	
Potential Energy and Conservation of Energy	8.1-8.5, 10.5-10.6
Oscillations	13.1-13.8
Fluids	15.1-15.9
Temperature & Heat	16.1-16.6
Phases & Phase Changes	17.1-17.6
Laws of Thermodynamics	18.1-18.10
Test III	
Section 001:	5/1 (Thursday) 9:00-12:00
Section 002:	4/28 (Monday) 2:00-5:00

Note: This selection and scheduling of material is tentative and subject to change at the discretion of the instructor.

Grading Scale

100	-	90	=	A	(4.0)
89	-	85	=	B+	(3.5)
84	-	80	=	B	(3.0)
79	-	75	=	C+	(2.5)
74	-	70	=	C	(2.0)
69	-	60	=	D	(1.0)
		≤ 59	=	F	(0.0)

Grading

Weighting

- In-Class Assignments/Participation/Homework 20 %
 - Reading Quizzes 15 %
 - Tests 65 %
- 3 Tests \implies 25 % for highest test grade and 20 % for the other two.

In-Class Work/Participation

In-class work and homework will consist of conceptual and quantitative problems worked in, or out of, class, and turned in as assigned by the instructor. Each problem in an assignment will be assigned a score of a check-plus ($\checkmark+ = 3$), check ($\checkmark = 2$), or check-minus ($\checkmark- = 1$). Assignments will typically be scored based on the effort made by the student to solve the problem, rather than purely on if the problem is right or wrong. Based on this scale, a check on an assignment is equivalent to a 100 (on a 100 point scale); Check-pluses therefore constitute a form of extra-credit. In figuring the final grade, averages over 100 on this part will be scored as a 100. However, students with averages of over 100 on this part of the grade may have their final grades increased by 2 points if it puts the student in the next letter grade bracket.

For example, suppose a student earns a 108 on the Daily Class Work part of the grade. The final grade for this student will be calculated with a 100 as the average value for the Daily Class Work part of the grade. Suppose that, after calculating the final grade, an 83.2 is obtained. This would give the student a B in the course. However, because the student is within two points of a B+, and has over a 100 on the Daily Class Work part of the grade, the instructor would award the student a B+ as the final grade.

When assigned conceptual problems, students are expected to:

- Provide a clear answer to the question.
- Write out the reasoning behind their answer.
- Provide an indication of how sure they are of their answer.

Typically the “sureness” scale is from 1 to 10 with 1 meaning “basically guessed”, 5 or 6 as “sure”, and 10 as “very sure”. **Without all three present on the page, a problem solution will be scored as a check-minus ($\checkmark- = 1$) regardless if the answer is right or wrong.** This is not required on quantitative (calculation) problems. Quantitative problems typically have a numeric answer, while qualitative problems involve some type of relationship between to objects or events.

Specific instructions may also be given for particular assignments relating to the scoring for that assignment. In addition, students are expected to participate in class discussions about these conceptual and quantitative problems. An additional credit may be awarded (i.e. a check-minus increased to a check, or a check increased to a check-plus) for strong class participation on a particular assignment. Students are expected to use the check-pluses to make up for absences due to illness, family emergencies, ect.

Homework

Homework/In-class work may also be graded on a 5 point/problem basis. Five points will be awarded for a problem with a correct, well-worked out solution. Four points will be awarded for a problem with minor errors or with the correct solution but worked out in a sloppy (hard to read) fashion. One to Three points will be awarded for problems that are incomplete, with the value depending on the how much progress the student has made toward a solution. Homework problems are due at the beginning of the next class period after they are assigned, unless told otherwise by the instructor.

Reading Quizzes

Short quizzes upon assigned readings from the textbook will be given periodically. The assigned reading will be announced in class prior to the quiz. These quizzes will be conceptual in nature. Students will not be allowed to use any notes or calculators for these quizzes. These quizzes will be graded on a standard 100 point grading scale. Typically, around 10 reading quizzes will be given during the semester; each quiz therefore represents about 1.5% of the total grade. This means that doing poorly on one quiz will not harm a students grade, but doing poorly on the bulk of the quizzes will. Quizzes will take between 10 to 15 minutes of class time.

Tests

Tests will typically consist of several questions with multiple parts. Approximately half the problems will be conceptual, with the rest as quantitative problems. Tests will be announced ahead of time. A formula sheet will be provided (students may not bring one of their own). Students will be given the whole period (~50 min.) to complete the test.

Comprehensive Final

During the Finals period, students will be given the option of taking a comprehensive final to replace the lowest of their first two test grades. Note that this final cannot be used to replace the third test. The comprehensive final will cover all material except that covered on the third test. Both the third test and the comprehensive final will be taken during the Finals period.

Class Policies

- The instructor reserves the right to modify this syllabus as deemed necessary any time during the semester. Emendations to the syllabus will be discussed and negotiated with students during a class period. A revised syllabus which supercedes the original document will then be handed out in a class period shortly after the discussion/negotiation class period.
- Dates for tests and quizzes will be announced one class period ahead of time.

- Questions about points awarded on test and quiz problems should be brought up as soon as these materials are handed back to students. All grades are final four weeks after tests and quizzes have been handed back to the class. If a student is not present in class when materials are returned, the student is responsible for arranging a time to collect the work from the instructor.
- Homework is due at the beginning of the next class period after it is assigned, unless instructed otherwise. Late homework may be accepted at the discretion of the instructor, with some penalty assigned for each instance by the instructor. If the student does not attend class, or is late to class, on the day the homework is due, the homework will not be accepted for credit. In other words, come to class even if you do not have the homework finished.
- A formula sheet will be provided for all quizzes and tests. The formula sheet will be posted on the class webpage:
physics.mercer.edu/young/phy141/phy141.htm.
- Practice problems, with solutions, will be posted on the class webpage:
physics.mercer.edu/young/phy141/phy141.htm
- Students are **highly encouraged** to attempt to work out the practice problems themselves **before** consulting the solutions.
Memorizing homework solutions will not help you on quizzes or tests.
- Cell Phone and Pager Usage: Out of courtesy for all those in the class, all cell phones and pagers must be turned off before entering any classroom or lab. The instructor reserves the right to zero out up to five (5) Daily Inclass/Homework assignments for failing to follow this policy.
- Attendance in this class is extremely important. Students are responsible for all information discussed in class. Be forewarned that students with more than an occasional absence risk doing poorly. If a student knows in advance that a class will be missed, it is expected that the student will discuss this with the instructor.

Students are allowed up to three class absences that will not count against their grade. In-class assignments can not be made up. In-class assignments missed during these absences will not count against the student's in-class assignments grade. Absences will be taken into account by subtracting the number of class days missed from the number of class days with an in-class assignments grade. This number will then be used to calculate the average in-class assignments grade.

For example, if there were 40 days during the semester with inclass assignments and a student missed 3 days, then the Daily Inclass assignments part of the total grade will be calculated by adding all of the Daily Inclass/Homework grades and dividing the sum by 37 (40-3).

Students are expected to use these absences for emergency situations such as deaths in families, illness, car trouble, etc.

Absences excused by the Dean's office, such as for athletes participating in competitions, musicians participating in performances, students attending conferences, etc. are not counted as part of the three allowed absences.

Students are responsible for material covered in class and assignments for the next class even if they are absent.

- Makeup tests will be administered for excused absences only, and must be made up within one week of the date when the test or quiz was administered to the class. If a student knows in advance that a test or quiz will be missed, it is expected that the student will discuss a makeup time beforehand.
- The three lowest reading quiz grades will be dropped. If a student misses a class that a reading quiz was given in, it is expected that the student will use one of the dropped grades to make up for the absence. **Students are expected to use these absences for emergency situations such as deaths in families, illness, car trouble, etc.**
- As stated in the Mercer Judicial System Handbook (<http://www2.mercer.edu/StudentAffairs/JShandbook.htm>):

Mercer University strives to be a Community of Respect where everyone is held in mutual high regard. Because every human being is created in the image of God, each person deserves to be treated with respect and civility. Standards of conduct are based on the values of mutual respect.

Respect for Other Persons

We value the worth of every individual in the community and we respect the dignity of each member in the community. We take responsibility for the consideration of the rights of others.

Mercer University is dedicated to the advancement of knowledge and learning and to the development of ethically responsible persons. University students are expected to uphold appropriate standards of behavior and to respect the rights and privileges of others. The university invites students to participate in the formulation of behavioral policies and to share in the responsibility for judicial decisions. These standards and procedures have been established to protect the university's educational purpose, to foster a sense of responsibility to the community, to provide for orderly conduct of its activities, to protect the members of the university from disrespect, and to safeguard the interest of the university community. Student conduct is expected to be lawful and in accordance with all federal, state, and local laws, and university regulations.

In keeping with Mercer University's values, sanctions imposed on students found to be in violation of the Student Code of Conduct are designed to promote the university's educational mission, restore community standards, and promote individual civility and positive growth. Sanctions are also intended to maintain the safety of the university environment and the integrity of the Student Code of Conduct applies to all campuses of the University and all international programs. The Vice President for Student Affairs (or designee) may modify non-substantive procedures in the effort to adjudicate violations in these programs when necessary. The University community. The processes for adjudicating violations of federal, state and local laws and violations of the Student Code of Conduct are separate and may be pursued independently of one another.

The University distinguishes its responsibilities for student conduct from the control functions of the wider community. The conduct of students both on campus and in the wider community is ordinarily of University concern when (a) the conduct interferes with the University's responsibility for ensuring members of the University full and equal opportunity to obtain their educational objectives, (b) the

conduct interferes with the University's responsibility to protect the health, safety and general welfare of persons in the University community, or (c) the conduct negatively impacts the University's image and/or academic integrity.

The Vice President for Student Affairs (or designee) may order any student to cease and desist from any activity adjudged to be disruptive to the University. If the student fails to cease and desist from such activity, the Vice President for Student Affairs (or designee) may immediately suspend the student pending a judicial hearing.

Violations of the Values of the Community of Respect

Violation of any of the following, or the aiding, abetting or attempting to commit these offenses by a student constitutes an offense that will result in disciplinary action.

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Failure to Comply. Noncompliance with the reasonable direction of university officials acting in the performance of their duties.

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Disorderly Conduct. Any action which can reasonably be expected to disturb the academic pursuits or infringe upon the privacy, rights, privileges, health or safety of students, or organizations. This includes actions that reasonably interfere with another student's ability to sleep and study effectively in his/her room.

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Conduct Unbecoming. Any conduct which is determined to be potentially detrimental to the University's reputation, or otherwise violates the rights of other individuals, groups, or organizations. This includes the display of indecent or offensive materials or engaging in indecent or lewd conduct.

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Possible Sanctions:

1. Creative/Educational Sanctions. Attendance at educational programs, interviews with appropriate officials, planning and implementing educational programs, research papers and other educational activities related to the violation.
2. Restriction. The withdrawal of specified privilege(s) for a definite period of time. Restrictions may include-but are not limited-to requirements such as not entering certain areas of housing or the campus, not contacting a certain individual or group, or not operating a motor vehicle on campus.
3. Fines. Not to exceed \$150 per individual or \$150 per individual member of an organization.
4. Probation. A period of time during which any further violations of the Student Code of Conduct may impact or jeopardize the student's status in a specific manner. The four types of probation that can be imposed are as follows:
 - a. Conduct Probation. A specified period of time in which any future violations of the Student Code of Conduct can result in increased sanctions being imposed that exceed those of a student who is not on conduct probation.
 - b. Housing Probation. A specified period of time in which any future violations of the Student Code of Conduct will result in the termination of housing privileges and access to any university owned housing facilities.

- c. Social Probation. Notice to an organization that all or a portion of social functions must cease for a designated period of time.
- d. University Probation. A specified period of time during which any further violation of the Student Code of Conduct puts the student's or organization's status with the university in jeopardy. Additional violations of the Student Code of Conduct that occur during this period of probation may result in suspension or dismissal. Students may be restricted from holding office in any student organization. Students cannot represent the university in any official capacity during the term of university probation. Continued enrollment depends on the maintenance of satisfactory conduct during the period of probation.
5. Forced Change of Residence. The temporary or permanent relocation of a student within housing.
6. Eviction from University Housing. Permanent removal from the housing system.
7. Suspension. The termination of the student's attendance at the university for an indefinite or specified period of time. Conditions, that must be met before re-enrollment is considered, may be placed on a student as part of this sanction.
8. Expulsion. The permanent separation of the student from the university.

Bottom line: The instructor will charge a student with a Judicial code violation if the student fails to comply with the instructor's directions and/or, is disturbing other students in class, or is engaging in lewd conduct among other things. The instructor may also penalize a student for failing to comply with directions and/or disturbing other students by zeroing out up to ten (10) Daily Inclass/Homework assignments.

- Students with a documented disability should inform the instructor at the close of the first class meeting or as soon as possible. If you are not registered with Disability Services, the instructor will refer you to the Student Support Services office for consultation regarding documentation of your disability and eligibility for accommodations under the ADA/504. In order to receive accommodations, eligible students must provide each instructor with a Faculty Accommodation Form from Disability Services. Students must return the completed and signed form to the Disability Services office on the 3rd floor of the Connell Student Center. Students with a documented disability who do not wish to use accommodations are strongly encouraged to register with Disability Services and complete a Faculty Accommodation Form each semester. For further information please contact Disability Services at 301-2778 or visit the website at http://www.mercer.edu/stu_support/swd.htm.