**PHYS 172 Modern Mechanics Spring 2012**

*www.physics.purdue.edu/academic_programs/courses/phys172/*

To do AS SOON AS POSSIBLE:

1. Obtain the **textbook** – Matter & Interactions, Modern Mechanics, 3rd Edition. If you purchase a used 2nd Edition, you must purchase an Access Code from WebAssign (http://www.webassign.net/). In addition, you are responsible for all of the material that we cover in the 3rd Edition. Read the Preface to the 3rd Edition so you will be aware of what has changed from edition 2 to 3.
2. Obtain the new PHYS 172 **Laboratory Manual** (from bookstore).
3. Obtain an **iClicker** audience response remote (not a CPS pad).
4. Register for **WebAssign**, the on-line homework service.
5. Register your iClicker on **CHIP**, your on-line PHYS 172 gradebook.
6. Click on the course **URL** listed above for any late announcements, etc.
7. Examine the Errata for the 3rd Edition. You can find a link to these on the course web page.

See below for more information on these important initial steps.

During the first week you will:

- Attend the two scheduled lectures, on Tuesday and Thursday.
- Attend the Recitation session assigned to you by the Registrar.
- Log in to WebAssign and complete "HW #1" by midnight Thursday, Jan 12.
- Lab meetings will not be held during the first week. Instead, log in to WebAssign and complete "Lab #1 Orientation" by midnight Tuesday, Jan 17.

Attendance is required for three evening exams this semester:

| | | |
|---|---|---|
| **Exam 1:** | **Wednesday, Feb 8** | **8:00-9:30 pm, Elliott Hall of Music** |
| **Exam 2:** | **Wednesday, Mar 7** | **8:00-9:30 pm, Elliott Hall of Music** |
| **Exam 3:** | **Wednesday, Apr 11** | **8:00-9:30 pm, Elliott Hall of Music** |

The date of the Final Exam will be announced later in the semester. Exam week ends on the evening of Saturday, May 5, and attendance is required.

## General Information and Syllabus

PHYS 172 is the first semester of calculus-based physics with an emphasis on modern mechanics. A first semester calculus course such as MATH 161 is a co-requisite for PHYS 172; calculus concepts will be introduced gradually throughout this course. We assume a mastery of high school algebra as a prerequisite, and prior exposure to high school physics is highly recommended.

This is a 4 credit hour course. The rule of thumb at this University is that you should spend twice as many hours (on average) studying for this course outside of class as you do in class. That is, eight hours a week spent reading, doing the homework, recitation, and laboratory

assignments, and studying for the quizzes and exams would be a typical investment of time for most students in this course.


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**Recitation and Laboratory Sessions**: The Registrar assigns each student to a specific Recitation and a specific Laboratory section. You will be given the name, email address, and Help Center/Office Hours schedule of your Recitation Instructor and your Lab Instructor at your first meeting time. Recitation sessions will be held during the first week as scheduled. Labs will only have an on-line assignment during the first week but will not meet. Labs will be held as scheduled during the second week. A day-by-day schedule for PHYS 172 can be found at the course web site.

## I. Required Books & Accessories

Textbook:

"Matter & Interactions – Volume 1 – Modern Mechanics" (Third Edition), by Ruth Chabay and Bruce Sherwood (Wiley).

Lab Manual:

"Physics 172 Laboratory Manual – Spring 2012 Edition" – Hayden-McNeil

WebAssign: Go to: *www.webassign.net/purdue/login.html*

Each student must be registered for this course with the on-line computerized homework service WebAssign. Instructions should accompany your textbook purchase, or get information from the course home page or the WebAssign URL above.

Note: The first assignment is due during the first week of class, on Thursday, Jan 12, before midnight.

Clicker:

NOTE: We are using the "iClicker" audience response system. Other systems are in use on campus (CPS), but only iClickers can be used for PHYS 172.

When you buy your iClicker, save your receipt. In rare cases units need to be returned to the bookstore, and having the receipt is helpful.

You must register the serial number of your own iClicker on CHIP, the course on-line gradebook. If you fail to do this, you may lose the points from the lecture quizzes you have earned.

**Never use a clicker registered to anybody else in this class, and never have two clickers in your possession at any lecture**. This is a violation of the Academic Honesty policy. Anybody found in violation of this policy will receive a failing grade.

Other:

Homework problems on WebAssign will require use of a computer with internet access. You will also need a scientific calculator for exams, recitations, and labs.

## II. Schedule

Five 50-minute lectures will be given per week on Tuesday and Thursday in room 114 Physics Building. You should attend the section assigned to you by the Registrar.

- Lectures are not optional. You should read the assigned sections of the text prior to each lecture and use the lecture session to clarify and reinforce the ideas covered in the assigned reading.
- Clicker Questions: You will be given questions every lecture; these are graded and count towards your final grade. Clicker questions are designed to provide feedback to the instructor and to you regarding your understanding of the concept under discussion. You may attend a lecture that you are not enrolled in and your Clicker points will still count. At the end of the semester, the three lowest clicker scores will be dropped for all students.

Each week also has a one-hour recitation section. You are required to attend the recitation section assigned to you by the Registrar. Recitations will be held during the first week of class. Recitation assignments will generally be posted in the Recitation tab on the left-hand side of the course home page by Wednesday of the week prior to the recitation. You are encouraged to look over the recitation problem so that you come to class ready to get to work.

Weekly laboratory sessions meet for two hours; you must attend the lab section assigned to you by the Registrar. Labs will NOT meet during the first week of class, but you must complete the first Lab assignment on WebAssign before midnight Tues, Jan 17.

A complete schedule of class meetings is on the course home page. This schedule shows all holidays and evening exams, as well as indicating the daily reading assignments. The time and date of the final exam will be announced as soon as it becomes known.

## III. Course Content

Major portions of Chapters 1 through 11 of the textbook will be covered this semester, as indicated in the reading assignments for each lecture (see Schedule). The goal of this course is to teach you how to understand and describe a wide range of physical phenomena using only a few fundamental principles of physics. This curriculum features a unified approach that combines traditional mechanics, a modern view of quantized atomic levels, and statistics to derive basic thermodynamics from mechanics. Applications will include topics involving asteroids, black holes, nuclear fission and fusion, quantization in atoms and molecules, and heat capacity.

Throughout this course you will generate computer animations describing specific physical behaviors using short but powerful programs that you will write yourself. The programming language is called VPython, and no prior programming experience is assumed.

**IV. Grades**

Grades will be determined from percentages earned in each of the categories shown in the table below.

| | |
|---|---|
| Evening Exams (3 x 10%) | 30% |
| Final Exam | 20% |
| Labs | 15% |
| Homework (WebAssign) | 15% |
| Clicker Questions | 5% |
| Recitation | 15% |
| TOTAL | 100% |

We will use an absolute scale to set the grades as given in the following table.

| Grade | Percentage |
|---|---|
| A+ | 95% |
| A | 89% |
| A- | 89% |
| B+ | 85% |
| B | 82% |
| B- | 79% |
| C+ | 75% |
| C | 72% |
| C- | 69% |
| D+ | 65% |
| D | 62% |
| D- | 59% |
| F | <59% |

This will easily allow you to estimate how many points you need to get the desired grade. At the end of the semester, if the grades are lower than we think is fair then we may lower the grade thresholds, but we will not raise the thresholds.

A running tally of your scores will be posted in the gradebook on the CHIP system. See the course home page for a link to CHIP. You should check this on a regular basis; report any questions or discrepancies to your Recitation Instructor. It is your responsibility to ensure

that the grades are accurate, and report this within 2 weeks from when the grades are recorded.

## V. SIGNALS

We will be using the Purdue Signals system this semester. Soon after exams 1 and 2, your score will be posted in Blackboard along with a "signal," green, yellow, or red. These signals indicate your progress in mastering the material. We will provide more details on this aspect of the course after exam 1.

## VI. Getting Help

This course will require a significant amount of time and effort. When a topic is not understood, or if you are stuck on a particular problem, try some of the following options:

A. Go to the Help Center, Room 11 PHYS Bldg. It is staffed during regular hours all day long by Teaching Assistants who are trained in this material.

B. Ask your instructor during lab, recitation, or lecture.

C. See the instructor during office hours, or make an appointment. We are happy to work through physics problems with you.

D. There are Supplemental Instruction (SI) study sessions available for this course. These study groups are open to anyone enrolled in this course who would like to stay current with the course material and understand the material better. Attendance at these sessions is voluntary. Times and locations for the help sessions can be found here: www.purdue.edu/sats/si . Students who attend these interactive sessions will find themselves working with peers as they compare notes, demonstrate and discuss pertinent problems and concepts, and share study and test-taking strategies. Students are asked to arrive with lecture notes and questions to these informal, peer-led study sessions.

E. Perhaps as a first resort, consult with a friend in the class. Peer consultation is a very effective way to learn physics (as long as you are not simply being told the answer).

## VII. Requesting Extensions of WebAssign Deadlines for Homework and Recitations

In a typical week you will have WebAssign assignments due for your Recitation, the Lab, and two regular homework assignments. Each of these assignments has a specific deadline, and after that deadline no credit will be given. If special situations arise where completing the assignment in time is impossible, you may request an extension of up to one week. You may go to the Physics Department Undergraduate Office in Room 144 and fill out a WebAssign Extension Request Form. The form is also available here: http://www.physics.purdue.edu/academic_programs/courses/phys172/extension.php and in Blackboard in the PHYS 172 Forms folder within the Course Content tab.

You must identify by name your Recitation Instructor who will receive the form and decide whether to accept or reject the request. Valid reasons include documented illness and family emergencies, but it can be a case where you simply have multiple exams on the same day. If you make such requests (involving undocumented conflicts) more than two or three times per semester, however, your TA will be instructed to reject excessive requests that do not result from a documented conflict. Any requests for extensions of Lab assignments should be made directly to your Lab TA.

**VIII. Absences and Excused (EX) Grades**

Unexcused absences from exams and quizzes will receive a score of zero. If the absence is for a valid and documented reason, you may receive an EX (Excused) grade by filling out an Absentee Report in Room 144, the Undergraduate Physics Office. It is also available online: http://www.physics.purdue.edu/academic_programs/courses/phys172/Absentee_Report_for_PHYS_172.pdf and in Blackboard in the PHYS 172 Forms folder within the Course Content tab.

When an Excused (EX) Grade is given for an approved absence, the designation "EX" will appear in the CHIP gradebook. This will be replaced by the average of your other scores in that category at the end of the semester.

Except in cases of extended illness, no excused grades will be given for the lecture questions; instead, the three lowest scores will be dropped for all students. Do not file an Absentee Report unless more than three lectures are involved.

Excused absences will **not** be granted for the Final Examination. If, in the opinion of the instructor, you have a legitimate and documented reason that prevents you from taking the Final Examination, you will receive an Incomplete for the course.

NOTE: Make-up exams will **NOT** be given for any of the exams. Any student with a valid approved reason for missing an exam may receive an EX grade.

Excused grades will typically be given for these three circumstances: (a) illness; (b) personal crisis (e.g., automobile accident, death of a close relative, weather conditions which make it impossible to get to the university); and (c) required attendance at an official Purdue activity (e.g., exam conflict, athletic event, band concert). Contact the relevant instructor IN ADVANCE (if at all possible) by email (preferred) or phone. Then go to room 144 Physics to fill out an Absentee Report. If you will be or have been out for five consecutive days, you must contact the Dean of Students; they will send us a letter.

- In case of illness, go to the Purdue University Student Health Center (PUSH). You should receive a slip from the Center with the date, doctor's name, and a telephone number. OR go to your private physician and obtain a written excuse. Take your excuse to the undergraduate office, Room 144 Physics. (We only need a doctor's excuse, not a diagnosis or any personal information.)

- In case of accidents, funerals, etc., after contacting your instructor by email or phone go to Room 144 with written evidence of your excuse (police accident report, funeral notice, etc.).

- In case of required attendance at an official Purdue activity, go to Room 144 at least a week in advance of the event and complete an Absentee Report, including documentation.

**IX. Academic Honesty**

Any effort to represent somebody else's work as your own, or allowing your work to represented as somebody else's, is cheating.

Working with another student on your homework is not cheating and, in fact, is encouraged. However, having somebody else solve assigned problems for you IS cheating.

Entering clicker responses for anybody else is cheating.

If a student is found cheating, he or she will receive an F for the course and be reported to the Dean of Students. In serious cases the Dean may suspend or expel the student from the university.