

WELCOME TO STUDENTS OF PHYSICS 112

WINTER 2007

THIS SHEET CONTAINS INFORMATION ABOUT PHYSICS 112. READ IT TODAY, CAREFULLY AND COMPLETELY, AS ONE PART OF YOUR CLASS ASSIGNMENT.

The Physics 111, 112, 113 sequence is a general physics course serving a broad spectrum of students, including biomed students, students in the School of Architecture, in agricultural science, education, etc. Physics 111, 112, 113 are each five credit-hour courses. The following is the statement from the University about GEC Physical Science courses.

“Physics 112 is a Physical Science course in the Natural Science category of the GEC. The goals and objectives for this category are:

Goals/Rationale:

Courses in natural sciences foster an understanding of the principles, theories and methods of modern science, the relationship between science and technology, and the effects of science and technology on the environment.

Learning Objectives:

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.”

The course meets these objectives through discussion of basic physics concepts and techniques with note as to their historical context. An understanding of these basic physics facts and principles lays the foundation for future investigations into many areas of modern science and technology. The student is provided the opportunity to strengthen understanding of these concepts by applying them to the solution of many varied situational problems and to investigating them via hands-on laboratory activities. When possible, these problems and activities emphasize the relevance of the concepts to current social or technological issues.

COURSE

Physics 112

PREREQUISITE

Physics 111

Physics 112 depends heavily on the material in Physics 111 and most students find that Physics 112 is more difficult than Physics 111. Students who received a grade below C- in Physics 111 are advised to repeat Physics 111 before taking Physics 112. Appendices A, B, C, & E of the textbook contain a review of the mathematics used in this course.

Course Home page: <http://www.physics.ohio-state.edu/and> click on “Courses” and then on “Physics 112”.

REQUIRED MATERIALS

1. Textbook

Physics by Cutnell & Johnson, Volume 2, 7th Ed. (Wiley, 2007)

Vol 2 of Cutnell & Johnson, 7th ed. and the Web Assign Registration Access Card are available as a shrinkwrapped valuepak at the local bookstores for less than the price of these items bought separately.

If you plan to take Physics 113, keep Vols. 1 and 2 of Cutnell & Johnson until you have completed Physics 113 as both are required for Physics 113.

Physics 112 assigns a few pages from Vol. 1 and it is also useful if a Physics 112 student needs to review concepts from Physics 111 used again in Physics 112. We suggest that you keep Vol. 1 if you have it. If you did not keep Vol. 1 of either the 7th ed. or the 6th ed., let your recitation instructor know. During the week of Feb 12, we shall make available in lecture some copies of Vol. 1 pages assigned for Physics 112.

2. WebAssign Registration Access Card

Available as part of the valuepak with the Cutnell & Johnson textbook when the latter is purchased as a new book from the local bookstores; also sold separately by the local bookstores; also available via the following website; <http://www.webassign.com/info/purchase.html>. A WebAssign registration access card is valid only until the end of the quarter in which it is first used.

3. Lab Manual:

Worksheets for Physics 112 Laboratory, 12th edition (2005). Available in local bookstores.

You must buy a new copy of the laboratory manual as it contains worksheets for you to fill in during labs.

4. Pocket Calculator

A pocket calculator which has scientific (powers of 10) notation, trig. functions, and logarithms. Your calculator should be brought to every lab session and to examinations. A nonprogrammable calculator (e.g., TI-30) is preferred. PDA's SHOULD NOT BE USED. If your calculator is programmable, you must show your recitation instructor that the memory is cleared at the start of each examination. If you want to store material in your calculator memory for another course, you will need to obtain a different calculator for use during physics examinations.

HOMEWORK

The "Class Schedule & Assignment Sheet" lists the specific homework assignments by date. All reading, problem, and question assignments pertain to the Cutnell & Johnson textbook.

1. Reading Assignments

You should do the assigned reading before coming to lecture. You are responsible for all the material presented in lecture and for all the material in the assigned reading, independent of whether it is covered in lecture. Try the self-assessment tests when you complete reading the relevant sections of the textbook.

The self-assessment tests are on the Cutnell website: <http://www.wiley.com/college/cutnell>. Click on Cutnell & Johnson, 6th edition.

2. On-Line Homework Problems

You must submit your answers to the homework problems on-line via WebAssign for grading. These problems are taken from the Cutnell & Johnson end-of-chapter problems but with **different numerical input values** for each student.

The sheet "On-Line Homework Instructions for Physics 111-112-113" describes how to log into WebAssign.

Contact Dr. Bolland (bolland.1@osu.edu) if you encounter technical difficulties when you try to log into WebAssign.

WebAssign allows you to submit partially-completed assignments. Once submitted, each answer is marked right or wrong. **You may resubmit each problem up to 9 times before the weekly deadline.**

Aside from homework #0 and #1, the weekly deadline for on-line submission of homework is **FRIDAY at 11:30 PM.**

WARNING: Think of the DEADLINE as **FRIDAY NOON** to give yourself a safety margin.

If you wait until late morning on Friday evening to finish submitting your answers and your computer or the server goes down, you are out of luck.

No extensions of time for on-line homework assignments will be granted.

The only cases in which a student may be excused from an on-line homework assignment are:

- a) hospitalization
- b) extended illness of the student (requires a physician's note stating that the student should be excused from school for that week)

- c) death of a parent or sibling
- d) military duty for the entire week

In those cases, present your documentation to the course manager.

No special arrangements will be made for a student away on an official university activity; such a student needs to submit the on-line assignment before they leave.

We urge you to submit partially-completed assignments a few days before the deadline. This will reduce the impact of possibly having your computer down (or some other personal disaster) on **FRIDAY**.

3. Homework Questions

You are expected to come to recitation prepared to present your answers to the questions assigned for that day.

SCHEDULE OF CLASSES AND EXAMS

There are five class meetings per week: lecture sessions each Tuesday and Thursday, recitation class each Monday and Wednesday, and a weekly two-hour laboratory. The lecture on Tu, Th meets at the same hour of the day as the recitation classes on Monday and Wednesday.

The dates for the quizzes, the midterm examinations and the final examination are listed on the Assignment sheet. Quizzes and midterm examinations are held in the recitation section (i.e., on Monday or Wednesday, as indicated). The final examination is held in the recitation room but at the time and date specified by the Registrar's schedule. The day and hour of the final exam are determined by the hour of your Monday recitation class, not your Tuesday lecture day.

GENERAL ADVICE

Your full participation in class is expected. You should do the assigned readings and the assigned problems before coming to class. A general rule for college courses is that you should expect to spend at least two hours studying and doing homework outside of class for each hour in class. Learn the names of your lecturer, recitation instructor, and lab instructor and confer with your instructors if you have difficulties with the course. Your recitation instructor, not your lecturer, has the records of your exam and homework grades and is the person responsible for assigning your final course grade.

Free tutorial assistance is available in the Tutor Room located inside Smith Lab 1011 (in room 1011A). This starts on January 8th.

Instruction tutorials, interactive solutions, simulations and self assessment tests are all available via the Cutnell & Johnson website: <http://www.wiley.com/college/cutnell>

SECTION CHANGES

Neither the lecturer nor the recitation instructor nor the lab instructor has the authority to sign an add slip or a change of section slip. If you are on the The Registrar's waitlist for Physics 112 see Deanna Mears in SM1036 on January 5th to request entry into Physics 112. Students with a conflict with work should bring a letter from the employer on the employer's letterhead to Deanna Mears Smith Lab 1036, on January 5th to request a schedule change.

NOTE: to be registered for Physics 112, you need to be registered for a recitation section and a lab section.

LABORATORY

Laboratory starts the week of January 8th. The laboratory room number on your schedule may be incorrect; check notices posted on the walls of the second floor corridors of Smith Laboratory for laboratory room changes. It is important that you know the name of your lab instructor.

At the end of each lab session, you must show your lab worksheets to the lab instructor for a final check and hand in the lab feedback form.

All laboratory work, including completion of the worksheet, must be done during laboratory class time. Students are not allowed to bring into the laboratory any material with data taken at other times (unless the experiment is a continuation from the previous lab session) or any sort of answers written in ahead of time. The presence of any such material in the lab will be considered evidence of intent to commit academic misconduct. At the very least, any such materials used for study prior to the lab should be tucked away where they cannot be retrieved easily, in a back-pack or other such carrying case.

More detailed information about the conduct and grading of the lab will be given at the first laboratory meeting. Expect to see lab-related questions on the midterms and final exam.

Because of holidays the lab schedule does not always quite mesh with the lecture schedule. Also, some labs were designed so that they can precede the material in lecture.

ABSENCE FROM LAB

1. Free Lab Excuse

You are allowed to miss one graded experiment. In doing so you forfeit only the 3 bonus points for doing all the labs. Since questions on each of the experiments (including the last experiment) may appear on the exams, you should try to attend every lab session. The automatic dropping of one lab grade, however, allows you to miss one class (to cover situations such as transportation problems, an isolated instance of conflict with a job, sick for one week) without your having to get official permission to do so.

2. Acceptable Excuses for Lab Make-up

In addition to the one free excuse, a student with one of the following excuses will be allowed to makeup a lab experiment PROVIDED this can be done during the week the experiment is scheduled. **NO OTHER EXCUSE WILL BE ACCEPTED.** In most cases, you will need to show documentation of your excuse.

- a) illness or injury
- b) death in the family
- c) appearance in court
- d) representing the university in an official activity or receiving an award and you have a letter from a university official requesting that you be excused (e.g., you are on the track team at a track meet; you are representing OSU at a national conference in your field.)
- e) Military Duty

In the above cases, no prior permission will be required. Just go to the lab that fits into your schedule and present your excuse to the lab instructor. If there is room in the class at that hour, you will be allowed to do the experiment then. **TO RECEIVE CREDIT FOR THE EXPERIMENT, YOU MUST WRITE YOUR REGULAR LAB INSTRUCTOR'S FULL NAME ON THE LAB FEEDBACK FORM AND ON THE LAB INSTRUCTOR'S ATTENDANCE SHEET, WRITE "MAKE-UP LAB" ON BOTH AND HAND IN THE LAB FEEDBACK FORM TO THE SUBSTITUTE INSTRUCTOR.** The substitute lab instructor does not have the list of who teaches when, so if you don't know the name of your regular instructor, find out this information from Smith 1036 before going to the substitute lab. In no case may a lab worksheet be taken home and handed in to your regular instructor later.

3. If a student is prevented by illness or injury from attending school for 2 or more weeks, the student should contact the course manager. This is the only circumstance under which a student should contact the course manager about absence from lab. Such a contact needs to be made, at the latest, within one week after the student returns to class.
4. **NO LAB MAKEUPS ALLOWED FOR A CONFLICT WITH A MIDTERM IN ANOTHER COURSE**
If another course schedules a common midterm that conflicts with your regularly scheduled lab time, you must take the makeup midterm in that course. According to university rules, a course with a common midterm that produces conflicts with regularly scheduled courses must provide a makeup midterm.

COURSE MANAGER

In the event of a problem with the course that is not resolved by your recitation instructor, lab instructor, or lecturer, you need to contact the course manager, Dr. Rallis. Dr. Rallis is in Smith Lab 1036B, tel. 292-4464, e-mail: rallis.1@osu.edu

COMMUNICATIONS

If you need to email an instructor or the course manager, send your message from an osu.edu address to preserve your privacy. Our spam filter often traps messages sent from other addresses.

GRADES

	<u>Grade Composition Points</u>
Quizzes (best 5)	100
Midterm 1	100
On-Line Homework	50
Laboratory	75
Final Exam	<u>175</u>
Total	500

Bonus: 3 points out of 500 for doing all labs during the quarter.

1. **Attend the section in which you are registered.**

Unless you take exams at Disability Services or unless, under special circumstances, you receive permission from the course manager to take an exam in a different section, you must take exams in the recitation section where you are officially registered. Except for a make-up lab or use of a lab grade from a previous quarter (as described below), you must regularly attend the lab section where you are officially registered. Otherwise, the appropriate instructor will not have the grade information on you and will enter a grade of zero. Check during the quarter that your name is on the roster for the section you attend.

2. **Reuse of lab grade from a previous quarter.**

On retaking a course, you are allowed to reuse a laboratory grade from a previous quarter only if you completed the course and received a grade in the course. In that case, go to SM 1036 and ask for a lab excuse. **You must do this BEFORE the end of the third week of the quarter.** The secretary will need to know the quarter in which the course was taken, the name of that quarter's recitation instructor and the call numbers for your current recitation and lab sections. You then give the lab excuse to your current recitation instructor. Once this is done, you do not need to attend lab. **HOWEVER, YOU MUST REMAIN REGISTERED FOR LAB IN ORDER TO REMAIN REGISTERED FOR THE COURSE.** Note: There is a two year limit on the use of a previous lab grade and you must initiate the lab excuse as described above.

NOTE: Any student who drops the course also drops the laboratory part of the course and therefore will receive no credit for the laboratory part of the course.

3. Physics 112 is not posting exam or homework scores on CARMEN or WebCt.

EXAMS

Your lecturer will discuss the character of the examinations in time for you to make adequate preparation. Copies of previous midterm examinations may be posted on the course website. These midterms are not necessarily those of your current lecturer and may contain typographical errors, but illustrate the types of questions asked.

The “equation sheet” policy for exams will be announced by the lecturer.

There are no makeup exams for the quizzes or the midterm exam. There are 7 quizzes per quarter. **To cover situations in which a student misses a quiz**, only the top five quiz grades for each student will count. For example, you miss 1 quiz because of illness, that is one of the two the quiz grades that is dropped. If you miss a midterm or a final examination for a serious unavoidable reason, then contact the course manager within 2 weeks of the date of the exam missed. If you missed a midterm for a serious reason, such as illness, you may be excused. Vacation plans are not an acceptable excuse for missing an exam. For exam-related problems other than missed exams, you must contact either your recitation instructor or your lecturer or the course manager within 24 hours of the exam. If you start an exam and then become too ill to continue, inform your instructor immediately.

Final exams are not returned to the students. **Use of cell phones during exams is not allowed.**

Note that there is no OSU rule about the number of final exams a student has to take in one day.

FINAL EXAM SCHEDULE

In the following cases, Dr. Rallis will allow a student to reschedule a physics final exam but you need to contact her before the deadline listed on the assignment sheet.

- a) A student has 4 final exams (including the physics final) in the same day.
- b) A student has 3 final exams (including the physics final) in a row on the same day with no break between any of the exams (e.g. exam at 9:30 AM, 11:30 AM, and 1:30 PM.).

Note that there is no OSU rule about the number of final exams a student has to take in one day.

REQUESTS FOR REGRADING

If you believe that there has been an error in the grading or addition of points on an exam or quiz, you must obtain a “Request for Regrading” form available in 1011 Smith Lab. This form along with the exam in question must be submitted to your recitation instructor within ONE WEEK of the date on which the exam was returned to you. **WARNING:** The show-work pages of exams are photocopied before the graded exams are initially returned to the class. Exams handed in for regrading will be compared with the photocopy of the original; if you request credit for added or altered answers, it becomes an academic misconduct case.

ACADEMIC MISCONDUCT

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/resource_csc.asp).

SUGGESTIONS AND COURSE EVALUATION

Suggestions for improving the course or instruction in the course sequence are desired. Feel free to present them at any time to the lecturer or recitation or laboratory instructors or the course manager. Toward the end of the quarter you will be given the opportunity to complete a form evaluating various aspects of the course and the instructors.

STUDENTS WITH DISABILITY

Please contact the course manager at the start of the quarter so that arrangements can be made to accommodate you. Students needing the services provided the Office for Disability Services (ODS) will need to be certified by that office. The ODS is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

SCHEDULING CONFLICTS WITH OTHER SCHOOLS

Students who are enrolled at other colleges and universities, but who are taking courses at Ohio State, are expected to make the necessary arrangements to fulfill all course requirements. These include attendance in labs and being present for all exams. In particular, activities or classes at another school do not take precedence over exams here.

LIBRARY REFERENCE MATERIAL

The texts listed below have been placed on reserve in the Science and Engineering Library as "outside" reference books for the Physics 111, 112, 113 course sequence. Study of more than one point of view on a topic often proves helpful in resolving difficulties for beginning students.

ON RESERVE

- Cutnell and Johnson, Physics: 6th edition and 7th edition.
- Giancoli, *Physics*, 6th edition and 5th edition.
- Mathew, *Socratic Physics, Vol 1: Mechanics*.
- Mathew, *Conceptually Guided Questions on Electricity and Magnetism*.
- Hecht, *Physics*: 2nd and 3rd editions.
- Serway and Faughn, *College Physics*, 6th edition.
- Tipler, *College Physics*.
- Kyker, *Study Guide to Accompany Paul Tipler College Physics*
- Walker, *Physics*, 2nd edition.
- Giambattista, Richardson & Richardson, *College Physics* 1st ed.

Comments by Dr. Rallis about some of the above books:

The textbook by Giancoli and the textbook by Serway and Faughn are generally similar to the Cutnell & Johnson textbook in level and treatment of the topics. However, the 6th edition of the Giancoli textbook and the Serway and Faughn textbook are superior to Cutnell & Johnson for modern physics.

The books by Hecht are the best books for teaching problem solving techniques: they work out example problems in the fashion that we want students to use in thinking about a problem.

The Physics Workbooks by Mathew are recommended for students Physics 111 and 112 who are having difficulty with physics. They are collections of short multiple-choice questions with answers or solutions to 2/3 of the questions at the back of the book. They are meant (a) as exercises to train the student via a sequence of small steps. (b) to provide questions that a student can answer quickly as drill, and (c) to provide concept questions a student should be able to answer quickly (and if not, the student should reread the textbook or consult the instructor). After answering a whole set of short questions in Mathew, the student is better equipped to do the problems and questions in the Cutnell & Johnson textbook.

The Kyker Study Guide presents a problem, states the strategy for solving the problem, and leaves the worked-out solution to the end of the chapter. A recommended way to use this guide is for you to first try to work out the problem by using the suggested strategy and subsequently check the worked-out solution in the book.

The Tipler text is recommended for the clarity of its explanations for Physics 112 and 113 students and for the better students in Physics 111. Giambattista et al. is recommended for Physics 113 students, particularly the chapters on Interference and Diffraction and Special Relativity.

In teaching problem solving, the Walker textbook presents the verbal description and equations side by side for each step. It is meant for Physics 111 and 112 students who require more assistance.

If you use any of the above books, aside from the required textbooks for this course, and would like to offer comments about them, please send your comments to rallis.1@osu.edu.