

Physics 220

PURDUE UNIVERSITY

Fall 2016

Lecturer: Prof. Matthew Jones (jones105@purdue.edu); Office: PHYS 378/337; Office hours: Tuesday, 9:30-10:30 AM or by appointment.

Purdue Course Web Pages:

http://www.physics.purdue.edu/~mjones/phys22000_Fall2016

<http://www.physics.purdue.edu/phys220>

Blackboard Learn Web Page:

<https://mycourses.purdue.edu/>

Text: Etkina, Gentile, and van Heuvelen: *College Physics* WITH modified MasteringPhysics® Access Code, 1st Ed., (Pearson), ISBN: 9781323064573.

If you do not buy the package above and prefer only an e-text with a modified MasteringPhysics® Access Code, please make sure to purchase this ISBN: 9780321918444.

Please see the handout, lecture notes, or link on the course web pages for instructions on how to purchase a modified MasteringPhysics® access code through Pearson.

This course will rely heavily on modified MasteringPhysics® for homework, quiz submission, and pre-lab assignments. For this reason, you will need reliable and readily available access to the internet.

Assignments: The homework schedule will be available on-line but will generally require weekly assignments to be turned in by 11:59 pm on Monday.

Lectures: 10:30-11:20 and 11:30-12:20 Monday and Wednesday in PHYS 114. Questions are encouraged before, during or after any lecture. The purpose of the lectures is to allow a more detailed presentation of the principles and connections of the subject material covered in the textbook. Demonstrations will be used to help illustrate the principles under discussion.

The emphasis of the lectures will be on the conceptual material of the course rather than on a particular exam or homework assignment.

Recitations: 10:30-11:20 Friday in PHYS 112. The purpose of the recitation is to allow a discussion of the homework problems. During weeks when exams or holidays occur, a review or lecture might be given in lieu of a recitation.

Recitation Instructor: Jeremy Munsell, Room PHYS 003, e-mail: jmunsell@purdue.edu

COURSE STRUCTURE

The course has three different components: Lecture, Recitation and Laboratory. The lectures will concentrate on developing an understanding of fundamental concepts. The recitations will be devoted to developing problem-solving skills. The laboratory will give you a chance to test the laws of physics presented in the lecture. Note that different people are in charge of the three components.

Prerequisites: College algebra and trigonometry.

Lectures: The lecture will be used to introduce new material. Demonstrations will take place during the lectures to illustrate the physics concepts. If you are not prepared for even one lecture, you will quickly fall behind. We are confident that regular attendance at lectures will be rewarded by better exam and homework grades. A tentative reading and homework assignment schedule is also provided on the course web pages. You should read the assigned sections before coming to each lecture. This is not an easy course! A large amount of material will be covered so it is important that you do not fall behind. Furthermore, physics is a subject where complex ideas are described using simple principles, so if you miss a lecture you might not understand the background needed to make sense of the topics that follow. It is also easy to lose track of how we reached certain conclusions, so if any of the lecture material is not clear, please ask! You will not be the only person with misgivings and repetition (within reason) of these concepts will benefit everybody. Our general advice to success is as follows:

1. Attend class
2. Take notes during the lecture and as you read the text. The very act of writing something down will aid in your ability to remember the material. Lecture notes should be posted online prior to the lectures, so you can print these and take notes directly on the pages.
3. Read and keep up to date with the text.
4. Work as many problems as you can – i.e. more work than just the assigned homework problems. After you work a problem, look and think about your answer you just determined. Does it make sense? Always write down units and carry the units through all of the calculations?
5. As you study, stop and ask yourself if you understand what you just read. If you don't, go back over the material until you understand it, or make arrangements to have it explained either in class, by the TA, or during office hours.

Recitations: While the emphasis in this course will be on concepts, it is important to be able to apply the concepts to actual problems. The recitation will be where you can get feedback and advice on how to solve such problems.

Homework: The modified MasteringPhysics® from Pearson will be used to assign credit for homework completed this semester. General instructions can be found on the handout distributed during the first day of class, which will also be made available on the course web page. A web expert from Pearson will be available during the first day of class to answer any of your questions.

The homework assignment for each week typically consists of about 10 problems. There will be about 14 homework assignments during the semester and your final homework score will be scaled to equal 150 points. Therefore, if you correctly answered all problems, your score would be exactly 150 points.

Using the MasteringPhysics® web-based system, you can enter answers to homework problems by using your own personal Pearson account. For most problems, you will receive several tries for 100% credit. Usually, no credit will be given for correct answers after the 5th try. The time cutoff for answering homework for full credit will be 11:59 pm on the Monday that the homework problems are due. This means that if you run into problems answering the homework questions on the weekend, you can ask about them on Monday and complete them by Monday evening.

After you use your five tries for 100% credit, you are still encouraged to submit answers until you correctly solve the problem. MasteringPhysics® will still inform you if your answer is correct. However, once the number of attempts exceeds the five tries discussed above, no credit will be assigned.

Many years of experience has shown that there are many opportunities for misunderstandings when entering answers into a web-based homework system. The misunderstandings could be as simple as a minus sign or a lack of accuracy when entering your answer, or entering units when the question explicitly states which units to use. In order to receive credit, your answer must be within $\pm 1\%$ of the correct answer, so you are advised to carry at least four significant figures in your calculations. You should enter four significant figures even if MasteringPhysics® asks for less.

Exams: Three exams will be given. The first two will be 1.5 hours and the last exam will be two hours in length. Exams will be closed book. A one-page formula sheet will be provided with each exam. A simple scientific calculator can also be used. *Please come to exams with your Purdue identification card which lists your 10-digit PUID number.*

Exam 1: Tuesday, October 4th, 8:00-9:30 pm in PHYS 112 and WTHR 200.

Exam 2: Wednesday, November 16th, 8:00-9:30 pm in ELLT 116.

Final exam: The Office of Schedules and Space will determine the date and location.

Note 1: No make-up exams are scheduled for this course. This means that if you arrive late for an exam or miss it entirely, there is no make-up exam that you can take.

Note 2: No electronic devices other than a simple scientific calculator can be used during the exam. Please do not bring other portable electronic devices to the exam.

Note 3: An acceptable scientific calculator is one that meets the ACT guidelines (see <http://www.actstudent.org/faq/calculator.html>).

Laboratory: There is a laboratory associated with this course and the required lab manual can be purchased in the local bookstores. Lab sections meet once a week during the semester and you will perform approximately 11 lab experiments. In addition, there are required pre-lab assignments which are also available on the Physics 219 modified MasteringPhysics® web site.

The lab syllabus, along with the details of how each lab section is run, will be discussed during the first lab meeting of the semester. Please consult your class schedules to determine when and where your lab section will meet.

Note that the laboratory associated with this course is run *independent* of the lecture. I have no control over the labs but questions about any lab experiment are always welcome. Be aware that there may be some topics covered in the lab that are not discussed in the lecture. Also, the labs may be slightly out of synchronization with the topics covered in the lecture.

Grades: There is one overall letter grade for the course, determined on the basis of 600 points as shown below:

Two 1.5 hour exams (150 points each)	= 300
Homework (normalized)	= 150
Laboratory (normalized)	= 150
Third exam (during finals week)	= 300

Total	900

Final grades will include the +/- modifiers. The exact cutoffs for various letter grades will not be determined until the end of the semester. If you make 90% or better you will probably get an A, 80% a B, 70% a C and so on. *The exact conversion from points to letter grade will not be known until after the semester.*

Note that you must pass (50% or better) the lab in order to pass the course. The requirements for passing the lab are given in the separate page on lab policies and work.

During the semester, you should regularly check that your exam, lab, and homework grades have been correctly entered into your Gradebook. *It is your responsibility to bring any problems with your assigned grades to the attention of your instructor immediately.*

Absences and excused grades: There is no way to make up missed midterm exams. Unexcused absences from any midterm exam will be assigned zero grade; Excused grades will be given only in one of the following circumstances: (1) illness; (2) personal crisis; and (3) required attendance at an official Purdue activity (e.g. athletics). You *must* contact your lecturer as soon as possible but before the exam and discuss your problem. Appropriate documents (e.g. a written note from a doctor, with their name and phone number included) may be needed to judge the merit of the excuse. More than one exam will likely not be excused. *Missing the final exam cannot be excused.*

Getting help: Recitation sessions are very important. They allow you to ask questions about homework or course material. Your recitation instructor will also give you suggestions on how to successfully attack physics problems.

Help center: The Physics Help center, located in PHYS 11A, has people who can help you with any physics problems. Hours when the help room is staffed will be posted on the door soon after the semester starts and on the following website:

http://www.physics.purdue.edu/academic-programs/docs/help_centers/HC218220.pdf

Course Outcomes: The expected outcomes of this course are to develop an ability to identify, formulate and solve simple problems that require concepts from mechanics, both statics and dynamics, oscillations and wave motion, as well as thermodynamics.

Course Office: The place to go for organizational information on the course is the Physics Undergraduate office in PHYS 144 (telephone 49-42970).

Academic Dishonesty: The emphasis of this course is on learning material that may benefit your future career, not in competition to see who scores highest on the assignments. The scores on course assignments are used as a metric to judge how much you understand. Your score on any assignment is not only determined by how hard you study but also by your prior academic preparation before taking this course.

Dishonesty will not be tolerated. All Purdue students are assumed to be familiar with [Purdue's Code of Honor](#). Dishonesty is detrimental to your own development and is unfair to all other students in the university. Cheating on exams, lab reports, quizzes, or tutorials, no matter how minor, will lead to an immediate **F** in the course and possible dismissal from Purdue.