

Physics Fundamentals

PHY 198.001 (Balduz) --- Fall 2013 Syllabus

Physics Department --- Mercer University

Text: College Physics, by Openstax College, ISBN-10(1938168003)/ISBN-13(9781938168000) PDF or web view (free), ebook (\$4.99), print (\$49.73).

Class Meetings: R 10:50am-1:30pm in SEB 215

Instructor: Dr. Jose L. Balduz Jr.

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office hours: MWF 11-12, 3-4, or by appointment (try email)...

Course web page: <http://physics.mercer.edu/balduz/GenPhys/phy198home.htm>

Please also see Physics Department home page at <http://physics.mercer.edu>.

This course is intended to help engineering students who are not yet ready for calculus and calculus-based physics. Every student in this course must also be enrolled in **MAT 133 Pre-calculus**. This combination (MAT 133/PHY 198) is intended for students with a weak high school math background and little or no high school physics. PHY 198 contains both lecture and lab components that will complement MAT 133 by providing additional mathematical practice in a scientific context. At the same time, students will learn basic elements of physics theory and lab work that will prepare them for **PHY 161 General Physics I**, a calculus-based introduction to physics for physical science and engineering students. The following (tentative list of) topics will be covered in sequence:

- Unit 1: **Introduction**. Ch. 1 (1-4)
- Unit 2: **Electric Current**. Ch. 20 (1-4), Ch. 21 (1)
- Unit 3: **Linear Kinematics**. Ch. 2 (108)
- Unit 4: **Sound**. Ch. 17 (1-4)
- Unit 5: **Nuclear Physics**. Ch. 31 (5)
- Unit 6: **Vectors** and **Two-Dimensional Kinematics**. Ch. 3 (1-5)

WebAssign and the eBook: Each student in the course must obtain an online account with WebAssign that will cost \$32.95 and will provide access to the online homework assignments, as well as access to the Openstax textbook (ebook), for one semester. The text is also available in (free) PDF and in (not free!) printed forms. Relevant links will be provided on the course webpage.

Course web page: Up to date information about the course schedule and content will be available on the course webpage, as well as basic conceptual material, examples, and solutions to in-class quizzes and exercises.

Class sessions: During scheduled class periods the instructor will discuss the theoretical and conceptual aspects of the course topics, present examples, go over solutions to textbook and homework problems, answer questions, ask questions to stimulate thinking and discussion. Occasionally we will see classroom demonstrations. We will often access and use the eBook online. We will have quizzes and group exercises, including labs.

Office hours: Please come see me! If you're doing well in the course, we can talk about physics concepts and the big picture; or about your life after Mercer; or other things... If you're not doing so well in this class, I can try to help you one-on-one, before you get too far behind. Typically that means talking about the material with you, but also having you work problems with me right in my office. There's no substitute for working through a problem yourself, with someone by your side that knows the way...

Homework (25% of total grade): Most or all weeks, there will be a homework assignment on WebAssign. Students may work individually or in groups, and they may use the textbook or any other resources except for the Instructor's Solutions Manual, which is considered off-limits. Although you are encouraged to work together, each student must submit their own answers, by the due date, electronically in their own account to receive credit.

Quizzes (25% of the total grade): Most or all weeks, there will be a quiz at the beginning of class, and/or one after group exercises. These may include both qualitative and quantitative questions. They will be *open-book*: I.e., students are allowed use of their calculator and a textbook, and whatever paper notes they want to bring. No laptops or other devices may be used.

Group exercises (25% of the total grade): Most or all weeks, there will be some form of in-class group exercises. Some of these will be similar to homework problems and quizzes. They will be *open-book*: I.e., students are allowed use of their calculator and a textbook, and whatever paper notes they want to bring. No laptops or other devices may be used. Others will be lab exercises,

which will always count as group exercises. Each student will be a member of a lab group. All data collection will be performed by the group. After that, each group must work to complete all data analysis, i.e. data tables and required graphs, before leaving the classroom. Sometimes students will have enough time to complete the entire lab procedure and the analysis during the session. Other times, there will not be enough time during the session, and it will be necessary to finish the analysis later. For some labs, students will hand in their work at the end of the lab session. **Lab reports:** For a typical lab, however, each group must submit a report containing data tables, graphs, conclusions, and answers to additional questions: For details please see "*Lab Report Guidelines*" handout. These reports will be prepared after the session and will be due on the day of the next session. For any report, each student who helped to prepare it must sign it, and everybody who signs it will receive the same grade.

Final exam (25% of the total grade): Monday, Dec 9, 9am-12

The final exam will consist of two parts. The first part will contain numerical problems on Introduction, Vectors and Kinematics (Chapters 1, 2, 3). The second part will contain only multiple-choice questions, and will be comprehensive, including all material covered in the course. The final exam will also be a *closed-book* test, with a formula sheet provided by the instructor.

GRADING SCALE: How much weight is given to each activity, in percentages of the total grade, is shown in the left table below. The final letter grade will be determined from the total grade using the scale shown in the right table below.

	total %
Homework	25
Quizzes	25
Group exercises (incl. labs)	25
Final exam	25
Total	100

	GP	%
A	4.0	90-100
B+	3.5	85-89
B	3.0	80-84
C+	2.5	75-79
C	2.0	70-74
D	1.0	60-69
F	0.0	0-59

ADDITIONAL NOTES

Syllabus changes: If changes to this syllabus are necessary, they will be implemented after discussion and negotiation with the students. The accompanying lecture and lab schedule is not a part of the syllabus: it is tentative and subject to revision.

Missed class sessions: To avoid hurting their grade, when a student misses a class session, they must convince the instructor that their absence was unavoidable or served a very good cause (e.g. when a student represents Mercer as part of a team). If their absence is not excused they will receive no credit for that day's class activities (quiz, lab, exercise). It is best to speak to the instructor ahead of time, or to present an official excuse from a Dean or team faculty advisor, or a doctor's excuse. There are no make-up activities. If a class session absence is excused by the instructor, their grade will be pro-rated for that session's activities - i.e. their final grade will not suffer.

Lab safety: Lab equipment may be hazardous to your health. Always follow the instructions of your lab instructor or their lab assistant, and consider the well being of your classmates as well as yourself... Think Safety First!

Lab manuals: The lab manuals (instruction sets and data tables) are viewable on computers in SEB 215. There will also be one copy of the lab instructions per lab station. Students may print completed data tables, graphs and lab reports during class; please do not print additional copies of the lab instructions.

Dropped grades: There will be no dropped grades. All work done in the course will be counted.

Extra credit: There will be no extra-credit work, except what is associated with the assessment post-test.

Honor Code: The College of Liberal Arts' academic misconduct policy will be followed. All students are bound by the Mercer University Honor Code... In addition, for all graded work completed in this class (except the online homework), each student must write their name on the paper, and they must sign the paper themselves; otherwise they will receive no credit. It is unethical, and a violation of the honor code of this university, for any student to submit work in person or online for credit, knowing that some person who may get credit did not contribute significantly to that piece of work. This applies not only to homework sets but also to quizzes, exams, term papers, lab reports and any other work you do at this or any other school...

Electronic devices: In order to maximize student engagement and to minimize sources of distraction, neither laptop computers nor

cell phones may be used when class is in session. Likewise, no student should communicate electronically with any person inside or outside the classroom by any means while class is in session. During quizzes and exams, no electronic devices of any kind may be used except for a calculator. Any device used in violation of these rules may be confiscated by the instructor for the duration of the class period. **Exception:** *Laptop use may be allowed, for note-taking and access to the course web page and the eBook, if this is not disruptive to other students, and if the laptop user pays attention to and remains engaged in the class. If this is not the case, or if any other use of the laptop is made, the instructor will ask the student to close the laptop, on a permanent basis. Nevertheless, it is strongly advised, that students take notes by hand and bring a paper textbook to class.*

Disability support: Students requiring accommodations for a disability should inform the instructor at the close of the first class meeting or as soon as possible. The instructor will refer you to the ACCESS and Accommodation Office to document your disability, determine eligibility for accommodations under the ADA/Section 504 and to request a Faculty Accommodation Form. Disability accommodations or status will not be indicated on academic transcripts. In order to receive accommodations in a class, students with sensory, learning, psychological, physical or medical disabilities must provide their instructor with a Faculty Accommodation Form to sign. Students must return the signed form to the ACCESS Coordinator. A new form must be requested each semester. Students with a history of a disability, perceived as having a disability or with a current disability who do not wish to use academic accommodations are also strongly encouraged to register with the ACCESS and Accommodation Office and request a Faculty Accommodation Form each semester. For further information, please contact Carole Burrowbridge, Director and ADA/504 Coordinator, at 301-2778 or visit the ACCESS and Accommodation Office website at <http://www.mercer.edu/disabilityservices>.

All requests for reasonable accommodation are welcome also in regard to absence from class for school representation (i.e., athletic or other events) or personal/family problems.