

Syllabus

Instructor: ***Sheng-Chiang (John) Lee***

SEB 206, 478-301-2599

Office Hours: MTWR 10 ~ 11am or by appointment

Lecture (SEB 143): MWF 11~11:50am

Lab (SEB 219): **R 12:15~2:55pm**

Pre-requisite: MAT 191

Textbook:

***Fundamentals of Physics, 9th edition,
by Halliday, Resnick, and Walker***

Course Description:

This course is the first of a 2-semester calculus-based introductory physics sequence. It serves as an introduction to the field of physics, which is a foundation of many other scientific and engineering disciplines. Although physical principles can/will be demonstrated in the class conceptually, they are all formulated through mathematical expressions. Therefore, students' hands-on ability in mathematical manipulations will influence the grades significantly. Students who take this course should be fluent in algebraic manipulations, trigonometry, power/logarithmic functions, and concepts/techniques of basic calculus.

The topics covered in this class include:

Kinematics, Newton's laws of motion, momentum, work, and energy; gravity; fluid dynamics and oscillations.

Objectives:

After taking this course, you are expected to

- Be familiar with the common scientific terminologies used in mechanics, e.g. force, energy, momentum, etc., and the units associated with them.
- Develop reasonable physical intuitions and be able to qualitatively AND quantitatively understand simple physical systems and predict their behaviors.
- Be able to apply scientific logic to solve unfamiliar physical problems analytically and quantitatively.
- Be able to apply acquired knowledge of physics in your understanding of the physical world.
- Generate a hypothesis to explain natural phenomena with the learned physical principles;
- Collect and organize experimental data in a format appropriate for studies of physics;
- Analyze data through the use of quantitative and/or qualitative scientific reasoning;
- Interpret a hypothesis in light of experimental evidence;
- Accurately communicate knowledge of physics, observations, analyses, and/or conclusions.

Grading Methods:

Grading Scale:

Score:	90+	85~89	80~84	75~79	70~74	60~69	59-
Grade:	A	B+	B	C+	C	D	F

Grading Components:

	Laboratory (20%)	Lecture (80%)			
	Refer to your Lab instructor	In-Class Quizzes	On-line Homework	Exams (3 mid-terms + 1 final)	iClicker
Weight:	20%	12%	10%	(8+12+16+20) = 56%	1+1 = 2%

Lecture Grades

In-Class Quizzes are problems that require solving skills. They are mostly taken from the textbook content of assigned readings or homework problems. All quizzes will be announced in the previous class, and **NO** make-up quizzes or other arrangement are available for unexcused absence or late for a class.

On-line Homework will be submitted and graded through the on-line homework/tutor system, *WebAssign*[®]. You may find more information below. Due date of each assignment will be announced in the class. No late submission will be accepted unless you have really compelling and legitimate reasons.

Exams are inevitably **accumulative**, since physics is an accumulative knowledge. You can not master more advanced topics without being fluent with the basics. However, exams will concentrate on the content covered in the corresponding periods, unless otherwise specified. All exams will be close-book. **A formula sheet will be provided**, and you should only bring your pen/pencil, calculator, blank paper for calculation, and your knowledge of physics to the exams. **No** make-up exams are available unless you are legitimately excused **prior to the exam**. Your grades will be posted on BlackBoard immediately after your work is graded. If there is any concern about your grades, you should discuss with me within **ONE** week after they are posted.

iClickers are used to facilitate in-class discussions through polling class responses to some conceptual questions. Your grades are based on your participation and correctness (half-half). Each student must have a unique iClicker[®] to use in the class throughout the semester (the same type used in many chemistry and biology courses at Mercer). You should be able to purchase them from the bookstore. There will be no make-up for missed iClicker[®] activities/grades. Missed grades may be waived if you have excused absence or legitimate reasons permitted by the instructor.

Laboratory Grades

There will be eight topics (units) of lab activities (tentative and subjected to adjustment based on progress in class), each of which is related to physical concepts learned in class. The grade of each unit is weighted equally toward the laboratory grades, and in general includes the following components. Variations from this description will be announced in advance.

Participation is mostly measured by how you work in your team during the lab periods. It is subject to the instructor's judgment.

Pre-Lab Quizzes. You should be prepared whenever you come to a laboratory. Though there is no formal lab manual for you, you will be provided with the general topic of the experiment and related reading materials in advance. You should read it before you come to the lab. A simple quiz will be given at the beginning of each set of lab activities to enforce this exercise.

Mid and Final Lab Reports. The activities of each topic usually take two to three weeks. At the end of each week, except for the last week of each topic, you will be asked to submit a short mid-lab report to summarize what you do in that week and your plan for the next. In the last week of each topic, whenever time allows, you will be asked to finish the report during the lab period. The hard deadline is one week after completion of the lab activities. Late reports will

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only be accepted within the first week after they are due and will suffer 20% loss of earned points. Each report should be **typed up using the provided report template**. The reports should follow the typical format: **double-spaced between lines; font-size = 12; 1 inch margin**. Each lab report is graded upon a 100-point scale. Details regarding the report format and grading will be discussed in class.

Class Evaluation

In an ongoing effort to improve the quality of instruction, each student enrolled in this course is required to complete the CLA standard survey on student perception of the course at the end of the semester. To supplement the CLA survey, each student is also asked to complete two other surveys that allow free written responses for more elaborative feedback. The CLA standard survey is administered by the University's **CoursEval** system and the two written evaluations are administered through **BlackBoard** during the last week of the semester. Students should complete these evaluations preferably by 12/05 and no later than 12/09.

More Information about *WebAssign*[®]

Each student in the course must purchase and obtain an access to the homework assignments administrated by **WebAssign** for this textbook. This access allows you to complete homework assignments online.

You will receive the “Class Key” on the first day of the class. You will use this key to enroll your **WebAssign**[®] account in this class (through [WebAssign[®] self-enrollment site](#)). You only need to do this once at the beginning of the semester. After then, you only need to log in through the [WebAssign[®] login](#) site to access the on-line homework system. You will submit all homework assignments through **WebAssign**[®], and they will be graded for 10% of your semester grade.

About Assessment

To evaluate the effectiveness of learning, there will be a pre-class assessment administered at the beginning of the semester and a post-class assessment at the end of the semester during the lab hours. The performance in the post-assessment may result in at most 1 point bonus added to the final grades following the following scales.

50-60% correct → 0.25 point

60-70% correct → 0.50 point

70-80% correct → 0.75 point

> 80% correct → 1.00 point

Important Dates:

Last Day for Course Withdrawal: 10/28/2016...

Final Exam: 12/15, Thursday , 9 ~ 12pm

Class Policies:

Attendance Policy: Attendance is not mandatory for lectures. However, students are solely responsible for the missed grades due to absence and learning the materials covered in the missed classes, including announcements. Attendance and active participation in labs are mandatory.

Class Etiquette: You are expected to conduct yourself in a respectful manner to your fellow classmates and the instructor. The instructor may ask you to leave the classroom/lab if your behavior is disturbing to the instructor or other students.

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Honor Code: You are bound by the Mercer honor code. The College's academic misconduct policy will be followed. All work, for which a grade is received, must be the **original** work of the **student** without aid or assistance of another party, or any printed and or electronic data/information. Academic misconduct cases will be referred to the honor council and the student will automatically receive a grade of incomplete (IC) pending a ruling by the honor council.

Cell Phone and Laptop Usage: Out of courtesy for all those participating in the learning experience, all cell phones must be **kept in your pocket/backpack with power/ringer off** before entering any classroom, lab, or formal academic or performance event.

Laptops may be used in class to assist individual's learning (e.g. to access on-line supplemental materials, to view provided class presentation and take note, etc.). However, using laptops for activities unrelated to the class is prohibited.

Warning will be given for the first-time violation. One semester credit will be taken for each following violation up to three times. If a student keeps violating the policy, one may be asked to leave the room by the instructor.

No cell phones/laptops are allowed during exam times.

General Education Course: The College of Liberal Arts is keenly interested in assuring the quality and integrity of its General Education Program. Every semester, randomly-selected students from each General Education course will be required to submit samples of their work to an independent and objective assessment by faculty. No personally identifiable information about any student will be used for the purposes of this assessment, and assessment results will have no bearing whatsoever on student grades.

Documented Disability Statement: *"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 ADAAA/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>.*

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Tentative Course/Lab Schedule: may vary according to class progress

Week	Topic	Reading
8/23 – 8/26 (2)	Measurements & Vector	Ch 1 & Ch 3
8/29 – 9/02 (3)	1D Motion	Ch 2
9/06 – 9/09 (2)	Labor Day ; Motion (2D/3D)	Ch 4
9/12 – 9/16 (3)	Motion (2D/3D); Review & 1st Exam	
9/19 – 9/23 (3)	Force I	Ch 5
9/26 – 9/30 (3)	Force II	Ch 6
10/03 – 10/05 (2)	Kinetic Energy and Work; Fall Break	Ch 7
10/10 – 10/14 (3)	Potential Energy and Conservative Force	Ch 8
10/17 – 10/21 (3)	Review & Midterm	
10/24 – 10/28 (3)	Conservation of Energy; Momentum	Ch 8 & Ch 9
10/31 – 11/04 (3)	Momentum; Rotation	Ch 9 & Ch 10
11/07 – 11/11 (3)	Rotation, Torque, and Static Equilibrium	Ch 10 & Ch 11
11/14 – 11/18 (3)	Review; 3rd Exam	
11/21 – 11/22 (1)	Thanksgiving	Ch 15
11/28 – 12/02 (3)	Angular Momentum	Ch 13
12/05 – 12/09 (3)	Oscillation; Gravity	Ch13 & 14
5/03 2-5pm	Final Exam	

Week #	Date	Lab #	Title
1	8/23 – 8/26		Introduction to Lab and Assessment: Pre-Test
2	8/29 – 9/02	1	Error Analysis: Density Measurement Take-home practice: Vector Analysis
3	9/06 – 9/09	2-1	Linear Kinematics 1 – dynamic cart/track
4	9/12 – 9/16		Review?
5	9/19 – 9/23	2-2	Linear Kinematics 2 – video analysis
6	9/26 – 9/30	3	Newton's Second Law
7	10/03 – 10/05		Fall Break – no lab
8	10/10 – 10/14	4	Work, Energy, and Conservation of Mechanical Energy
9	10/17 – 10/21		
10	10/24 – 10/28	5	Conservation of Linear Momentum
11	10/31 – 11/04	6	Static Equilibrium
12	11/07 – 11/11	7	Rotational Motions
13	11/14 – 11/18		
14	11/21 – 11/22		Thanksgiving – no lab
15	11/28 – 12/02	8	Periodic Motion
16	12/05 – 12/09		Assessment: Post-Test