

# PHY 121L Basic Physics Laboratory I

## Syllabus

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

SEB 244, 478-301-2599

Office Hours: MWF 1 ~ 2:30pm or by appointment

Co-requisite: PHY 141 or PHY 161

Textbook: ***Mercer University Physics Laboratory Manual***

The manual will be available on the physics laboratory web site for pre-lab reading.

Hard copies will be provided in each laboratory session.

### ***Course Description:***

In this course we will conduct experiments concerning vectors, kinematics, classical mechanics (including linear and rotational momentum and the conservation of energy, etc.), and thermodynamics. You will also learn how to use graphs to represent data and analyze experimental results. The basics of error analysis will be introduced, and you will learn how experimental uncertainty affects results. In some experiments, computers will be used to obtain data and analyze the results. You will come away from this class with hands on laboratory experience and the ability to conduct simple experiments.

### ***Objectives:***

After taking this course, you are expected to

- Be familiar with the experimental basis of the physical principles covered by the labs.
- Be able to make and interpret scientific plots.
- Be able to discuss the experimental uncertainty due to measurements, and draw conclusions from the experimental data.

### ***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:

	Pre-lab Quizzes	Lab		Bonus Points
		Participation	Reports	
Weight:	5%	10%	85%	≤ 4%

### **Pre-Lab Quizzes**

You should be prepared whenever you come to a laboratory. The lab manual contains the information you need for the experiments, and you should read it before you start doing anything. Simple quizzes will be given at the beginning of each lab session to encourage you to be prepared prior to the lab.

### **Lab Participation**

Lab participation is to measure your working attitude in the lab. It is subject to the instructor's judgment. Normally, unless you have really bad working attitude, you will get all 5%.

### **Lab Reports**

All reports are due at the beginning of the following lab. Late reports will 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:

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**double-spaced between lines; font-size = 12; 1 inch margin.** Typical reports will be graded upon 100 points, distributed as following.

1. Experimental Description (< 2 pages): 15 points
2. Instructor-signed Data Tables and Graphs (provided in your Lab Manual): 35 points  
You must **have the instructor sign the original data tables or graphs** you acquire in the lab before you leave the lab. Otherwise, your lab report **will not count** and will be graded with 0 point.
3. Discussion/conclusions (1 ~ 2 pages): 30 points
4. Answers to the questions: 20 points

Guidelines for reports of “inquiry-based” and other non-typical labs will be given when needed. Physics Laboratory Guidelines, which the style of your reports should follow, can be found at <http://physics.mercer.edu/labs/>.

### Pre/Post Assessment

All students are required to take the assessment tests in their first and last lab. These tests are issued by the department for assessment purpose. A pre assessment will be given in the first lab. Not finishing the assessment test properly (fill in you individual information and complete all questions in the test) will result in a penalty of 1% taken from 5% lab participation credit. However, the score in this test will not affect your final lab grades. A post assessment will be given in the last lab. Same policy applies to the post assessment test, except that your score in this test will determine the bonus points you will get. Following is the score ranges and corresponding bonus.

Less than 50%	50% ~ 59%	60% ~ 69%	70% ~ 79%	80% ~ 100%
No bonus	+1%	+2%	+3%	+4%

### Peer-Evaluation

You will be evaluated by your group fellows in the middle and at the end of the semester, and the evaluations will be kept confidential to the instructor only. Since the whole group receives a single grade for their report, it is not fair for the sloppy ones to get the same grade as the hard workers. Your true lab grades, therefore, will be scaled by your contribution. For instance, if your group receives an average lab grade of 90 in the first half of semester, but you only contribute 70% of what you should, then your lab grade will be  $90 \times 0.7 = 63$ . The purpose of the evaluations is to provide another measure of each group member’s contribution to the lab reports. I will use the evaluations as a reference, not a decisive judgment, when I conclude your contribution to your group work.

### Use of BlackBoard

BlackBoard will be used to post your grades as soon as your reports are graded. It is a web-based interactive program, through which other resources may be made available to you. You should use this to monitor your progress and grades in this course. If there is any concern about your grades, you should discuss with me within **ONE** week after they are posted.

### Class Evaluation

In an ongoing effort to improve the quality of instruction, each student enrolled in this course is required to complete an end-of-semester course evaluation, to be administered through **BlackBoard** during the last week of the semester. Students failing to submit the evaluation by 12/18 will be assigned the grade of “Incomplete,” which will automatically turn into an “F” if the evaluation is not submitted by the midterm of the very next semester.

### ***Important Dates:***

**Last Day for Course Withdrawal: 10/29/2009!!!!**

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### ***Class Policies:***

**Attendance Policy:** Attendance is mandatory. Make-up lab will only be available for excused absence, and the student will write the report by him/herself. In a rare case that a make-up can not be practically available for an excused student, the student should discuss with the instructor for other options.

***Special Note:*** *To prevent the spread of H1N1 (Swine Flu) or Seasonal Flu virus, if students have influenza-like symptoms, it is recommended to remain at home until at least 24 hours after you are free of fever (100°F or 37.8°C), or signs of a fever without the use of fever-reducing medications. Do not physically visit Student Health Center for it may help further spread the virus. The preferred method of making contact is via phone or e-mail.*

**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.

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

**Documented Disability Statement:** Students with a documented disability should inform the instructor at the close of the first class meeting. The instructor will refer you to the office of Student Support Services (SSS) for consultation regarding evaluation, documentation of your disability, and recommendations for accommodation, if needed. Students will receive from SSS the Faculty Accommodation Form. On this form SSS will identify reasonable accommodations for this class. The form must be given to the course instructor for signature and then returned to SSS. To take full advantage of disability services, it is recommended that students contact the Office of Student Support Services, immediately. The office is located on the third floor of the Connell Student Center.

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### ***Lab Schedule:***

<b>Week</b>	<b>Lab #</b>	<b>Topic</b>
8/25 – 8/28		<b>First Week of Classes - No Labs</b>
8/31 – 9/04	1	Pre-Assessment/ Vector Analysis
9/07 – 9/11	2	Error Analysis: Density Measurement
9/14 – 9/18	3	Linear Kinematics
9/21 – 9/25	4	Projectile Motion
9/28 – 10/02	5	Newton's Second Law
10/05 – 10/09	6	Energy Conservation
10/12 – 10/16		<b>Fall Break</b>
10/19 – 10/23	7	Hydrostatics
10/26 – 10/30	8	A Survey of Thermodynamics
11/02 – 11/06	9	Static Equilibrium
11/09 – 11/13	10	Moment of Inertia and Rotational Energy
11/16 – 11/20	11	Angular Momentum
11/23 – 11/27		<b>Thanksgiving Break</b>
11/30 – 12/04	12	Periodic Motion
12/07 – 12/11	13	Assessment Post-Test