PHY 1420 Theory Labs Syllabus

Welcome to PHY 1420 Theory Labs! **Please read this syllabus very carefully!** Failure to read the syllabus will not be an excuse for an exception to any policy stated within the syllabus.

The objectives of the Theoretical Laboratory Experiments (TEs) are for you to:

- Gain conceptual understanding of fundamental physics.
- Gain operational understanding of physical quantities.
- Be able to interpret, in simple but clear language, representation of physical quantities such as numbers, equations and diagrams.
- Be able to solve physics problem via interactions with other students and Teaching Assistants (TAs).

Theoretical Laboratory Experiments Announcements
All announcements regarding the theoretical lab experiments will be posted on Canvas. A copy of this syllabus can be downloaded from the Baylor Physics Labs webpage: www.baylor.edu/physics/theorylabs

Theoretical Laboratory Experiments Supervisor
Professor Jeff Lee Jeff_Lee@baylor.edu

Office Hours
By appointment (send an email to arrange).

Texts
PHY 1420 & PHY 1430: Tutorials in Introductory Physics (with Homework book) by Lillian McDermott, Peter Shaffer etc.

Note: Some of the questions assigned by your TAs may be from these books.

Safety
1. You are expected to be familiar with the entire safety section in the lab manual. Failure to follow theserules may result in your removal from the Theoretical Laboratory Experiments room and will have a negative impact on your grade.

2. **Food and beverages are not allowed in the Theoretical Laboratory Experiments room.** You mustleave these things outside or keep them in your closed backpacks. This includes personal water bottles! *Students with food or beverage containers in the TE room will be asked the leave the TE room and will receive a zero for that TE. NO exceptions. This is your warning.*

3. **You must wear closed-toed shoes in lab, no sandals.** If you forget to wear closed-toed shoes then you will be required to leave the TE room, and you will receive zero for that experiment.

Baylor University Equity, Civil Rights, and Title IX

Civil Rights Policy and *Sexual and Interpersonal Misconduct Policy*

Baylor University does not tolerate unlawful harassment or discrimination on the basis of sex, gender, race, color, disability, national origin, ancestry, age (over 40), citizenship, genetic information or the refusal to submit to a genetic test, past, current, or prospective service in the uniformed services, or any other characteristic protected under applicable federal, Texas, or local law (collectively referred to as Protected Characteristics).

If you or someone you know would like help related to an experience involving:

1. Sexual or gender-based harassment, sexual assault, sexual exploitation, stalking, intimate partner violence, or retaliation for reporting one of these types of prohibited conduct, please visit www.baylor.edu/titleix, or contact us at (254) 710-8454, or mailto: TitleIX_Coordinator@baylor.edu.
2. Harassment (excluding those issues listed in #1) or adverse action based on Protected Characteristics, please visit www.baylor.edu/civilrights, or contact us at (254) 710-7100 or Civil_Rights@baylor.edu.

The Baylor University Honor Code will be strictly enforced. Details of this policy can be found at http://www.baylor.edu/student%5Fpolicies/index.php?id=32287

Theoretical Laboratory Grade:

1. Your numerical theoretical laboratory average is provided to your lecturer at the end of the course. Theinstructor of your physics class will determine the percentage it will count towards your final grade.

2. Your theoretical laboratory grades will be entered on *Canvas*. **Check your grades frequently to ensure that your grades have been recorded correctly.** If your grades are not posted or the gradesare posted incorrectly, notify your TA or Professor Lee.

3. **Save all your graded work until the end of the course**, then either your TA or Professor Lee can verify thecorrect grade and revise the recorded grade accordingly.

No Theoretical Laboratory grades will be changed after 4:00 pm on Tuesday November 30, 2021.

Theoretical Laboratory Experiments: There are two components: 1. Theoretical lab work & participation. 2. Homework assignments.

Theoretical lab work & participation: During the theoretical lab experiments you will work in groups of 3 to 5 students to complete the relevant work. You must carefully follow all instruction given in the question(s) and by your TA. You will work *together*, while the TAs will assist you to be on the right track by engaging you in dialogue. The point of the Theoretical Laboratory Experiments is to work constructively and cooperatively in groups. Your grade for this part of the class is based on your participation. Participation means trying your best to understand the material yourself and convince others of your answers through active and patient dialogue. You will **not** be able to get the full grade if you do not participate in discussions with the others and the TAs. Your participation will be graded by your TA at the end of each Theoretical Laboratory session according to the following guideline:

Participation Level	**Participation Grade**
Actively participates in discussion with other members of the group and the TA's	3
Reluctantly participates and tries to understand the materials	2
Passively participates	1

You are expected to show up to your classes on time. If you are late to class by 5 minutes you lose 1 participation point, and if you are late to class by 10 minutes you lose 2 participation points. Except under exceptional circumstances, no one is admitted 15+ minutes after classes start.

Homework assignments: At each theoretical lab experiment session, you will be assigned 1-3 homework problems, some of which will be from the homework book of the *Tutorials in Introductory Physics*. These homework assignments are due at the beginning of your next Theoretical Laboratory Experiment class. **Homework cannot be turned-in after the class has already begun (see note on late assignments below)**. The homework assignment will carry 3 points. Only one of your homework problems will be graded (chosen randomly).

The graded homework will carry 3 points. You are strongly encouraged to work on your homework assignments in groups as you do in the TE classes. However, under no circumstances should you copy another's homework. Points will be taken off if evidence is found that you copied your homework from someone else (**this is a potential violation of the Baylor Honor Code**). You are strongly encouraged to finish your homework assignments well before they are due. Past experience has shown that last minute or rushed homework assignments hardly ever get good grades.

In summary, your total grade for each theoretical lab will be out of 6 (3 for participation in class + 3 for homework assignments). Each of these will be posted separately on Canvas for each theoretical lab.

Absences

1. **Scheduled Absences:** If you think you will be absent from a theoretical lab experiment for a *university-sanctioned* event (athletic contest, band trip, debate, etc.), then email Professor Lee at least one week before leaving for the event. It is not possible to arrange make-ups for the theoretical lab experiments. However, if you are excused from attending a particular theoretical lab experiment for a *university sanctioned* event, that grade will be dropped. Homework assignments are not excused, and they are due on time. If you think you will be absent on a certain day make sure that you turn in your homework through a friend, or have it reach your TA before the due class starts. Circumstances that absolutely prevent you from giving one week's notice will be considered. This does not include club-related events.

2. **Unscheduled Absences:** If you miss a theoretical lab experiment for *any reason*, then email the Professor Lee within **two days** after the absence. He will consider dropping the theoretical lab that you have missed but only with the support of valid documentation (e.g., Doctor's or Counselor's note.)

3. **Attendance Requirement:** The College requires 75% attendance. Since there are 10 theoretical labs, you must attend at least 8 theoretical lab sessions.

Note that missed Theoretical Lab Experiment grades will be dropped only after you present valid documentation. No Theoretical Lab Homework grades are dropped. So, for example, if you were suddenly taken ill, you should have your homework sent by a friend, and make sure that you go and see a doctor and get a document saying that you were ill on the day of the missed class. You are strongly encouraged to have your homework assignments finished well before they are due, so that in case of an unforeseen unscheduled absence, you don't lose your homework grade.

Lab Equipment: The equipment used in the laboratories is often expensive and difficult to replace. If you damage lab equipment, we will send you a bill. Do not put your book packs on the equipment!

Special Circumstances: If you have specific physical or learning disabilities and require special accommodations, please contact Professor Lee early in the semester, so that your learning needs may be appropriately met. Letters from the Office of Access and Learning Accommodation should be presented to Professor Lee, not your TA.

Free Physics Tutors: Physics tutors are available through the Physics Department. The tutor schedule is available through a link on the physics webpage. The tutoring area is between room E.331 and Stairway# 7 in the Baylor Science Building.

Conflicts: If you have any problem with this course, you should first discuss it with your TAs. They are there to help. You will find that they are generally willing to assist in any way that they can. In the event that you encounter a problem that you are unable to resolve with your TAs, feel free to contact Professor Lee.

Comments and Complaints: If you have comments or complaints about your TAs or the Theoretical Labs in general, please send them to Professor Lee.

Some Additional Details: In this section, 1-3 homework questions will be assigned for each of 10 Theory Labs. The questions will be from the *Tutorials in Introductory Physics* book by McDermott & Shaffer, and some questions will be from elsewhere and provided to you.

For each lab, **one** of the assigned questions will be chosen at random, by your TA, to grade. Therefore, it is obviously wise to do all of the assigned questions. The grade for each graded question will be appropriately prorated out of 3 points.

Complete each question thoroughly. Point form and short answers are generally acceptable, but the answers must be complete (one word is rarely a complete answer).

In order to receive full points for a calculation, it is necessary to show your steps, not just the answer. Therefore, when a formula is required for the calculation, please state the formula, plug in the numbers used for that calculation, and then give the answer with appropriate units.

Here is a trivially simple illustrative example.

Example: Calculate the average speed of a car that travels 80 m in 4 s.

Solution:

$$v = \frac{d}{t}$$
$$v = \frac{80\ \text{m}}{4\ \text{s}}$$
$$v = 20\ \text{m/s}$$

Assignments are to be submitted to your lab TA (hard copy) unless instructed otherwise by your TA. Do not submit assignments to Professor Lee.

All assignments are due at the beginning of the class after they are assigned. Please see the chart of due dates below. **Note that we do not have a Theory Lab every week. It is your responsibility to adhere to the schedule below!**

Extensions on assignments are not given, and late assignments receive the grade of zero!

Theory Lab #	Date Assigned (Week Of)	Date DUE (Week Of)	Lab Topic (PHY 1420)
1	August 30, 2021	September 6, 2021	Velocity
2	September 6, 2021	September 13, 2021	Acceleration
3	September 13, 2021	September 20, 2021	Forces
4	September 20, 2021	September 27, 2021	Newton's 2nd and 3rd Laws
5	September 27, 2021	October 4, 2021	Work & The Work-Energy Theorem
No Lab	**October 4, 2021**	**N/A**	**No Lab**
6	October 11, 2021	October 18, 2021	Conservation of Momentum in 1D
7	October 18, 2021	October 25, 2021	Rotational Motion
8	October 25, 2021	November 1, 2021	Pressure in a Liquid
No Lab	**November 1, 2021**	**N/A**	**No Lab**
9	November 8, 2021	November 15, 2021	Superposition and Reflection of Pulses
10	November 15, 2021	November 29, 2021	Ideal Gas Law

Your TA will give you instructions on how to submit Lab #10.