

# PHYS 226 – Spring 2022

## Physics of Forces and Motion Laboratory

### INSTRUCTOR INFORMATION

Instructor of record: Ali KAYA

Teaching Assistant: As determined in Canvas. This will be the primary point of contact for the student.

Telephone: 609-592 5799

Email: [alikaya@tamu.edu](mailto:alikaya@tamu.edu)

Office: MPHY 302

Office hours: Please email the instructor or teaching assistant to arrange an appointment.

### COURSE DESCRIPTION AND LEARNING OBJECTIVES

*Physics of Motion* Laboratory for students in the sciences. This is the first semester laboratory to accompany a two- semester course sequence in introductory physics. This class will meet weekly in a 110 minutes block to carry out various experiments. Topics include material covered in a typical calculus-based introductory physics course on the principles of mechanics and motion.

- Skills to gain: Ability to carry out simple experiments and analyze the data collected to understand a variety of basic physics concepts. Become familiar with a variety of laboratory devices and how to use them to make measurements. See learning outcomes listed below.

PHYS 226 is a core-curriculum course, and as such it has the following learning objectives:

- *Critical Thinking: creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.*
- *Communication: effective development, interpretation and expression of ideas through written, oral and visual communication.*
- *Empirical & Quantitative Skills: manipulation and analysis of numerical data or observable facts resulting in informed conclusions.*
- *Team Work: ability to consider different points of view and to work effectively with others to support a shared purpose or goal.*

### PRE-REQUISITES

MATH 151 or 171. A working knowledge of plane geometry, trigonometry, and algebra; a working knowledge of derivatives and integrals; proficiency in the use of vectors (addition, subtraction, dot and cross products).

### TEXT AND OTHER REQUIRED MATERIALS

- All text and required material for this lab course is hosted on Canvas ([canvas.tamu.edu](https://canvas.tamu.edu)). There is nothing for you to buy.
- Students are required to have a laptop computer that meets the specifications of the university (see [TAMU's BYOD](#)), as well as access to a working Microsoft Excel application. TAMU provides students with access to Microsoft 365 at [office365.tamu.edu](https://office365.tamu.edu) and it includes Excel among other Microsoft products.
- You will also may need to consult your PHYS 206 textbook.
- It is strongly recommended that you use your TAMU Google Drive for teamwork. You will need do their fair contribution to the data collection and analysis of the report. If a student fails to
- how to set this up will be provided on Canvas.

## MODE OF INSTRUCTION

There are 6 lab projects in this course targeting different physics concepts. Labs meet in the Mitchell Physics Building, room 236 (MPHY-236) at their assigned time. Students will work in teams of up to three to collect, and analyze data and to produce a team-report. The activities and deliverables of individual lab projects are described in the manual of the lab, which will be available in Canvas in due time.

Labs are two-week long and each lab has the following structure:

- **1<sup>st</sup> Week - Data collection:** the team initiates the lab project by performing the data collection as indicated in the lab writeup **in-person** at the lab room. In this step the usage of data-acquisition equipment, programming tools, and analysis software is strongly emphasized to give the students the familiarization to the tools and methods used.
- **2<sup>nd</sup> Week - Lab Report Creation and Submission:** during this week students do NOT come to the lab room. Instead, students of team will self-organize, create a report following the guidelines in the writeups, and submit their report in Canvas. Details on what is expected in the lab reports are provided in the writeup as well.

## MEETING TIMES

Students will be randomly assigned a group number (group 1 or 2) that identifies the specific weeks to perform the in-person Data-collection portion of the lab. Your instructor will assign you to one of the weeks; please do not attempt to attend the lab when it is not your week.

Students who show up to the data-collection week will be arranged in teams of up to 3 students on the spot by the TA. The team will jointly collect the data, analyze the results, and submit a single joint lab report, explicitly naming contributing authors, in the span of two weeks. The same grade will be applied to all members of the team. It is expected that:

- ALL students in a team do their fair contribution to the data collection, data-analysis, and writing of the lab report.
- A student who did not do their fair share of work towards the report should not be named as an author on the report.
- If a team is concerned that a given member is not doing his/her fair share the team should make a good faith attempt to remedy the situation at least a week before the report's due date. If that does not work the team should email the instructor and indicate that their report will not contain the name of one student.

## ABSENCES

Only in the case of [officially excused absences](#) will a student be allowed to remedy a missed lab report. Consistent with Rule 7.3, students are required to notify their instructor and/or their T.A. by the end of the second working day after their absence, and documented proof must be presented within one week of the last date of the absence.

**Student Activities:** Note that only those activities marked as “authorized” in the [TAMU's Official Activities calendar](#) constitute university excused absences. Activities missing from that calendar or labeled as “sponsored” DO NOT constitute an university excused absence.

Students missing the data-collection week without a university-excused absence will obtain a zero in the missed lab report.

Students missing the data-collection week and have a university-excused absence will be provided with already-collected data sets and videos showing how the data was collected. Lab reports will be created and submitted individually by the student in the span of two weeks.

## LAB SCHEDULE AND DUE DATES

Weeks run from Monday to Friday.

Week		Lab Schedule
#	Date	M/T/W/R Labs
1	(01/18-01/21)	<b>No Lab</b>
2	(01/24-01/28)	Lab 1: Error analysis (group 1)
3	(01/31-02/04)	Lab 1: Error analysis (group 2)
4	(02/07-02/11)	Lab 2: Visual Odometry (group 1)
5	(02/14-02/18)	Lab 2: Visual Odometry (group 2)
6	(02/21-02/25)	Lab 3: Forces (group 1)
7	(02/28-03/04)	Lab 3: Forces (group 2)
8	(03/07-03/11)	Lab 4: Collisions (group 1)
9	(03/14-03/18)	<b>No Lab, Spring Break</b>
10	(03/21-03/25)	Lab 4: Collisions (group 2)
11	(03/28-04/01)	Lab 5: Rotational Motion (group 1)
12	(04/04-04/08)	Lab 5: Rotational Motion (group 2)
13	(04/11-04/15)	Lab 6: Harmonic Motion (group 1)
14	(04/18-04/22)	Lab 6: Harmonic Motion (group 2)
15	(04/25-04/29)	<b>Last Report due by 05/01</b>

The lab reports will have to be submitted to Canvas by the time and date specified in the system. Students can submit up to **3 days late** with a **penalty of 0.5% of their grade per hour late** (36% maximum late penalty).

## COURSE ASSIGNMENTS AND GRADING POLICIES

There are 6 lab assignments over the course of the term totaling 100% of the course total score. The individual contribution of each lab to the total score is shown in Table 1 below. The mapping of the course score to the final letter grade is shown in Table 2:

*Table 1: Percentage contribution of each lab report to the total score*

Lab #	Percentage of grade (%)
Lab 1	14
Lab 2	18
Lab 3	14
Lab 4	18
Lab 5	18
Lab 6	18
<b>Total</b>	<b>100</b>

*Table 2: Letter grade associated with the score*

Grade	Score Range
A	85-100
B	70-84
C	55-69
D	40-54
F	<40

## COURSE EXPECTATIONS:

You are expected to:

- Use your Canvas account (<http://canvas.tamu.edu/>) to access course information, assignments, and your grades.
- Always use your @tamu.edu e-mail account to send correspondence between yourself and the teaching instructors. Always include your section number in the subject line for all correspondence. Check your @tamu.edu email account daily.
- Be an active problem solver, contributor, and discussant during the labs and report preparations.
- Be prepared and accountable by reading the assigned material ahead of time and be able to answer simple questions over said material.
- Use a mask and abide to social distancing while in the lab rooms and TAMU buildings as discussed in the section below titled "**COVID-19 Temporary Amendment to Minimum Syllabus Requirements**"

# University Policies

## Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

## Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

## Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" ([Section 20.1.2.3, Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).

**NOTE:** Faculty associated with the main campus in College Station should use this Academic Integrity Statement and Policy. Faculty not on the main campus should use the appropriate language and location at their site.

## Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

**NOTE:** Faculty associated with the main campus in College Station should use this Americans with Disabilities Act Policy statement. Faculty not on the main campus should use the appropriate language and location at their site.

## Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled,

including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](#) (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).

**NOTE:** Faculty associated with the main campus in College Station should use this Title IX and Statement on Limits of Liability. Faculty not on the main campus should use the appropriate language and location at their site.

### Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](#).

### COVID-19 Temporary Amendment to Minimum Syllabus Requirements

The Faculty Senate temporarily added the following statements to the minimum syllabus requirements in Fall 2020 as part of the university's COVID-19 response.

#### *Campus Safety Measures*

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices for the Fall 2020 academic term to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- Self-monitoring—Students should follow CDC recommendations for self-monitoring. **Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.**
- Face Coverings—[Face coverings](#) (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the [Face Covering policy](#) and [Frequently Asked Questions \(FAQ\)](#) available on the [Provost website](#).
- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the [Student Conduct office](#) for sanctions. Additionally, the faculty member may choose to teach that day's class remotely for all students.

#### *Personal Illness and Quarantine*

Students required to quarantine must participate in courses and course-related activities remotely and **must not attend face-to-face course activities**. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence (See [Student Rule 7, Section 7.2.2](#).) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7. While Student Rule 7, Section 7.3.2.1, indicates a medical confirmation note from the student's medical provider is preferred, **for Fall 2020 only, students may use the Explanatory Statement for Absence from Class form in lieu of a medical confirmation. Students must submit the Explanatory Statement for Absence from Class within two business days after the last date of absence.**

#### *Operational Details for Spring 2021 Courses*

For additional information, please review the [FAQ](#)