



PHYS 2425.02E University Physics 1

COURSE SYLLABUS: Spring 2026

INSTRUCTOR INFORMATION

Instructor: Dr. Robynne Lock

Office Location: STC 238

Office Hours: TBD

University Email Address: robynne.lock@etamu.edu

Preferred Form of Communication: Email

Communication Response Time: 48 hours

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Video “textbook” https://youtube.com/playlist?list=PL6gcWzXb-Ezp0gJX68ttmpz6_Ts8TXTDC

A free textbook: W. Moebis, S.J. Ling, and J. Sanny, *University Physics Volume 1*, Open Stax, Available freely online at <https://openstax.org/details/books/university-physics-volume-1>

Free nontraditional textbooks:

- G. Elert, The Physics Hypertextbook, Available freely online at <https://physics.info/>
- S.A. Hill, How Things Move, Why Things Move, Available freely online at <http://howwhy.sahill.us/>

In lieu of a course packet or lab manual, all class activities are digital and can be found in D2L or linked in D2L. Many activities are in the form of Google Docs. You should be able to work off of a laptop/tablet/etc. during class (class laptops are available). **However, sometimes the internet in our classroom is not great, so you might want to download or print activities before class.**

If you want a more standard textbook, my favorite is Knight’s Physics for Scientists and Engineers. I don’t require it because it is expensive, but if you find a cheap copy of an old edition, I highly recommend it.

Course Description

Calculus based physics course in mechanics for science, mathematics, and engineering students.

Prerequisites: MATH 2413 with a minimum grade of C or concurrent enrollment.

The syllabus/schedule are subject to change.

Student Learning Outcomes

Momentum and Impulse

- pJ1. Demonstrate reasoning with momentum and impulse in word form- Use cause and effect statements
- pJ2. Distinguish between changes in momentum and changes in velocity
- pJ3. Solve conservation of momentum problems
- pJ4. Solve impulse problems

Dynamics

- D1. Draw clearly labeled and properly formatted free-body diagrams for systems indicating the type of force, what is acting, and what is being acted on.
- D2. Use Newton's first and second laws to determine what the net force is based on an objects' motion and vice versa
- D3. Understand how friction works for objects that are not moving, objects that are about to move, and objects that are already moving
- D4. Translate free-body diagrams to net force equations.
- D5. Use Newton's second law to solve problems.
- D6. Determine when forces are a Newton's third law pair and how that affects their relative magnitudes
- D7. Demonstrate understanding of tension.
- D8. Understand what apparent weight is and how it changes with acceleration
- D9. Identify centripetal forces

Work and Energy

- WE1. Explain physical situations using the conceptual meaning of work
- WE2. Calculate work for constant or variable forces.
- WE2. Use the work-energy theorem to explain how an object's or objects' velocity(ies) change based on force(s) and displacement and vice versa
- WE3. Solve problems using the work-energy theorem.
- WE4. Explain changes in energy in words and with graphs
- WE5. Understand what is meant by a force being conservative or nonconservative and how this relates to energy conservation
- WE6. Solve problems using conservation of energy.
- WE7. Understand the equations for the final velocities in a perfectly elastic collision conceptually
- WE8. Understand how to use a potential energy graph to understand the physical behavior of an object

Kinematics

- K1. Convert from a verbal description to graphs of position vs time, velocity vs time, and acceleration vs time.
- K2. Convert from a graph of motion (position, velocity, and acceleration) to a verbal description.
- K3. Convert from one graph of motion to another type of graph of motion (position, velocity, and acceleration).
- K4. Convert between position, velocity, and acceleration functions using calculus.
- K5. Solve problems using constant acceleration and constant velocity equations in: One dimension
- K6. Solve problems using constant acceleration and constant velocity equations in: Two dimensions

Rotation

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- R1. Explain physical situations using the physical meanings of torque and angular acceleration
- 5b. Solve problems using Newton's second law for rotation.
- 5c. Explain physical situations using the physical meanings of angular momentum and moment-of-inertia
- 5d. Solve problems using conservation of angular momentum.

Problem-solving

- PS1. Understand equations as reasoning tools
- PS2. Draw sketches and/or diagrams that are helpful for solving the problem, including coordinate systems.
- PS3. Use a clear system for labeling quantities with letters and do algebra with symbols
- PS4. Explain a plan for how to combine equations without doing the algebra PS4. Identify relevant physics principles and equations
- PS5. Use calculus to calculate physical quantities and solve problems
- 8d. Check for reasonableness by making a ballpark guess before doing calculations and comparing your results
- 8e. Assumptions

Units

- U1. Convert between units
- U2. Label units using SI system throughout work
- U3. Show how units work out in final equations.

Vectors

- V1. Understand what a vector component is and be able to calculate it
- V2. Write vector equations in component forms
- V3. Graphically add and subtract vectors

Learning skills

- L1. Prepare for class by bringing notes on provided materials
- L2. Contribute to in-class group work
- L3. Complete homework
- L4. Reflect on learning progress
- L5. Describe what it means to be a physicist

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students should be able to use D2L (myLeo Online), view videos on YouTube, use a calculator, use Excel and/or a graphing calculator or app, convert work to a pdf, take screenshots, use a variety of online communication methods such as Zoom, D2L, and email.

Instructional Methods

This class is being taught in studio mode. Studio mode is a student-centered active learning environment that blends lecture time with lab time. Lecture and/or readings will be used to introduce topics. The majority of class time will be focused on group activities. Activities will include conceptual work, labs,

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and problem solving. Activities will be completed in groups of 2-4. The instructor will assign groups. Groups will be changed 2-3 times during the semester.

Physics education research has shown that students learn best when actively engaged in class. Studio mode has been implemented at many universities and has been found to have positive impacts on conceptual understanding and problem-solving ability.

Physics can feel hard, but you can do it if we all help each other. It is very important that you ask questions, share your work, discuss your ideas, and ASK QUESTIONS. We are a learning community 😊

Our class is a learning community.

You could watch online physics lecture videos for free. I want you to get value from your college experience that the internet cannot provide. We help each other learn. We learn to work together and learn to communicate. I am here to help you.

What we do

- Find our current unit on the left hand content menu.
- There will be reference material for you to read/watch before or after class.
 - o I have video lectures for almost all of the material. While they contain similar content to in class lectures, the examples are normally different, and I know people like more examples. Video lectures may be required as homework.
 - o I have a page called Textbooks/reference materials, and you can use anything in there if you are looking more perspectives on the course material.
- I will lecture some. I try not to lecture more than about a third of total class time on average.
 - o You need to be actively engaged to learn, and a lot of people have a hard time actively engaging during lecture (myself included).
 - o Make sure to take good notes during lecture. Some of you are probably already expert note takers, but some people probably aren't. If you are taking pictures of the board, rewrite the board in your own handwriting from the pictures later to help yourself actually process the material.
 - o *Do I have to take notes?* Yes? How else are you going to keep track of everything?
- You will work on group assignments during class.
 - o The GA, LAs, and I will help you through it. I will strive to be clear on what you should be learning from each assignment.
 - o Group work will be checked during class to make sure you are understanding what you need to.
 - o *Do I have to work in a group?* Yes, if your group is working well together, you will learn more this way. I am fully aware that learning to get the most out of group work is difficult, and I am trying to figure out how to teach these skills more deliberately. I am open to suggestions. You need teamwork skills and communication skills for your career anyway.

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Student Responsibilities or Tips for Success in the Course

- Come to every single class (unless you are sick).
- Email me if you have to miss class.
- Do all of your homework.
- Write summaries of what you learned at the end of every class.
- Students should keep handwritten notes. Handwriting helps your brain process information. Organize your notes so that information is easy for you to find when you need it.
- When watching videos, take notes and pause the video to give yourself time to process. Work examples with me.
- Learn about learning. The most important thing you can learn in college is how to learn well. You will need to learn new skills and knowledge throughout your whole life.
- The most important thing you can do is to **ask for help** when you need it. **I love when students come to my office!** Then I can help you, and you are also helping me become a better teacher.

GRADING

What do grades mean? Why do we grade? What are grades used for?

You have probably spent over a decade in an education system in which you are regularly assigned grades. These grades may reflect completion of assignments, timeliness, understanding of the material at a snapshot in time, a difficult time in your life, how many demands there are on your time, and many other things. Grades, in theory, should have been used to determine your readiness for college and used in college admissions. Grades, in theory, could be used by potential employers to determine if you can perform well in their jobs. But do grades actually predict your success in college or in life, however you may define success? As it turns out, grades are surprisingly poor predictors of “success” however you may define it (S.D. Blum, *Ungrading: Why rating students undermines learning (and what to do instead)*, Morgantown: West Virginia University Press, 2020).

College is supposed to be about learning.

Most students in this class take it because they are required to. In fact, our current financial aid systems make it difficult for students to take any class “for fun”. Most people go to college so that they can get a well-paying job, and that makes sense. College is expensive. However, it’s important to know that college is more than gaining skills that are obviously applicable to any given job. The most valuable thing you can learn in your class is *how to learn and to think critically*. The specific skills needed for any job are going to change over our lifetimes, and you need to be able to handle that. Aside from career reasons, college is valuable for preparing you to be a responsible citizen in a democracy. I don’t think anybody wants to be taken advantage of because they don’t understand something on a deep level. All of your classes are important, the humanities (e.g. English and history) included.

How can we return the focus of our class to learning instead of stressing about grades?

I use standards (learning goal) based grading. This is an improvement over traditional grading because grades directly reflect what you can do. Grades are weighted by learning goals rather than by assignment, so it will probably look different than what you are used to. If you are confused, please ask! D2L is not really built for standards-based grading, so I know it can look confusing. The most important aspect of this system is the opportunity for revisions. Anything you work on professionally will go

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through cycles of review. When I write a paper, it gets reviewed, and I have to revise it. When I develop class activities, I revise them after I see what actually happens in class. You will be able to revise your work so you can learn from your mistakes. I hope the opportunity to revise will also reduce your stress so that you can focus more on learning.

Grading scale

In this class, I use standards-based grading. This means that your grades are determined by your scores on specific learning outcomes. I assess how you are doing on most learning outcomes through weekly individual progress assessments. Each question will be labeled with which learning outcomes are being assessed. Learning outcomes related to your learning skills will be based, your preparation for class, on your participation in group work during class, and doing homework and learning reflections.

The grade calculation is as follows:

10%	Momentum and impulse
20%	Dynamics
10%	Work and energy
10%	Kinematics
5%	Rotation
10%	Problem-solving
5%	Units
10%	Vectors
20%	Learning skills

(Homework and daily in-class group work are part of learning skills.)

The letter grade scale is:

A	90.0-100%
B	80.0-89.9%
C	70.0-79.9%
D	60.0-69.9%
F	0-59.9%

You **MUST** turn your work in on time. I don't accept late work (because my past students told me not to). (I will in extenuating circumstances. I'm not a monster. ☺)

Assessments

Individual progress assessments will be weekly, and **you can make revisions to them as many times as you need/want to.****** There will be time to work on revisions during class. You are required to talk to an instructor about your revisions before turning them in, or I will not evaluate them.

In order to be allowed to make revisions, you MUST meet the following requirements:

- You did the homework that was due the day of the assessment.
- You brought a cheat sheet to the assessment.
- You participated in good faith in the majority of group assignments the prior week.

I have these rules to improve your learning. You're not getting the most out of this class if you are not doing these things.

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You should expect to need to make revisions on most individual progress assessments. This is not a bad thing. You should not feel discouraged. Everything I submit in my professional career needs to be revised. This is really closer to how real projects work. I am just holding you to a high standard and trying to support you in learning as much as possible.

Absent/Late work policy

- You must email me within 24 hours of missing class, or you will not be allowed to make up any work that you missed. This applies to both individual assessments and to group work. **You may not make up more than 3 missed individual progress assessments.**
- Late homework is not accepted at all.
- Exceptions can be made for extreme circumstances such as hospitalization, but you have to communicate this to me as soon as you possibly can.

Course Outline/Calendar

Classes begin Monday, 1/12.

Content schedule

Weeks 1-2 (1/12-1/25)	Momentum and impulse
Weeks 3-8 (1/26-3/8)	Dynamics
Weeks 9-10 (3/16-3/29)	Work and Energy
Weeks 11-13 (3/30-4/19)	Kinematics
Weeks 14-15 (4/20-5/1)	Rotation
Week 16 (5/4)	Finals week

Schedule is tentative and may be adjusted depending on the pace at which we cover material.

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

Zoom Video Conferencing Tool

https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

The syllabus/schedule are subject to change.

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

STUDENT RESPONSIBILITIES FOR COURSE

CWID and Password

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

Technology-Related Issues

Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a ETAMU campus open computer lab, etc.

TECHNOLOGY REQUIREMENTS AND SUPPORT

Minimal Technical Skills Needed

Students will need reliable computer and internet access for this course. Students must be able to effectively use myLeo email, myLeo Online D2L, and Microsoft Office.

Learning Management System (LMS) – D2L

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All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are the technical requirements:

- View the [Learning Management System Requirements Webpage](#).
- Learn more on the [LMS Browser Support Webpage](#).

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found on the [Brightspace Support Webpage](#).

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement

If you have any questions or are having difficulties with the course material, please contact your instructor. Correspondence will always be through university email (your “myLeo” mail) and announcements in myLeo online (D2L). You will not RECEIVE email through D2L, so be sure to check your ETAMU email for communication. Students are encouraged to check university email daily.

Include the Following in Emails with Instructor:

- Course name and subject in the subject line
 - Salutation (Good afternoon, Dr. Jackson)
 - Proper email etiquette (no “text” emails – use proper grammar and punctuation)
 - Student name and CWID after the body of the email (possibly add to student signature on email)
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COURSE AND UNIVERSITY PROCEDURES/POLICIES

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

Student Conduct

The syllabus/schedule are subject to change.

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The [Code of Student Conduct](#) is described in detail online in the [Student Guidebook](#).

Students should also consult the [Rules of Netiquette Webpage](#) for more information regarding how to interact with students in an online forum.

ETAMU Attendance

For more information about the attendance policy, please view the [Attendance Webpage](#) and the [Class Attendance Policy](#)

Academic Integrity

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty University Procedure 13.99.99.R0.03](#)

[Undergraduate Student Academic Dishonesty Form](#)

[Graduate Student Academic Dishonesty University Procedure 13.99.99.R0.10](#)

[Graduate Student Academic Dishonesty Form](#)

Use of Artificial Intelligence

East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources

Students with Disabilities-- ADA Statement

The syllabus/schedule are subject to change.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

East Texas A&M University

Velma K. Waters Library Rm 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@etamu.edu

Website: [Office of Student Disability Services](#)

Nondiscrimination Notice

East Texas A&M University will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information, or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M University buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and ETAMU Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M University campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

East Texas A&M Supports Students' Mental Health – Counseling Services

The Counseling Center at East Texas A&M University, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students.

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Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

Mental Health and Well-Being

The university aims to provide students with essential knowledge and tools to understand and support mental health. As part of our commitment to your well-being, we offer access to Telus Health, a service available 24/7/365 via chat, phone, or webinar. Scan the QR code to download the app and explore the resources available to you for guidance and support whenever you need it.



As an Institutional Member of the National Association of Schools of Music, East Texas State A&M University supports the Association's commitment to student health and wellness. The following web address provides links to information for resources related to physical and mental well-being, as well as assists in offering preventative measures that students can take to avoid serious and/or chronic conditions: [Musician Health and Safety - East Texas A&M University](#)

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