TEXAS A&M UNIVERSITY — UPDATED* SYLLABUS

This update has been made necessary by the decision to move all classes online after spring break 2020.

Course title and number	PHY 206: Newtonian Mechanics; Sections 549-554
Term	Spring 2020
Meeting times and location	MWF 12.40-1.30 pm, ~~MPHY 203~~ Check Howdy for times and locations of your section's recitations. **RECITATIONS MEET THE FIRST WEEK!**

UPDATE: Starting March 23 classed are taught online using Zoom at the usual class times. All relevant Zoom links can be found on ecampus. They will also be distributed by email. All recitations will be taught via Zoom as well. These Zoom links will be shared with you by your TAs.

Course Description and Prerequisites

Mechanics for students in science and engineering.
Prerequisite: MATH 151, MATH 171, or equivalent

Learning Outcomes or Course Objectives

Mechanics provides a mathematical description of many phenomena occurring in the world around us. Mechanics is the science of how and why objects are moving. It is the foundation of physics and engineering. Basic skills in Mechanics allow you to compute the trajectory of a space ship or to construct a bridge that can withstand a given load. This class will also teach you some other important skills: analytic thinking, problem solving strategies, and the ability to express ideas and facts in a scientific discussion.

Instructor Information

Name	Rainer J Fries
Telephone number	845-1411
Email address	rjfries@comp.tamu.edu
Office hours	T, W 10.30 am - 12 noon
Office location	~~MPHY 309~~

UPDATE: Office hours are now online through ZOOM. Please contact the instructor for a time slot and Zoom link.

Textbook and/or Resource Material

- Don't Panic, Vol. I: Mechanics, 7th edition by William Bassichis.
- iclicker classic or iclicker reef – Please register your iclicker. If you use the iclicker app/reef you can sign up for this class through the app. For the iclicker classic please register on the icklicker website: https://www.iclicker.com/remote-registration-form-for-classic

The course website with important information, announcements, videos, pre-lecture quizzes and homework will be hosted by ecampus: http://ecampus.tamu.edu
Make sure you can access this course on ecampus. You will need to login with your TAMU netid.

UPDATE: You need a computer, laptop, tablet or phone with a stable internet connection. A microphone is needed to ask questions during class. For the exams you must have a working microphone and webcam.

Grading Policies

The course grade will be determined from the various components of the course in the following way:

(a) Homework (4%)
(b) In class quizzes and recitation (4%)
~~(c) Three midterm exams (18% each)~~
(d) Final exam (38%)

Make-up exams for midterms or the final will only be permitted in case of a university recognized absence. You will have to show evidence for a university recognized absence (letter from a supervisor or athletic department, doctor's note, etc.). Make your absence known to the instructor as soon as you know about it.

You will be allowed to substitute the score of the final exam for your lowest scoring midterm exam if the score in the final exam is better. Only one midterm exam score can be replaced. You will not be allowed to substitute the score of a midterm exam that has been missed due to an absence that is not university recognized.

There will be no make-ups for missed in-class quizzes. However, to accommodate students with legitimate absences you will get the full score (100%) in this category if you have 90% of the available points at the end of the semester.

The letter grade is determined as follows. A: 90-100, B: 80-89, C: 60-79, D: 45-59, F: < 45. Grades can be curved up.

UPDATE: The second midterm exam is canceled. The total number of points for the remaining two midterm exams stays the same at 54%. You can still replace the lowest scoring midterm exam with the final exam score.

Course Policies

1. It is your responsibility to determine what material is being covered in each class.
2. Team work is encouraged outside of class but not on exams
3. You should expect a quiz at any time
4. No calculators or notes are permitted on exams
5. **You should come to lecture having read about the topic and tried problems**
6. You should come to recitation with questions on problems

We will use iclickers for various kinds of assessment: pop quizzes, in class discussion, etc.

The pace of this course should allow you to understand the material in depth, but it does move right along. Don't fall behind. It is extremely difficult to catch up and the longer you leave it the harder it gets.

Americans with Disabilities Act (ADA)

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 believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity

For additional information please visit: http://aggiehonor.tamu.edu

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

Tentative Schedule

Week	Topic	Required Reading and Pre-Lecture Quiz	Learning Objectives
1: Jan 13	Calculus Review, 1-D Motion	1,2	Find derivatives and integrals of simple functions. Obtain algebraic equations for the kinematic variables by integration of acceleration and velocity.
2: Jan 20	1-D motion, Vectors, 2-D and 3-D motion	3,4	Solve 1-D problems. Express vectors in terms of unit vectors and components and adding vectors. Derive 2D equations of motion. Solve 2D problems.
3: Jan 27	Newton's Laws	5	Learn Newton's three laws. Become familiar with certain forces. Analyze simple systems.
4: Feb 3	Newton's Laws II	6	Consider more complex systems. Study the friction force and gravity.
5: Feb 10	Work	7	Master the precise definition of work. Calculate work for various forces.
6: Feb 17	The Work Energy Theorem. Potential Energy Functions **EXAM I (2/19)**	8	Prove the Work Energy Theorem. Determine whether or not a force is conservative.
7: Feb 24	Energy Conservation	9	Application of conservation of energy.
8: Mar 2	Momentum Conservation	10,11	Calculate Center of Mass, derive the law of conservation of momentum and apply it. Analyze elastic and inelastic collisions
9: Mar 9	SPRING BREAK		
10: Mar 16	Polar Coordinates, Circular Motion **~~EXAM II (3/18)~~**	12,13	Derive the components of velocity and acceleration in terms of the unit vectors in polar coordinates.
11: Mar 23	Torque, Angular Momentum	14	Apply polar coordinates to simple circular motion. Apply Newton's Law in polar coordinates
12: Mar 30	Conservation of Angular Momentum	15,16	Learn definition of torque. Define angular momentum and derive the law of conservation of angular momentum.

13: Apr 6	Oscillations, Harmonic Motion	18	Use differential equations to analyze sinusoidal motion.
14: Apr 13	Reference Frames	19	Transform kinematic variables from one coordinate system to another. Learn about inertial and non-inertial frames.
15: Apr 20	Review **EXAM III (4/22)**		

Common Midterm Exams for all Sections: Wed **Feb 19**, ~~Wed **Mar 18**~~, Wed **Apr 22**, 7-9 pm, ~~Rooms TBA~~
Final Exam: Fri **May 1**, 10.30-12.30, ~~Room MPHY 203 (TBC)~~