

PHYSICS 206 (Don't panic) Fall 2020

Instructor:	Dr. Jeremy Holt
Office:	CYCL 333
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Office hours:	MW 10:00 – 11:00 AM or by remote appointment
Lecture hours:	MW 7:20 - 8:35 PM, MPHY 204-205
Course Website:	http://www.quantumnovae.com/teaching-206

Recitation schedule:

Section	Day	Time	Room
513	Monday (M)	12:30 - 1:50 pm	remote
514	Tuesday (T)	9:30 - 10:50 am	remote
515	Tuesday (T)	2:00 - 3:20 pm	remote
516	Wednesday (W)	12:30 - 1:50 pm	remote
517	Wednesday (W)	3:30 - 4:50 pm	remote
518	Friday (F)	9:30 - 10:50 am	remote

Prerequisites:

- MATH 151, MATH 171, or equivalent
- Textbook: “Don’t Panic: Volume I”, by William H. Bassichis, 6th Edition or higher
- I-clicker REEF for in class quizzes and assessment:
<https://app.reef-education.com/#/login>
- ZOOM client, download from <https://tamu.zoom.us/>
- CANVAS learning system will be used for exams, and grades. CANVAS is available at <https://canvas.tamu.edu/>

COVID-19

Due to the current coronavirus pandemic, professors have been asked to enforce several important class policies to ensure everyone’s safety, including:

- (1) All in-person classes will be simultaneously broadcast over Zoom so students who opt to attend remotely can participate in classes.
- (2) Recitations and office hours will be online only.
- (3) Face masks must be properly worn **at all times** inside the lecture hall. In particular, the mask must cover both the nose and mouth. Professors have been instructed to remove any students who do not comply.
- (4) The first and second floors of MPHY are marked for one-way travel, including whether stairs are up only or down only.
- (5) Students should enter and exit the classroom through the designated doors.
- (6) Students should fill the lecture hall starting from the bottom and filling to the top in order to minimize human contact.
- (7) For our class, students must sit in only those seats marked with a **blue sticker**.
- (8) There will be a red line in front of the first row of seats, and students must not cross that line into the instructor's space.

- (9) Do not congregate inside of MPHY before or after lecture. We ask that you enter the building about 10 minutes before lecture, make your way to the lecture hall, and stay no longer than 10 minutes after.
- (10) These class policies will remain in effect until we are given further instructions from the university administration.

Goal:

Master the fundamentals of physics to open the way to understanding subsequent courses in physical science and engineering.

Exams Schedule

Exam	Day	Book chapter covered on exam
Exam I	September 24, 8:30-9:30 PM	Chapters 1 – 6
Exam II	October 22, 8:30-9:30 PM	Chapters 1 – 10
Exam III	November 19, 8:30-9:30 PM	Chapters 1 – 15
Final Exam	December 7, 2:00-4:30 PM	All Chapters

Tentative Classes Schedule and Learning Outcomes

Week	Topic	Learning Objectives
Aug. 19 Chpt 1,2	Calculus, One Dimensional (1D) Motion	Find derivatives and integrals of simple functions. Obtain algebraic equations for kinematic variable by integration
Aug. 24 Chpt 3,4	1D problems, Vectors, 2D Motion	Solve 1D problems. Become expert in unit vectors and components. 2D equations of motion. 2D problems.
Aug. 31 Chpt 5,6	Newton's Laws	Learn Newton's three laws. Become familiar with certain forces. Analyze simple systems.
Sep. 7 Chpt 6	Friction, Second Law problems. Gravitational force.	Study the friction force. Consider systems with friction. More complex systems.
Sep. 14 Chpt 7	Work. The Work Energy Theorem.	Master the precise definition of work. Prove and apply the Work Energy Theorem.
Sep. 21 Chpt 8	Potential Energy Functions EXAM I	Ability to determine whether or not a force is conservative.
Sep. 28 Chpt 9	Conservation of Energy	Applications of Conservation of Energy.
Oct. 5 Chpt 10,11	Conservation of Momentum, Collisions	Calculate Center of Mass, Apply Second Law to system of particles. Analyze elastic and inelastic collisions.
Oct. 12 Chpt 12	Polar coordinates	Derive the components of velocity in terms of unit vectors in polar coordinates.
Oct. 19 Chpt 13	Polar coordinates, Newton's Law in polar coordinates, circular motion EXAM II	Derive the components of acceleration in terms of the unit vectors in polar coordinates. Apply Newton's Law in polar coordinates.

Oct. 26 Chpt 14	Torque and Angular Momentum	Learn definition of torque and angular momentum. Use polar coordinates to obtain useful expressions for these quantities.
Nov. 2 Chpt 15,16	Conservation of Angular Momentum, Applications	Derive the law of Conservation of Angular Momentum. Solve problems using the law.
Nov. 9 Chpt 18	Harmonic Motion (Simple, Damped, and Forced), Resonance	Apply Newton's Law with restoring force. Solve resulting differential equation. Analyze sinusoidal motion
Nov. 16 Chpt 19	EXAM III Frames of Reference	Be able to transform kinematic variables from one coordinate system to another. Inertial systems.
Nov. 23	Review	
Dec 7	FINAL EXAM	

Grading Scheme

Your course grade will be calculated from a weighted sum of your midterm exam scores, recitation score, in-class quiz score, and final exam score. Each component is calculated out of 100 points and the contribution of each component to your final score is given by

Midterm exams	Recitation	Class Quizzes	Final Exam
50%	10%	5%	35%

If your grade on the Final Exam is higher than your lowest grade on one of the three exams during the semester, the grade on the Final will replace that one lowest exam grade in computing the course grade (it will only replace one grade in case of two exams having the same lowest grade). The Final Exam grade cannot be used to replace an exam that has been missed without a University excused absence. The missed exam will count as a zero when computing your final grade. Students are expected to be familiar with the Texas A&M University Student Rules at <http://student-rules.tamu.edu>.

Grading Scale

Your final letter grade in the course will be no less than that shown below for a given achieved percentile.

A	B	C	D	F
90-100	78-89	60-77	45-59	0-45

Course Policies

General rules:

- 1) It is your responsibility to know the dates and times for all exams and to come prepared
- 2) No calculators or notes are permitted on exams
- 3) Makeup exams are only for University-excused absences
- 4) You should come to lecture having read about the topic and tried problems
- 5) You should expect a clicker quiz each class
- 6) You should come to recitation with questions on problems
- 7) Teamwork is encouraged outside of class but not on exams

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.

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. 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.

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](#).

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

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.**