

# PHYS 4A: Physics for Scientists and Engineers: Mechanics

FALL 2022

Professor	Class Time	Contact	Friday Lecture
Zuleyha Yuksek, PhD	<b>M - Th</b> : 12:30 pm - 1:20 pm <b>Location:</b> S35, <b>in-person</b>	<a href="mailto:yuksezkuleyha@fhda.edu">yuksezkuleyha@fhda.edu</a> (408) 864-8668 S Quad, S11a	<b>Zoom Link is <a href="#">here</a></b>  <b>Passcode:</b> 119462
	<b>Friday</b> : 12:30 pm - 1:20 pm <b>Location:</b> Zoom, <b>Online</b>		

**Course website** Canvas through your De Anza portal (<https://deanza.instructure.com/>)

**Final Exam** **Wednesday, December 14 from 11:30 AM to 1:30 PM**

***NOTE:** Last day to drop a class with a "W" is November 18. If you do not drop by this date, you will get a grade according to your performance in this class at the end of the quarter.*

## Lab Sections

Professor	Class Section (all in S11)	Contact Details
Juming Jiao	T: 1:30 pm - 4:20 pm Location : S11	<a href="mailto:jiaojuming@deanza.edu">jiaojuming@deanza.edu</a> , S13 Phone: (408) 864 5496
Juming Jiao	Th: 1:30 pm - 4:20 pm Location : S11	<a href="mailto:jiaojuming@deanza.edu">jiaojuming@deanza.edu</a> , S13 Phone: (408) 864 5496

## Description

The general physics sequence provides a calculus-based introduction to the basic concepts of physics that form the foundation of all the natural sciences. The first quarter introduces classical mechanics, which is the application of the fundamental laws of Newtonian mechanics to a variety of simple systems. This course is a rigorous introduction to the physical laws that describe and explain the motion of bodies. It also requires problem solving using verbal logic, critical analysis, and mathematical models. Students investigate general scientific procedures as a quantitative interplay between experimentation and theory employing statistical methods, graphical techniques, and measurement theory.

The topics we will cover this quarter include: kinematics; uniform and non-uniform circular motion; linear and rotational dynamics (i.e., Newton's Laws); linear and angular momentum; conservation of momentum and energy; work; and Newton's Law of Gravity.

## Prerequisites

PHYS 50 with a grade of C or better, or the equivalent (including high school physics); Completion of Math 1A with a C or higher and MATH 1B or MATH 1BH (may be taken concurrently).

### **Required / Recommended Materials**

- The textbook for this course is *Physics for Scientists and Engineers* by Serway/Jewett, Vol 1, 9<sup>th</sup> Edition. The book is published by Cengage, but you could also buy the used book.
  - It is optional; however highly recommended
- The homework system for the course is expertTA. You will purchase access to expertTA when you open your first homework assignment.
  - The cost of expertTA is \$32.50 for the quarter.
- You will need a reliable scientific calculator, like a TI-83. We will not do any programming with the calculator, so even a less complex version will suffice.

### **Teaching Philosophy**

I will use a combination of mini-lectures and collaborative learning activities in pairs and groups (in-class discussion, problem solving, laboratory computational experiments, etc.) to help you learn the material. My role will be to facilitate your learning through discussion and in-class activities, not to have you copy down everything I say or write. The flip-side is that you have to come to class prepared, ready to discuss the material, and to participate!

### **Course Format**

In-class - You will come to class by reading and completing reading quizzes for each chapter. There will be a mini-lecture to introduce the topic at the beginning of class. Throughout the class, you will answer Think/Pair/Share questions, then do problem-solving in pairs. You are highly encouraged to meet outside of class with your friends to work on homework assignments by Zoom or by Canvas-Group features (Conference).

Asynchronous Work - You are expected to complete reading, reading quizzes and homework assignments outside of class time.

You are expected to:

1. Pre-class assignment
  - complete reading assignments through your book.
  - complete a reading quiz on a reading assignment.
2. Complete HW assignments.

You are encouraged to work collaboratively with your friends on the homework assignments, but any submitted assignment must be your own.

Office Hours: - I will be offering office hours in person, however I will also accommodate if you need online office hours on zoom. You need to let me know in advance, so I can make it according to my availability. The zoom link will be provided once you request it.

## Grading Policy

Your final letter grade will be determined by dividing the total number of points earned (including extra credit) by the total number of possible points (excluding extra credit), multiplying by 100, and consulting the following table:

Letter Grade	Percent Points	Letter Grade	Percent Points	Letter Grade	Percent Points
A	93.0-100.0	A-	90.0-92.9	B+	87.0-89.9
B	83.0-86.9	B-	80.0-82.9	C+	77.0-79.9
C	73.0-76.9	C-	70.0-72.9	D+	67.0-69.9
D	63.0-66.9	D-	60.0-62.9	F	0-59.9

Your grade will be based on five major components, discussed in detail below, with the following relative weights:

Component	Weight
Reading Assignments	10%
Homework & Activities	15%
3 Exams ( highest 2 will be counted)	40%
Lab	15%
Cumulative Final Exam	20%
Quizzes - BONUS	5%

- **Lab:** The labs are an important component of this class; they will give you hands-on experience with designing and executing experiments, and the material covered during lab complements what we do in class. **Remember: You must complete every lab in order to pass the lab class, and you must pass the lab in order to pass this course!**
- **Reading:** You will need to complete a reading assignment before we start each chapter. All the assignments will be linked from within Canvas. ***The lowest grade of the reading assignments will be dropped in your total.***
- **Online Homework:** Homework assignments will be through ExpertTA approximately per week due every Saturday at 11:59pm.; however it might change with respect to the assignment. So, check the canvas for each homework deadline. The assignments will be linked from within Canvas. Instructions for using Expert TA are provided below. You are encouraged to work together on the homework assignments; however, each student must do her/his own work and be able to solve each problem independently. ***The lowest grade of the homework will be dropped in your total.***
- **Exams:** Over the course of the semester, there will be 3 Midterms. **Only two of the Midterms will be counted in your course grade, the lowest one will be dropped.** These will be through

ExpertTA with a time limit. Although you submit your answer on ExpertTA, you are supposed to show your work on a piece of paper and submit it before you leave the class. Review materials and more details will be provided closer to the time of the exam. This category counts for 40% of the overall course grade (each is 20%).

- **Final Exam:** The final exam will be a 2-hour, cumulative, closed-book/closed- notes exam. *The final exam cannot be missed or made up.*
- **Chapter Quizzes - BONUS:** Quizzes will cover 1–2 chapters and will be administered in class. You will be responsible for all the material covered in lectures, assigned reading, and homework assignment. **They are OPTIONAL.** At the end of the quarter, %5 of this part will be added on your total as BONUS POINTS!!!!
- **Policy on Late Work :** Homework assignments will be accepted after the due date, but the maximum grade will be reduced by 5% per day. All other assignments must be completed on time - no late work will be accepted.

### **Registration Instructions for ExpertTA**

From inside of Canvas, go to an available assignment that uses Expert TA and open it. Our first assignment is in **Module 0, HW 0.1 | Learning ExpertTA**. This action brings you directly to the take assignment page. This automatically registers you in Expert TA, so Canvas will be your primary springboard for accessing our system for the quarter.

#### Check-out:

- You will not be able to do homework until you complete the payment process.
- You will need to click on the check box to confirm that you are purchasing access for the class listed.

After you have clicked the checkbox, you will choose your method of payment. If you are using a credit card to pay now, click “Credit Card”. The option for a “free 14-day Trial” will allow you to delay your payment for exactly two weeks. If a trial is chosen, you will be able to do homework immediately, and be asked to make your actual payment with a credit card after the trial period has ended.

#### Payment with a Credit Card:

- After clicking “Credit Card” you will be redirected from our site to Authorize.net
- Authorize.net is an industry leader in secure payments and used by tens of thousands of companies.
- Enter your credit card information. Note: Pay careful attention when entering information into each field, including the street address and CVV code boxes.

Registration is Complete and you are done! You will be directed to your assignment to begin your work. *As you work problems, your scores are ported back over to Canvas within a few minutes at a time.*

Verify your email: You will see information at the top of the page each time you are redirected from Canvas into Expert TA, including the email address our system captured for you. This is your username and how we uniquely identify you in our system. If for some reason your email address in Canvas changes, this can cause issues. Be sure to verify your email from time to time to make sure it's the same.

Do I need a password? No, because you log into Canvas, you will never access Expert TA directly from our login page, as your password is handled and managed via Canvas at all times.

Can I study from previously taken assignments? Yes, if you want to visit Expert TA for additional practice, or to study, then you can go into the system from an older assignment, and then navigate manually outside of the take assignment area to the Class Management page, which is your dashboard. All assignments used with Canvas are shown here. Completed sets can be opened back up by clicking the assignment name and choosing View Detailed Grade Report.

FAQs: Hints and Feedback are provided throughout the term while taking assignments, typically for homework and not on exams. Hints are generalized tips, whereas feedback is always meaningful assistance based on your most recent incorrect answer.

Student Support Link: <http://theexpertta.com/support/student-support>

24x7 Student Support: - email [main@theexpertta.com](mailto:main@theexpertta.com) or call 877-572-0734.

## **Policies to Minimize the Spread of COVID-19**

Face masks: De Anza College requires students to wear appropriate face coverings (e.g. masks, fully covering both mouth and nose) in all college buildings, including classrooms, laboratories and studios. That means your mask must **cover your mouth AND nose**. See the [Face Mask Information webpage](#) for more information. If students arrive to class, lab, studio, or office hours without a face covering, they will be denied entry, and must leave and obtain a face covering before they can return. Likewise, students are required to wear face coverings when in hallways within buildings and to be prepared to put one on if they come within six feet of another person when traversing campus. Students who refuse will forfeit the right to attend class until a mask is worn. All college employees have the right to refuse services to students if they do not comply with these requirements.

Cleaning: College Operations is providing the following for all classrooms used this fall:

- Face masks
- Hand sanitizer
- Sanitizing wipes

We request that you use available cleaning products to wipe down your desks or work areas when you arrive in class. Classrooms will be thoroughly cleaned and sanitized at least once daily as well.

Symptoms and Quarantining: If you have any symptoms of illness, especially those associated with COVID-19, you must not attend class under any circumstances. As with any absence, you should contact your instructor to discuss missed lectures and assignments. If your instructor is quarantined due to COVID-19 exposure, the class will be offered remotely until the instructor is able to return to campus. Additionally, instructors may move the class to remote instruction if they feel in-person meetings are not

safe.

Attendance: To prevent the spread of COVID-19, if you have symptoms or have been exposed to the virus you are required to self-quarantine and report according to De Anza's health policy. If you have symptoms or believe you were exposed to the virus, you should not attend class in-person and notify your instructor. You should use the [Student Self-Report Form](#) to notify the college Health Services office.

If someone in an on-campus class **tests positive for COVID-19**, the other students and instructor can continue coming to class – **provided they have received a COVID-19 booster** – but **must be tested after five days**. Anyone in the class who has not received a booster (but is eligible for one) will be required to stay home for five days and then be tested. (See COVID-19 [testing and isolation protocols](#).)

## My Expectations

I expect you to come to each class prepared, ready to discuss the material, and to be active participants in all discussions and group-based activities. In particular:

- 1- Attendance is strongly recommended— During class time, we will complete activities and practice problems that will reinforce the concepts that we are covering. Please don't come to class if you don't feel well, but do let me know.
- 2- Be respectful—Please treat everybody as you would like to be treated. That includes respecting differences of opinion, listening attentively while others are speaking, and ensuring no discourteous interruptions or distractions (cell phones should be silenced, no texting, no browsing the web, etc.). Any disruptive behavior during class will not be tolerated. If there is disruptive behavior during the class, the student will be given a warning. If the problem persists, then the student is asked to leave the class and a disciplinary report may be in progress.
- 3- Time management —
  - a. Reading should take 2–4 hours per week. Be sure to read the text before class, take notes and work through examples, and complete the Online Reading Assignments!
  - b. Homework should take 3–5 hours per week. Be sure to start your homework early and get help if you need it from your instructors, other students, and the physics tutors.
  - c. Quiz Preparation should take 1 – 2 hours per week. If you are completing the assigned reading, applying yourself in class and lab, and completing your homework conscientiously, you won't need to put much time into preparing for the quiz.
  - d. Completing the quiz should take 1-2 hours to complete, depending on whether you use all the available attempts.

## Additional Policies & Information

- 1- Academic Integrity: Each student will be held to a high standard of academic integrity. Cheating (copying) on the homework, exams, or any other assignments will result in a zero for the assignment, and may also cause you to fail the class. Keep in mind: if you feel overwhelmed by the material and assignments, or simply need additional help, come to my office hours, attend recitations and group tutoring, or get in touch with me as soon as possible.
- 2- Accommodations Policy: In compliance with the Americans with Disabilities Act and with Section 504 of the Rehabilitation Act, De Anza College is committed to ensuring educational access and accommodations for all its registered students. I request that any student with a

documented disability needing academic adjustments or accommodations speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities should also contact the [De Anza College Disability Services Office](#).

- 3- **Inclusive Classroom:** In this community, diversity is an invitation to celebrate the uniqueness of each individual, as well as the cultural differences that enrich us all. In this course, I will do my best to ensure that students from all backgrounds and perspectives will be served equitably. The diversity that students bring to this class will be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful and inclusive of the many identities of students in terms of gender, sexual orientation, disability, age, socioeconomic status, ethnicity, race, culture, perspective, and other background characteristics. Your suggestions about how to improve the value of diversity and inclusiveness in this course are encouraged and appreciated.
- 4- **Reporting a Bias Incident or Sexual Misconduct:** In any case of possible bias or sexual misconduct, either in the classroom or anywhere on campus, you are encouraged to file a complaint. You should use the online form [here](#). Any De Anza community member, who experiences or observes an incident of bias or misconduct, including faculty, staff and students, can file a report through this system. More information and resources around procedures dealing with sexual misconduct and discrimination and harassment are available [here](#).
- 5- **Emergency preparedness:** In the event of a campus-wide emergency or College Closure (e.g., snow day) continue with readings and assignments according to the course schedule and as posted on Canvas. Online office hours will be established. Information regarding the status of the Colleges status and reopening schedule may be monitored on the De Anza College home page.

### Course Schedule & List of Topics

Below is the *tentative* schedule of topics for the course. Please refer canvas page for the most up-to-date schedule, reading and homework assignments, and other deadlines.

<b>Chapter</b>	<b>Topic</b>	<b>Time (weeks)</b>
Ch 1	Physics and Measurement	0.25
Ch 2	Kinematics in 1D	1
Ch 3	Vectors	0.5
Ch 4	Kinematics in 2D	1
Ch 5	Force & Motion	1
Ch 6	Circular Motion & Other Applications of Newton's Law	1
Ch 7	Energy of a System	0.5
Ch 8	Conservation of Energy	0.5
Ch 9	Impulse & Momentum & Collision	1
Ch 10	Rotational Motion	0.5
Ch 11	Angular Momentum	0.5
Ch 12	Static Equilibrium	1
Ch 13	Universal Gravitation	1
Ch 14	Fluids Mechanics	1
Ch 15	Oscillatory Motion	If time permits

**Student Learning Outcome(s):**

\*Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of mechanics.

\*Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

**Office Hours:**

In-Person	S11a	M,T	9:30 AM	10:30 AM
In-Person	S11a	W,TH	3:30 PM	5:30 PM