**PHYS 1111: Introductory Physics 1**

**Spring 2020**

|  |  |  |  |
| --- | --- | --- | --- |
| Dr. Kimberly Shaw | Shaw\_kimberly@columbusstate.edu | |  |
| ESS & Physics Office | Jordan 204 | 706-507-8344 | |
| UTeach office | Jordan 111 |  | |
| Classroom | Jordan 213 |  | |
| Course meeting times | Tuesday/Thursday | 9:30 – 10:45 am | |
| Office hours | Monday  Wednesday | 8:30am – 8:55 am  11:00 – 11:50 am  Jordan Hall 111 | |
|  | Tuesday/Thursday | 11:00 – 12:15 Jordan Hall 204 | |

*Note: If the listed office hours are not workable for you, please schedule an appointment. I also welcome drop-ins, as my schedule permits. I am on campus Monday through Friday. If my door is open, ask me if I have time to help!*

Catalog Description of PHYS 2211: *Prerequisites:* MATH 1113 with a grade of "C" or better; *Co-requisite:* PHYS 1311. An introductory course which will include mechanics (kinematics, dynamics, work and energy, momentum and collisions, and rotational motion and statics), and may also include thermodynamics and waves. Elementary algebra and trigonometry will be used.

# Necessary materials

1. Your mind.
2. A calculator with “trig” functions.
3. pencil or pen, paper.
4. Textbook: OpenStax College Physics. This is available as an open source text with either a free pdf, online access, or you can purchase a copy from their website or the university bookstore.
5. ExpertTA online homework system.

# Philosophy of learning

Memorizing is not learning! A good understanding in physics not only requires that you be able to answer a physics problem that you have seen before, but also be able to do well on a similar one that uses a different context, or otherwise is somewhat different from the one you already worked. But a good understanding in physics is more than just solving word problems! You should be looking at how to apply conceptual understandings and interconnect them throughout the semester.

# Notes about this course

Scientists, engineers and mathematicians learn by doing: they construct and deploy models of the real world and test their ability to predict new phenomena. Students will spend time in small groups collaborating in understanding both physics concepts and in working physics problems, at times working on class “challenge” problems. The teacher will guide discussion, both with small groups and with the whole class, using Socratic questioning and remarks, and will work to both bring up and address points in the course content that are common areas that students struggle with.

**Further Notes – The Game**

The class this semester will be themed “Race Through Space And Time: Destination Mars”. During class, we will have multiple team based competitions, Kahoot reviews at the start of class, and there will be suggested activities both during and outside of class designed to support your learning. Each of these that you choose to participate in will earn you either Knowledge Points, Skill Points, or both. You will be able to track your game points, and once you earn certain amounts, you will Level Up. Levelling Up will earn you Powers within the game, which will start small and grow during the game. Levels will be awarded in D2L.

# Learning Objectives:

These objectives are the minimum expectation I have for students who pass this class with a C. If you cannot perform to this level, you have not earned a passing grade. Students will be able to:

* Create and analyze graphs and other models to understand physical situations.
* Utilize explicit problem-solving skills, particularly in analyzing a description of a physical situation. Evaluate whether an answer to a problem is a realistic answer.
* Apply physics laws and concepts to unfamiliar contexts. Explain physics concepts, to analyze a physical situation in a qualitative and/or quantitative manner.
* Explain physical reasoning in a clear and concise manner, both in oral and written format. Explanations may be quantitative or qualitative.
* Apply scientific reasoning *for answering questions and solving problems*.
* Analyze and create models to explain and predict the motion of objects using concepts of linear and rotational motion, kinematics, forces, energy, and momentum.
* Use data or calculations to make logical deductions and arrive at reasonable conclusions, taking into account the significance and limitations of experimental error.   
  In other words, evaluate whether an answer to a problem is a realistic answer, or whether it makes no sense.

**General Education Area D Learning Outcomes**

* Demonstrate knowledge and understanding of scientific reasoning and how new knowledge is acquired in one or more areas of science, including the selection and use of appropriate methods, tools, and technology for answering questions and solving problems.
* Relate scientific principles and methods to problems that are important to individuals and societies.

# Reading the Textbook and Flipped Lecture Videos

Reading assignments in the text will be posted in CougarView. You are expected to do these readings and/or watch flipped lecture videos in order to be prepared for class each day. In this way, we can have the opportunity to spend more time in class practicing understanding the concepts, explaining them and extending them to new contexts, and solving problems. The material in these videos and in the textbook *will be* on the exams, and will be used in class. If you do not come to class prepared, you will not be able to excel in this course.

You will be able to earn Skill Points in the game by creating notes on the reading and/or videos before class. You will be able to earn Knowledge Points in the game during regular Kahoot quizzes based on these assignments.

# Homework using ExpertTA

For each unit, there will be an online homework assignment in ExpertTA. Doing homework (and otherwise practicing problem solving with these principles) is critical to learning physics, and you should take every opportunity to practice. It is the responsibility of the student to keep up to date on her/his assignments, and to be aware of all due dates. You will need to purchase a subscription (if you don’t already have one). This subscription is $32.50 for the semester – but there is a 14 day free trial period before you have to pay for it. The link for student registration is http://goeta.link/USW12GA-CC5EC6-1ZO You will earn 50 Skill Points for establishing your account (not paying, just signing up) and doing the Practice Assignment before class on January 31. A separate document describing how to access the system is posted in CougarView. Homework will be worth 15% of your course grade, and you will be able to drop one assignment.

# On time Attendance and Course Participation

You will be held responsible for material missed if you miss class. ***You must attend every class for the first three weeks for enrollment verification purposes.*** If you miss any class during the roll verification period without informing me prior to the absence, you will be dropped from the roll. If you have more than 6 unexcused absences, you will be dropped from the class with an EA (excessive absences). *I am required to report excessive absences to the university, in compliance with financial aid and VA educational aid policies.*

*On-time* attendance to class will earn points toward your course grade. At the end of the semester, this will be converted to a percentage. However, if you arrive late you will be counted as present (and it will not be reported to financial aid or the VA), but you will lose points in this category. Each day that you are on time to class will earn 2 points in this category.

Class participation in discussion and in problem solving activities is an important learning experience, and will also be an opportunity to earn points in class. In most class meetings, a portion of your work will be collected and then returned to you during a later class meeting, or you will submit your work via email. For each activity, you will earn up to 3 points.

You will have the opportunity to earn participation points in class discussion as well. Students that are attentive in class will earn 2 points each day; contributing in a useful way to the whole class discussion will earn 3 points. Distraction from class will earn 1 point.

Three times during the semester, each group will evaluate the contributions of themselves and the other students in their group. An average student will earn 5 points for each, but a strong student will earn more, and a student not doing their share will earn less.

In total, there will be 200 points available for students, which will be converted to a percentage – and that will be worth 5% of your course grade.

If you have read this far in the syllabus, stop for a moment, and email a picture of yourself (along with any nickname you prefer I use) to [shaw\_kimberly@columbusstate.edu](mailto:shaw_kimberly@columbusstate.edu) . If you have done so by the second day before class, you will earn 25 skill points towards levelling up in class.

# Midterm Exams

There will be three exams during the semester. They are *tentatively* scheduled for February 13th, March 10th, and April 14th. I reserve the right to move these exam dates, but will post any changes on the course web site and announce them in class. Students may drop one midterm exam. If you are absent *for any reason* from an exam, this will be the exam you drop. I will NOT give makeup exams under any ordinary circumstances. Each of the midterm exams you keep are worth 25% of your course grade.

Work must be shown, in the format I provide, in order to earn credit. These exams will be testing your ability to solve problems that you have not necessarily worked before, apply conceptual knowledge, and explain your reasoning.

Real world physics applications mini-project

This project will be worth 5% of your course grade. I will post the rules and the rubric for the assignment, as well as some ideas for potential project topics, separately on CougarView. It will be due on April 30th , and you will submit the assignment via CougarView in the DropBox by 5pm. In this small project, you are going to identify a “Real World” situation, and analyze it using the physics we have learned this semester. In this project, you will explain a problem or scenario you are discussing; you will discuss what steps are needed to do the calculations and/or solve the problem; you will show your reasoning and mathematical steps and data. You will write a short conclusion about your results, and talk about why your scenario matters – to you, to society, or anywhere in between.

# Final Exam

The final exam will be comprehensive. You may NOT drop the Final Exam grade. The exam will be held in our regular classroom, on May 7th from 8:00 – 10:45 am, as determined by the University. The final exam is worth 25% of your course grade.

# Grades will be based on the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **#** | **Points per assignment** | **Percentage of course grade** | **Notes** |
| **Homework** | Up to 14 | 100 | 15 % | Drop 1 HW |
| **On time Attendance and Participation** | 25 days |  | 5 % |  |
| **Exams** | 3 | 100 | 50 % | Drop 1 exam out of 3 |
| **Real world physics application mini-project** | 1 | 100 | 5% |  |
| **Final exam** | 1 | 100 | 25 % |  |

# Letter grades will be awarded as follows:

A 100 – 88.0 %

B 87.9 – 78 %

C 77.9 – 68 %

D 67.9 – 60 %

Typically there is no need to adjust this grading scale. However, should it be necessary, scales may be adjusted downward, but will never be shifted upwards.

# Expectations for this class

* I expect we will have a civil and respectful classroom.
* I expect that you will have the math skills to succeed in this class when you enter, as established by course pre-requisites. If you discover that you are having a hard time, I expect you to talk to me or seek help in other ways, as quickly as possible, so that I can support your learning.
* I expect students to have prepared for class (reading the text and viewing the flipped video lectures). I will not be repeating this material to you – I will be using this as a jumping off point, so that we can clarify this material, and make your understanding of it deeper.
* I expect students to be prepared to think critically, and to be prepared to do more than memorize things. Your careers as scientists and engineers will be better served by learning how to think through these problems, rather than by memorizing things to survive this class.
* If a classmate is cheating or not participating fully in any part of the class I expect that someone will let me know. It is not fair to the other students who will be working hard in my class to let a student skate by on the work of others, however, you should not assume that I already know if someone is not doing their share of the work. This can be confidential or not, as you choose.
* Be sure to respect your fellow students by not dominating the discussion nor by interrupting their comments. If you disagree with another student’s approach, try to persuade them that your approach makes more sense in a polite and respectful way.
* Speak up! The best way to learn is to think, and to ask questions. If you don’t want to do so in class, ask your classmates later, or ask me later. Or find the tutors in the Academic Center for Tutoring.
* Please avoid disruptive behaviors in class that make it difficult to accomplish everyone’s class objectives. Civil behavior in the classroom also includes use of respectful and appropriate language and behavior. Students who violate civility expectations may be asked to leave class. Students who fail to adhere to the behavioral expectations outlined by the instructor may be subject to discipline in accordance with the procedures described in the Student Handbook.
* Both in class discussions and when working in groups, I expect each of you to participate fully, and to allow others to do so as well.

Plagiarism and Cheating: Plagiarism is the presentation of another’s work or ideas as one’s own, instead of giving credit to others for their work. This includes copying the homework of a classmate, copying exam, homework or quiz answers, or cutting and pasting information into a project without proper citation. Any act of plagiarism will result in the course grade of “F”. Questions regarding the definition of plagiarism should be directed to the instructor before work is submitted for grading. Academic dishonesty is one of the highest crimes you can commit in a university, and I will have no tolerance for it at all. If you are unsure if an action is academically dishonest – either ask me, or look at the student handbook for university-wide (and more general) definitions.

If you have read this far in the syllabus, include along with the other information I asked you to email a short paragraph about something that you are good at outside of school, and anything you’d like me to know about you. This should also be emailed by the beginning of the second class meeting for 25 skill points.

Campus Carry: For information regarding HB 280 (Campus Carry), please refer to [www.usg.edu/HB280](http://www.usg.edu/HB280). It is the permit holder's responsibility to know and comply with the law.

Cell Phone policy: Please silence your cellular telephones and other electronic devices before entering the classroom. Texting is expressly forbidden in class at all times. Cell phones may be left on in vibrate or silent mode, but I expect that you will only answer emergency calls (i.e., you have a sick family member for whom you are responsible). I reserve the right to revoke this policy later if it is abused. The instructor reserves the right to answer any phone calls or text messages on your behalf during class, or to remove you from the classroom for the class period, if this becomes distracting. Cell phone usage is completely forbidden during exams. Also, you will lose 50 Skill Points if you are caught playing on your phone off-task during class.

Accommodations: If you have a documented disability as described by the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973, Section 504, you may be eligible to receive accommodations to assist in programmatic and/or physical accessibility. We recommend that you contact the Center for Accommodation and Access located in Schuster Student Success Center, Room 221, [706-507-8755](tel:%28706%29%20507-8755) as soon as possible. The Center for Accommodation and Access can assist you in formulating a reasonable accommodation plan and in providing support. Course requirements will not be waived but accommodations may be able to assist you to meet the requirements. Technical support may also be available to meet your specific needs.