

Syllabus PHYS 101 Introductory Physics Spring 2022

Welcome to Physics! In this course, you will learn the role of physics in real life and begin to develop your scientific skills. **Labs start immediately.** The TAs are responsible to send the labs to the students via ecampus. (No lab book.)

The following course objectives focus on the General Education Foundations (GEF) objectives. These skills are important for integrating the skills we learn in class toward your everyday life and future career awareness. During the course of this class, students should be able to:

- **Employ** a set of problem solving strategies that can be utilized to **solve** a variety of problems that can be related to situations in their everyday lives.
- **Recognize** from a word problem (or situation) information that is known or can be estimated or calculated.
- **Apply** concepts of motion, forces, energy and momentum to **explain** and **analyze** a situation to **determine** if it is possible and/or **predict** outcomes.
- **Relate** class concepts to a variety of real-world issues including medical applications, driving in our cars and global climate change.

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Ask nonpersonal class questions (e.g., homework Q's) **by the app GroupMe** (link on ecampus). Questions of a personal nature may be sent via email.

Office hours: Tuesdays 1:30-2:30 PM (online) & Wednesdays 12:30-1:30 PM (office)

Lectures: We will meet three times a week, Mondays, Wednesdays and Fridays
Class info will be available online at community.wvu.edu/~miholcomb.

Textbook: I am required by the department to use College Physics by Serway & Vuille (11th edition). The **cheapest way to purchase** access is an ebook with WebAssign access straight through Cengage. Joshua Swinehart will help with book/online access questions (joshua.swinehart@cengage.com).

There is no perfect book for Physics 101, and even if there was, I would not be allowed to switch to it. If you expect you might need more help in this course, I strongly recommend that you consider getting at least one other physics book. You can find several for ~\$5 on Amazon. I personally like the Physics book by Cutnell & Johnson. Get it used. Don't wait until you are confused with our book to order.

Inclusivity: The WVU community is committed to fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services. For more info on WVU's Diversity, Equity, and Inclusion initiatives, see <http://diversity.wvu.edu>.

Honor Code: Though you are allowed and encouraged to talk to your fellow classmates about homework assignments, the work you turn in is expected to be your own. For quizzes and the final, you are not allowed to talk to classmates or consult other resources besides your notes and the textbook. Copying of another's work on homework or tests will not be tolerated, will be noted in your school file, and will yield a failing grade on the assignment. It's easier to discover than you might think.

Attendance: In order to not penalize anyone that may prefer to temporarily avoid the in person classroom due to covid-19 or other sickness concerns, I will not be grading participation this semester. If you are sick, I recommend accessing the class lecture slides online. However, class attendance is correlated with class performance. No need to email me about this. You are an adult, and I trust you to make your choices.

Grading: 15% Homework, 15% Lab, 70% Weekly Quizzes/Final (Final counts as three quizzes, 4 lowest dropped (final still counts like three quizzes))

This means that if you like your quiz grade, you are not required to take the final.

Final Class Grades: A- (90), B- (80), C- (70), D- (60), F (0-60)

Prior class averages: Lab 95, WebAssign 95, Tests/Final 74, Class Average ~80

Cengage: In order to cover the large amount of topics required in this course, there will be homework or quiz **assignments on almost all class days** on Cengage. The first time you log into Cengage, you'll need the **class code: wvu 5988 8462** The system is free for the first 10 days, so there is no reason to wait based on finances. I typically assign three different types of Cengage homework problems:

1. **Multi-part** with lots of description: designed to introduce you to a new concept in a guided manner, sometimes with interactive diagrams to assist visual learning
2. **Relatively simple** and short: designed to test your ability to apply a new concept
3. **Somewhat challenging:** designed to strengthen your problem solving skills by stretching your current abilities to more complex situations (often appear short)

To encourage repetition of your review of the course material, I will award 10% extra credit to the homework assignment for right answers before 9 am on the due date.

Cengage has virtual office hours in case you are having issues:

January 11 - February 17

(every) Tuesday | Wednesday | Thursday

10 am – 12 pm, Zoom: <https://cengage.zoom.us/j/97652162052>

Questions: In order to better assess your understanding of the material in the book and presented in class, you will often be required to turn in (through Cengage) a short response between most sets of classes regardless of your class attendance. In these responses, you will provide one or more topics from the reading that you do not understand. Inappropriate answers will not be given credit. Since I may not have time to read every response, I'll pick common questions. Part of homework grade.

101		Planned Schedule (Note that it may be adjusted if I think it helps learning.)	Spring 2022
Date		Topic	Readings
10-Jan	M	Welcome; What is Physics and Why Should Everyone Take It?	N/A
12-Jan	W	Tools of the Trade; Why Units and Estimation are Important (Practice HW)	1.1, 1.3-6
14-Jan	F	Straight Motion; Defining Position, Velocity & Acceleration	2.0-1
17-Jan	M	No Class (Holiday)	N/A
19-Jan	W	Problem Solving Day for Quiz 1	N/A
21-Jan	F	Using Graphs to Understand Motion	2.2-3
24-Jan	M	The Physics of Falling Down; 1D Motion along the Vertical (Free Fall)	2.4
26-Jan	W	Problem Solving Day for Quiz 2	N/A
28-Jan	F	Trigonometry Review; What are Vectors and Scalars? Add/Subtracting	1.8-1.11
31-Jan	M	Projectile Motion; Footballs, Bullets & Rockets	3.0-3.2
2-Feb	W	Problem Solving Day for Quiz 3	N/A
4-Feb	F	Newton's Three Laws and Applying Them	4.0-2
7-Feb	M	Free-Body Diagrams for Hospitals and Movies	4.3
9-Feb	W	Problem Solving Day for Quiz 4	N/A
11-Feb	F	Friction	4.4-6
14-Feb	M	Kinetic Energy and Work; Why Physicists Don't Work The Same Way	5.0-2
16-Feb	W	Problem Solving Day for Quiz 5	
18-Feb	F	Gravitational Potential Energy and Roller Coasters (5.7 is useful but no time)	5.3-4 & 5.6
21-Feb	M	Momentum and Impulse and Their Relation to Forces	6.0-1
23-Feb	W	Problem Solving Day for Quiz 6	
25-Feb	F	Conservation of Momentum; Gun Recoil, Space Walking and Cardiology	6.2
28-Feb	M	Elastic and Inelastic Collisions; Car Wrecks and Pool	6.3-4
2-Mar	W	Problem Solving Day for Quiz 7	N/A
4-Mar	F	Rotation; Can Spiderman's String Support His Weight?	7.0-2
7-Mar	M	Centripetal Acceleration and Merry Go Rounds	7.3-5
9-Mar	W	Problem Solving Day for Quiz 8	N/A
11-Mar	F	Torque; Efficient Use of Tools; Center of Gravity/Mass	8.0-4
		Spring Break	
21-Mar	M	Rotational Kinetic Energy and Angular Momentum	8.5-6
23-Mar	W	Problem Solving Day for Quiz 9	N/A
25-Mar	F	Springs	5.5 & 13.0-2
28-Mar	M	Pendulums and Oscillatory Motion	13.3-6
30-Mar	W	Problem Solving Day for Quiz 10	N/A
1-Apr	F	Waves on My Guitar String; An Opportunity to Hear Me Sing and Play	13.7-11
4-Apr	M	States of Matter, Density and Pressure	9.0-2
6-Apr	W	Problem Solving Day for Quiz 11	N/A
8-Apr	F	The Pressure of Diving into Liquids; Archimedes' Principle	9.3 & 9.5
11-Apr	M	The Equation of Continuity; The Plumbing of Sinks and Blood Vessels	9.6
13-Apr	W	Problem Solving Day for Quiz 12	N/A
15-Apr	F	Good Friday (No Class)	N/A
18-Apr	M	Stress and Strain	9.10
20-Apr	W	Problem Solving Day for Quiz 13 (Some Review Questions)	
22-Apr	F	Temperature & Thermal Expansion (Ocean Rising)	10.0-3
25-Apr	M	Heat and Energy Transfer (Cooking and Global Climate Change)	11.0-2, 11.4-6
27-Apr	W	Extra Credit: Movie Review Calculation Presentations (Put PPT on Flash Drive)	
29-Apr	F	Class Review Problem Solving Day	
		Final: Thursday, May 5 8PM (On Cengage, Like Longer Quiz)	
		Note: Special time for Introductory Physics finals.	
		Final is worth three quiz grades. Four quizzes get dropped, so you	
		don't have to take it if you are already happy with your quiz grade.	

Snow Days: In the case of bad weather, I may decide to hold class remotely. If so, you will receive messages by both GroupMe and by email. Lectures will be online under the same ecampus tab as for the virtual office hours. If we have a remote day(s), you may attend the class concurrently or later, as you prefer. There is a recordings tab in ecampus to see old lectures after recording.

Talking In Class: There will be many opportunities to talk in my class. I ask, however, that when I haven't asked for a class discussion that you do not talk with your neighbors. **Our classroom is designed to amplify sound** (including your discussion with your neighbor). Therefore, even quiet discussions can be very distracting to other students and myself. I hate to point people out, but if I notice your talking does not stop when inappropriate, I will specifically ask you in front of the rest of the class if you have any questions. I prefer not to do that, but I will do what is necessary to help the other students be able to focus on my lecture.

Quizzes: I am required by the university to give Wednesday evening tests. Based on the popularity of weekly quizzes in the past, we will be doing weekly quizzes instead of midterms. There will be five questions, occasionally with a few parts. A portion of the questions will be multiple choice. My expectation is that most students will finish these quizzes in 20 minutes, but you are allowed 45 minutes. There is a time window from **2pm to 11:59pm** over which you can start the test. You should not expect me to answer quiz questions late at night; I have kids, I may be asleep. I would move the time earlier, but I know a fair number of people in the past have had evening jobs. **Warning:** Lockdown compatibility issues have occurred with Chromebooks; plan for this possibility. Should anyone have technical difficulties, you must tell me immediately if you want a short extension on the deadline. I will not extend the deadline beyond the following morning.

Warning: My current plan is not to have you monitored during testing. However, if we experience any issues with cheating, that could change with very little notice (you will be notified by email). Monitoring may include being zoomed during test taking or being forced to take the quiz at a specific location. My hope is that this will not be necessary, but be warned that it is a possibility. Please don't cheat.

Extra Credit: Class discussion is a proven technique to identify common student misconceptions about topics, however, students are often reluctant to speak up (typically in fear of being incorrect). Yet, if you have an incorrect idea (which is very common), it is critical to identify it before the quizzes! Thus, I will give one point of extra credit that will be added to a quiz grade for well-reasoned class responses (they do not have to be correct to receive the point). I unfortunately cannot hand them out for every response (or I would spend half of the class just handing out paper). I will not give points for answers that have no independent thought behind them (e.g. I picked that one because my neighbor did). **These papers should be turned in at the end of the lecture received. Max of three. These papers are non-transferrable between students (part of honor code).**

Late Policy: All Cengage date extensions should be requested through the automatic extension process (not by emailing me) which expires 14 days after the due date. There will be a small late penalty to be fair to students that did the assignment on

time. Manual extensions should only be requested if the automatic request is no longer available or an increase in the submission attempts (from 10) is needed. Although I will try my best, I cannot guarantee that I will respond to these manual requests in a timely manner. I suggest you turn on your email notifications. Late penalties for manual extensions will be assigned to reflect the length of time since the assignment was due. One day late = small penalty, 1 week late = larger.

Online Resources for the Class

I apologize for the number of websites; but I need external websites, for those students that get booted from ecampus temporarily for various registration issues.

www.community.edu/~miholcomb/phys101.html : On this website, I will post lectures and a few problem solving videos.

eCampus: Where you will find links to GroupMe, website and the virtual office hours.

Cengage: Where you will find and complete daily homework, quizzes and the final.

GroupMe app: Rather than email, all non-personal questions should be asked on this app. You can also organize study groups, suggest tutors and discuss homework. You may not discuss the quizzes or final via this app or others, other than if you have any technical issues. Discussing quiz/final questions is an honor code violation.

Frequently Asked Administration Questions for Physics 101

Below are some of the frequently asked questions about the mechanics of my course. Please read over the entire syllabus before sending questions. If you have questions beyond those below, please **submit your question on GroupMe**. Questions of a personal nature can of course be emailed to mikel.holcomb@mail.wvu.edu

You do not need to email me for the following reasons:

- That you have or will **miss a class**. I don't need to know. Read the lecture slides.
- That you have or will **miss a lab** (or anything else about the lab). Tell your TA. There is one makeup lab near the end of the semester. I have no control over the lab.
- To request a homework extension. **All homework extensions should be requested through Cengage**. If you need an extension of the due date, use the automatic extension; it will happen immediately. If you need an extension in the number of submissions, use the manual extension. I have to manually accept and it may take me a day before I notice it (I'm normally much faster but no guarantees). I will also give you a date extension IF I take too long to respond (meaning it is close to the deadline). I believe you have to **turn on notifications** in WebAssign for you to be notified by email that you have gotten an extension. There is no limit on the number of extensions you may ask, however, frequent requests may result in my denial of the extension opportunity. Serious personal circumstances may warrant my allowing more extensions. Basically, I would rather you do the homework than not, even if it's late; but to be fair to the rest of the class that did it on time, you won't get as much credit if you are late. I also cannot offer extensions if you have looked at the answer key. WebAssign tells me if you have seen it.
- To ask about **tutors**. Please place any tutoring information you find on GroupMe. I will.
- Questions about things detailed in the syllabus. Please read it before asking me.

Rubric for Extra Credit Fictional Movie Review Presentation (for up to 5 points added to a quiz that is not dropped)

Names of all group members that contributed:

Movie Title:

	Competent	Proficient
Preparedness	Had to access files from Google Drive or other. Don't email to me.	Came with flash drive of PPT or had other notes
Grammar and Typos	Some grammatical errors or typos, but they did not significantly affect understandability.	Few if any grammatical errors and/or typos. In the real world, everything you turn in should look professional.
Description of the Scene	Most of the scene is clearly explained, but there are some minor details skipped that could affect how the calculations should be approached.	Based upon your description, it is very clear what is going on in the scene.
Appropriateness	N/A (I am outlawing the bus/bridge scene in the movie Speed, October Sky and the circular bullet scene in Wanted.)	You followed the directions above about picking a scene related to class material and not obviously possible or impossible (e.g. easy sports or people flying)
Formulas Provided	Most of the needed formulas have been provided, but some are missed and/or unnecessary.	All of the formulas and only the appropriate formulas needed to calculate the scene have been provided.
Approach	There are only minor approach problems.	There are no problems with the approach.
Identify variable(s) to solve for	You have identified a variable(s), but this only tells you if the scene is precisely accurate (such as distances or times), and not if the scene could even occur	At least one variable is identified as what you will solve for to determine if the scene can occur in real life. (Generally that variable is not time, though you may need to solve for it to get something else.)
How you will find out if variable(s) reasonable	While you mention the comparison of your result to something you'll find online or in literature, no plan for searching for this information or range of possible results is given.	You discuss how you will determine if your selected variable(s) are actually achievable. This determination is either based on things that can be found in papers, or based on more calculations.
Estimations	Variables in need of estimation are mentioned. Some minor variables might be left out.	Any variables that need to be estimated are mentioned as well as how estimations will be made.
Understandable	A few minor things were unclear.	Your explanation of the calculations were easy to follow.