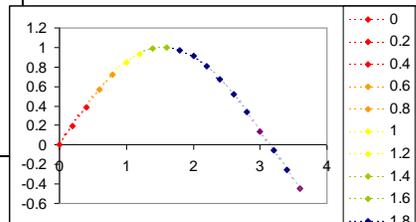
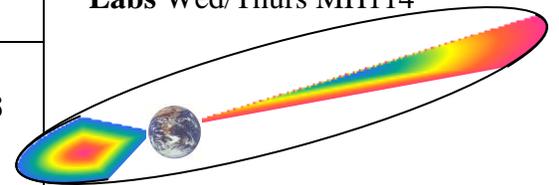


Monday	Tuesday	Wednesday	W/Th Lab	Friday
<b>27. Sept</b> Introduction	<b>28. Sept</b> Sect. 1.1-1.5 <b>HW#0 Due</b>	<b>29. Sept</b> Sect. 1.6-1.9 <b>HW#1a Due</b>	<b>Lab #1</b> x,v,a and all-that	<b>1. Oct</b> Sect. 2.1-2.2
<b>4. Oct</b> Sect. 2.3-2.4 <b>HW#1b Due</b>	<b>5. Oct</b> Sect. 2.5-2.6 <b>HIP1</b>	<b>6. Oct</b> Sect. 2.6-2.7 <b>HW#2a Due</b>	<b>Lab #2</b> Accel. due to Gravity	<b>8. Oct</b> Sect. 3.1-3.2
<b>11. Oct</b> Sec. 3.3-3.4 <b>HW#2b Due</b>	<b>12. Oct</b> Sect. 4.1-4.3 <b>HIP2</b>	<b>13. Oct</b> Sect. 4.4-4.5 <b>HW#3a Due</b>	<b>Lab #3</b> 2-D Motion	<b>15. Oct</b> Sect. 4.6-4.7
<b>18. Oct</b> Chapter 1-4 Review <b>HW#3b Due</b>	<b>19. Oct</b> <b>Exam 1</b> <b>HIP3</b>	<b>20. Oct</b> <i>Special Lecture</i> <i>Relativity</i>	<b>Lab #4</b> Forces	<b>22. Oct</b> Sect. 5.1-5.3 <b>HW#4a Due</b>
<b>25. Oct</b> Sect. 5.4-5.7 <b>HW#4b Due</b>	<b>26. Oct</b> Sect. 6.1-6.2 <b>HIP4</b>	<b>27. Oct</b> Sect. 6.3-6.4 <b>HW#5a Due</b>	<b>Lab #5</b> Forces, Accel., & Friction	<b>29. Oct</b> Sect. 6.5-6.6
<b>1. Nov</b> Sect. 7.1-7.2 <b>HW#5b Due</b>	<b>2. Nov</b> Sect 7.3-7.5 <b>HIP5</b>	<b>3. Nov</b> Chp 8.1-8.3 <b>HW#6a Due</b>	<b>Lab #6</b> Centripetal Motion	<b>5. Nov</b> Chp 8.4-8.5
<b>8. Nov</b> Chp 8.4-8.5 <b>HW#6b Due</b>	<b>9. Nov</b> Chp 6-8 Review <b>HIP6</b>	<b>10. Nov</b> <b>Exam 2</b>	<i>Veterans</i> <i>Day</i>	<b>12. Nov</b> Sect. 9.1-9.3 <b>HW#7a Due</b> (Chp 10 in 3 <sup>rd</sup> ed.)
<b>15. Nov</b> Sect. 9.4-9.5	<b>16. Nov</b> Sect. 9.6, 10.1 <b>HW#7b Due</b> <b>HIP7</b>	<b>17. Nov</b> Sect. 10.2- 10.3 (Chp 11 in 3 <sup>rd</sup> ed.)	<b>Lab #9</b> Global E-Budget	<b>19. Nov</b> Sect. 10.4- 10.5 <b>HW#8a Due</b>
<b>22. Nov</b> Sect. 10.6- 10.7 <b>HW#8b Due</b>	<b>23. Nov</b> Sect. 11.1- 11.3(Ch9 in 3 <sup>rd</sup> ) <b>HIP8</b>	<b>24. Nov</b> Sect. 11.4- 11.5	<i>Happy</i> <i>Thanks-</i> <i>giving</i>	<b>26. Nov</b> <i>Thanksgiving</i> <i>Campus</i> <i>Closed</i>
<b>29. Nov</b> Section 11.6- 11.7 <b>HW#9a&amp;b Due</b>	<b>30. Nov</b> Section 11.8-11.9 <b>HIP9+HIP10</b>	<b>1. Dec</b> Review Chapter 11	<b>Lab #10</b> Energy, Momentum, Friction and More	<b>3. Dec</b> Review Chapter 1-11 <b>HW#10 Due</b> <b>EC Assignment Due</b>
<b>6. Dec</b> <b>Sect. #2</b> <b>Final</b> <b>10-11:50am</b>		<b>8. Dec</b> <b>Sect #1</b> <b>Final</b> <b>8-9:50am</b>		

# PH 211

## General Physics with Calculus

Sect.#1 MTWF 8am on Zoom  
Sect.#2 MTWF 11am on Zoom  
Find Zoom location at:  
<http://minirov.info/ph211>  
Labs Wed/Thurs MH114



**Instructor:**  
Gregory Mulder

**Office:** <http://minirov.info/ph211>  
**Phone:** 541-908-4025 (cell)  
**E-mail:** [mulderg@linnbenton.edu](mailto:mulderg@linnbenton.edu)

**Office Hours:**  
M 9-9:50am  
T,W 10-10:50pm  
Or by Appointment  
Or call or e-mail at any time!

**Textbook:** "Physics for Scientists  
and Engineers: A Strategic  
Approach" 4<sup>th</sup> Edition

**Online Homework assigned at:**  
<https://moodle.linnbenton.edu>  
**Class material available at:**  
<http://minirov.info/ph211>

**Linn-Benton Community College**  
**Fall 2021**

# Ph 211: General Physics with Calculus

Linn-Benton Community College  
Fall 2021

**P**hysics is the study of nature. It is the study of how rainbows are formed. It is the study of why the sky is blue, why the stars twinkle, and how the planets move through the heavens. Applications of physics have given us eye glasses, levers, pulleys, the combustion engine, transatlantic steamers and communication, television, lasers, computers, satellites, space flight, and new insights into the universe that startle the imagination and can only make one hungry to learn more.

When developing the Ph 211 sequence we invited a variety of individuals from industry and academia to help determine what skills and knowledge you should gain during your year of Physics with Calculus to maximize your potential in your future career.

As you complete Ph 211 you should:

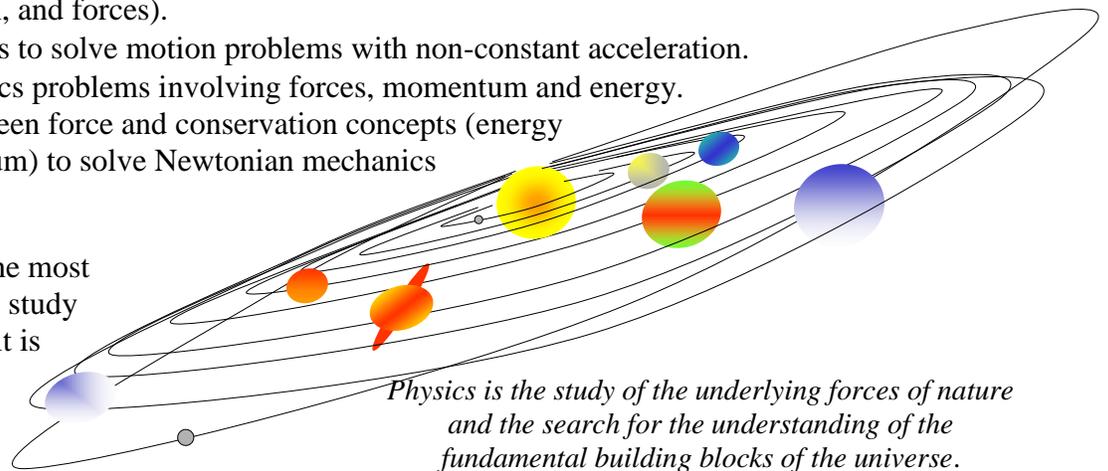
- Describe and explain physical objects in motion.
- Conduct experiments to determine critical motion parameters (such as position, velocity, acceleration, and forces).
- Use calculus to solve motion problems with non-constant acceleration.
- Solve physics problems involving forces, momentum and energy.
- Select between force and conservation concepts (energy or momentum) to solve Newtonian mechanics problems.

Of course, to me, the most important reason to study physics is because it is simply fun.

Physicists have the neatest toys—

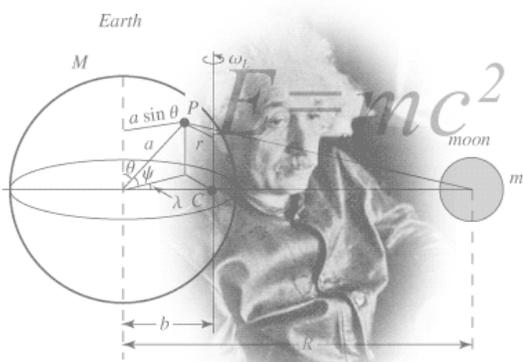
many of which I hope to share

with you—and we get to go on gedanken journeys that previous generations can't even imagine.



*Physics is the study of the underlying forces of nature and the search for the understanding of the fundamental building blocks of the universe.*

In Physics 211 we will study the foundations of physics. We will discover how a guy named Aristotle had ideas that seemed good at the time but ended up goofing up Western Civilization's view of the Universe for the better part of two millennia. In this adventure we will start by making everyday observations about how things move—by the end of the term we will end up learning some pretty neat things about universal law of gravitation and the shape of the universe in which live.



As you continue in Physics, in Physics 212 we get to deal about fluids, pressure, waves, light and sound. Physics 213 focuses on electric charges and field, the origins of magnetism, and the fundamental origins of the formation of light. In Physics 315 we get to learn thermodynamics, the nature of time, the unpredictable but very probable nature of the universe and the fundamental interconnectedness of everything.



## Math requirements for this class and for physics in general

Math is the language of a large part of what we do in physics. To be able to do well in Physics, we've created the following prerequisites for this class:

- Completion of MTH 251 (Differential Calculus) with a "C" grade or better.
- Completion of MTH 252 (Integral Calculus) with a "C" grade or better.

Physics is a field that heavily relies upon mathematics. This is because mathematics is a compact language that allows physicists to speak to one another regardless of what part of the world they might come from. An added benefit of this class is that you will leave it with a greater understanding of just what all that math you've been studying is about.

## Grading Scale for this course:

Final grades are determined from the below components of the course.

### Basis for grading:

Midterm Exams:	30%
Final Exam	20%
Labs:	18%
Hand-In Problem	15%
Moodle Homework:	15%
Class Participation	2%

### Grading Scale:

90%-100%	A
80%-89%	B
70%-79%	C
60%-69%	D
< 60%	F

### Other possible grades at LBCC:

**I -- Incomplete.** An 'I' grade is assigned if for some reason a student cannot complete all components of the course by the end of the academic term. To receive an 'I' grade, the instructor and student must agree upon a contract that will spell out when uncompleted work will be turned in. The student has until the end of the next term to complete all unfinished work

If you don't know how to calculate a weighted grade, there is a spreadsheet program available on Moodle that will help you, or use the formula:

$$FinalGrade = \sum_i (percent\_weight) \cdot \frac{pts\_earned\_per\_category}{total\_pts\_possible\_per\_category}$$

**Exams:** There will be two mid-term exams and one comprehensive exam for the term.

**The Final:** One aspect of physics is that every week builds upon what was learned in the weeks previously. As a consequence, by nature, the final exam is comprehensive. A large fraction of the Final will come directly from the conceptual questions that will be given to the class in the textbook and on Moodle.

**Labs:** Much of the learning that goes on in physics happens in the lab. Laboratory work is consequently a large part of the grade. A significant part of each exam will consist of topics covered in the lab. By department policy, you must complete at least 7 labs in order to pass the class. Lab packet and lab books are available in the bookstore. Lab books will be turned in via GradeScope.

**Class Participation:** Make sure that you sign in as yourself when you attend class on Zoom each day. Zoom will automatically capture your attendance. If you can't make it to class on a day, you can instead watch the recorded Zoom lecture that will usually be available by the end of the day – as you watch the Zoom video write a short journal entry that records your clicker responses and summarizes the day – turn this journal in at the end of the term for credit for the days you didn't directly attend class.

**Homework** assignments can be found on Moodle and come from material in each chapter. You can get to Moodle by going to <https://moodle.linnbenton.edu/>. Homework solutions and other materials are available at <http://minirov.info/ph211>. On homework assignment you get as many attempts as you want to take until you get the correct answer. Many questions have feedback to read after you submit your answer. There are three types of homework questions: conceptual questions, exercises and problems.

Conceptual questions are best done with a friend. Although you can do them alone, I'd suggest you work with someone from class on these and don't look at the answer until you have really thought about your pre-conceptual thinking.

Exercises are one-step problems. For most exercises I include information on where in the textbook you can find information that covers the exercise. If you find yourself stuck on an exercise for more than 15 minutes, it is best to find someone from class or our help-desk, TASS or tutor sessions to help you out. In such cases, usually another person can point you in the right direction in a fairly short period of time.

Problems usually have multiple concepts within them. Getting good at solving problems is a large goal of the class.

**Hand-In Problems:** Almost every week a homework problem will be due that is to be turned in at <https://www.gradscope.com/>. The Hand-In Problem's purpose is to allow you to receive feedback on how you present your work. Hand-In problems can be found at <http://minirov.info/ph211>

**Hand-In Problems:** Almost every week a homework problem will be due that is to be turned in in hard-copy format uploaded to GradeScope. The Hand-In Problem's purpose is to allow you to receive feedback on how you present your work. Make sure that you follow the HIP Scoring Rubric when completing these homework problems. Hand-In problems can be found at <http://minirov.info/ph211>

**Students in need of accommodations:** LBCC is committed to inclusiveness and equal access to higher education. If you have approved accommodations through the Center for Accessibility Resources (CFAR) and would like to use your accommodations in the class, please talk to your instructor as soon as possible to discuss your needs. If you believe you may need accommodations but are not yet registered with CFAR, please visit the CFAR Website for steps on how to apply for services or call 541-917-4789.

**Other important information:** The Add/Drop date and date for payment has recently been moved to the 2<sup>nd</sup> Monday of the term. The good news is that this change allows for financial aid to be disbursed a week earlier than in the past. The bad news is that you need to decide your full schedule right away -- as always, if you need help with your academic schedule, let me know and I'll be happy to work with you on this.

**Students in need:** Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Roadrunner Resource Center. See [minirov.info/ph211](http://minirov.info/ph211) for contact information.

Use this sheet to keep track of your overall score in the class. You can use this formula to find your total weighted grade or use the grade calculator on Moodle or [minirov.info/ph211](http://minirov.info/ph211).

$$FinalGrade = \sum_i (percent\_weight) \cdot \frac{pts\_earned\_per\_category}{total\_pts\_possible\_per\_category}$$

**Moodle Homework 15%:**

	Your Score	Out Of
HW0		
HW1		
HW2		
HW3		
HW4		
HW5		
HW6		
HW7		
HW8		
HW9		
HW10		
ECHW		

**Labs: 18%**

	WriteUp	Post Quiz	Out Of
Lab1			
Lab2			
Lab3			
Lab4			
Lab5			
Lab6			
Lab7			
Lab8			
Lab9			
Lab10			
MakeUp			

**Hand-In-Problems: 15%**

	Your Score	Out Of
HIP1		
HIP2		
HIP3		
HIP4		
HIP5		
HIP6		
HIP7		
HIP8		
HIP9		
HIP10		
Term Summary		

**Class Participation: 2%**

	M	T	W	F
Week 1				
Week 2				
Week 3				
Week 4				
Week 5				
Week 6				
Week 7				
Week 8				
Week 9				
Week 10				

**Midterms and Final: 50%**

	Your Score	Out Of
Exam1		
Exam2		
Final		