

# General Physics with Calculus Part III, PH 213 Syllabus

## General Information

### Instructor Information and Availability

Instructor name: Heather Hill

E-mail address: hillh@linnbenton.edu

Office hours: Monday and Wednesday 12 – 2pm, Thursday 1 – 2pm, Friday 10 – 12pm  
(or available by appointment)

Office number: MH 111

### Course Information

CRN: 43310; Section: 07

5pm – 7pm on MW, 5pm – 8pm on R

Classrooms: MH 108, MH 106

Number of credits: 5

### Prerequisites:

MTH 254 and PH 212 with a grade of "C" or better.

**Note:** PH 213 heavily relies upon mathematics. If you feel yourself getting lost in the math, make sure that you ask for help as quickly as possible.

### Course Materials

Required:

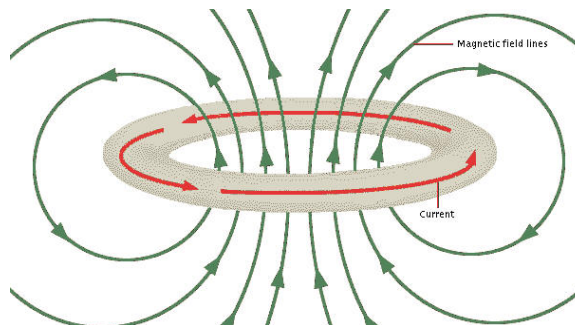
- Textbook: *Physics for Scientists and Engineers*, 4<sup>th</sup> ed., by Knight along with a valid access code
- PH 213 Lab Packet
- Brown Lab Notebook

### Course Description

This term will be a lot like the last two terms in that the class will have homework assignments through [masteringphysics.com](http://masteringphysics.com), hand-in problems (HIPs) due each week, and a set of laboratory activities each week.

**New this term:** we will have two formal lab reports (but no graded lab reports!) and a lab exam.

In Physics 213, we focus on electricity and magnetism. One hundred years ago,



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

physicists were successful in unifying these two seemingly different phenomena. The result was a new way of looking at the universe that allowed us to create new technologies and devices such as motors, generators, radio and radar. The field of electromagnetism also allowed us to better explore the cosmos and paved the way to develop still new models that have allowed us to understand the general nature of the universe in which we live.

There are a set of outcomes for PH 213 that have been developed by committees formed from industry executives, researchers and physicists. These outcomes specify the skills and abilities a student successfully completing PH 213 will have. By the end of PH 213, you will be able to:

- Describe and explain charged physical objects moving in electric fields and magnetic fields.
- Conduct experiments to determine the electric field of a charge distribution.
- Use calculus to determine the electric field of a charge distribution.
- Describe and explain the relationship between electric field and electric potential.
- Use Gauss' Law to solve a problem.
- Solve problems in series and parallel circuits.
- Relate the induced current in a circuit to the motion of magnets.

Whether you are an engineer, scientist, mathematician or a citizen of our world, we expect that the tools you gain in this class, as well as all the classes that you take, will allow you to understand in a more complete manner the way the world works and how you can improve the quality of life upon it.

Meanwhile, as always the most important reason to study physics is because it is simply fun. Studying the nuts and bolts of physics takes a lot of work. But it is these nuts and bolts that come together to form a bigger picture of how the universe works and with this a better understanding of the possibilities it affords us.

My favorite topics within physics are acoustics, biophysics (breast cancer cell research), physics education research (PER) and historical physics. You can ask me about Schrödinger's cat, the Michelson Interferometer and the luminiferous æther, marimba resonator and bar construction, microtumors or spheroids, single photon confocal microscopy and multiphoton microscopy.

### **Grading:**

Midterm Exams:	40%
Final Exam:	20%
Labs:	10%
Hand-In HW:	12%
Mastering HW:	10%
Lab Final:	8%

## Grades:

A	100 – 90%
B	89 – 80%
C	79 – 70%
D	69 – 60%
F	59 – 0%

## 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 following quarter to complete all unfinished work.

**W – Withdraw.** A 'W' grade is given if the student withdraws from the class through the Registrar. W's do not impact GPA, but may impact completion scores for financial aid and other purposes. Look in webrunner for the last day to withdraw from classes and other details.

**Exams:** There will be two midterms and a final exam this term. A central aspect of physics is that every week builds upon what was learned in the previous weeks—this is especially true in PH 213. As a consequence, by nature, the final exam is comprehensive. The final will consist of a conceptual part and an analytical part.

**Labs:** This term, two-formal reports will be due. A formal report is a typed up synopsis of your lab for that day. Lab notebooks will not be collected each week—however, you must make sure that you complete the lab before you leave class and make sure that you “sign out” before you leave the room. You can make up one lab by creating a YouTube video that clearly demonstrates some principles of electricity and magnetism and e-mailing me the link.

There will be a **Lab Exam**. You may bring your lab notebook into the Lab Exam. Any permanently affixed items in your lab notebook can then be used to assist you with the Lab Exam.

**Homework:** Homework comes from the end of the chapters in our textbook and are to be completed online at [masteringphysics.com](http://masteringphysics.com). Access to this website comes with your textbook. The course code this term is: **PH213SPRING2019**

**Hand-In Problems (HIPs):** HIPs will be posted on Moodle and at [minirov.info/ph213](http://minirov.info/ph213). Your ability to communicate your problem-solving skills is just as important as your ability to come up with a correct answer. Thus, you should neatly and clearly show all of your work for each HIP. When grading your hand-in problems I will be assessing how clearly and thoroughly you show your work.

## Late Assignment Policy

No work can be made up after it is returned to the class. Late homework is not accepted.

# **College Policies**

## **LBCC Email and Course Communications**

You are responsible for all communications sent via Moodle and to your LBCC email account. You are required to use your LBCC provided email account for all email communications at the College.

## **Disability and Access Statement**

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 this class, please talk to your instructor as soon as possible to discuss your needs. If you believe you may need accommodation but are not yet registered with CFAR, please visit the CFAR website at [www.linnbenton.edu/cfar](http://www.linnbenton.edu/cfar) for steps on how to apply for services or call 541-917-4789.

## **Statement of Inclusion**

To promote academic excellence and learning environments that encourage multiple perspectives and the free exchange of ideas, all courses at LBCC will provide students the opportunity to interact with values, opinions, and/or beliefs different than their own in safe, positive and nurturing learning environments. LBCC is committed to producing culturally literate individuals capable of interacting, collaborating and problem-solving in an ever-changing community and diverse workforce.

## **Title IX Reporting Policy**

If you or another student are the victim of any form of sexual misconduct (including dating/domestic violence, stalking, sexual harassment), or any form of gender discrimination, LBCC can assist you. You can [report](#) a violation of our sexual misconduct policy directly to our Title IX Coordinator. You may also report the issue to a faculty member, who is required to notify the Coordinator, or you may make an appointment to speak confidentially to our Advising and Career Center by calling 541-917-4780.

## **Campus Police/Emergency Resources**

You may review emergency services and resources at the LBCC [Public Safety website](#). Campus Safety can be reached using the 'Code 2' button on any campus phone or by dialing x411 on campus or (541) 917-4440 off campus. Dial 911 for off campus emergencies.

## **Campus Resources**

### **Learning Center**

The Learning Center provides academic support and a comfortable place to study. It is located on the second floor above the Library. It also provides free tutoring services for all classes.

### **Library**

Computers and printing available.

### **Science Help Desk**

The Science Help Desk is located in the atrium on the first floor of Madrone Hall and is manned 20 hours per week.

### **Single Stop**

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 Single Stop Office for support ([singlestopatLBCC@linnbenton.edu](mailto:singlestopatLBCC@linnbenton.edu), 541-917-4877, or visit the website <https://www.linnbenton.edu/current-students/student-support/Single-Stop-at-LBCC/>). The office can help students get connected to resources to help. Furthermore, please notify me if you are comfortable in doing so. This will enable me to provide any resources, knowledge or connections that I may possess to help aid.

### **Linn-Benton Lunch Box**

The LB Lunch Box provides an emergency supply of food for students in need. <https://www.linnbenton.edu/current-students/involvement/institutional-equity-and-student-engagement/student-resources/lb-lunch-box.php>

## **Changes to the Syllabus**

I reserve the right to change the contents of this syllabus due to unforeseen circumstances. You will be given notice of relevant changes in class, through a Moodle Announcement, or through LBCC e-mail.

## Science Help Desk Schedule for Spring 2019

(First Floor of Madrone Hall)

*April 2 – June 7*

TIME	MON.	TUE.	WED.	THUR.
9:00 AM				Mike <b>Chemistry</b> (9:00 – 12:00)
10:00 AM	Aaron <b>Chemistry</b> (10:00 – 12:30)	William <b>Physics</b> (10:00 – 12:00)	Eric <b>Chemistry, Physics</b> (10:00 – 12:30)	Misa
11:00 AM				
12:00 PM				
	Eric <b>Chemistry, Physics</b> (12:30 – 3:00)		Russell <b>Chemistry, Physics, Geology, Astronomy</b> (12:30 – 1:30)	Russell <b>Chemistry, Physics, Geology, Astronomy</b> (1:00 – 3:00)
1:00 PM		Russell <b>Chemistry, Physics, Geology, Astronomy</b> (1:00 – 3:00)		
2:00 PM			Misa <b>Physics, Astronomy, Geology</b> (2:00 – 3:00)	
3:00 PM				

PH 213 Tentative Schedule

Week	Monday	Tuesday	Wednesday	R Lab	Friday
<b>1</b>	April 1st <b>In Service No Class</b>	April 2nd	April 3rd <b>Chapter 22 Electric Charge &amp; Electric Force</b>	April 4th <b>Lab 1: Electric Charges with Formal Report</b>	April 5th  <b>HW 1a Due</b>
<b>2</b>	April 8th <b>Chapter 23 The Electric Field</b>  <b>HW 1b Due</b>	April 9th	April 10th <b>Chapter 23</b>  <b>HIP 1 Due</b>	April 11th <b>Lab 2: The Electric Field</b>  <b>Rough Draft for Peer Review</b>	April 12th  <b>HW 2a Due</b>
<b>3</b>	April 15th <b>Chapter 24 Gauss' Law</b>  <b>Hw 2b Due</b>	April 16th	April 17th <b>Chapter 24</b>  <b>HIP 2 Due</b>	April 18th <b>Lab 3: Gauss' Law</b>  <b>Formal Report Rough Draft Due</b>	April 19th  <b>HW 3a Due</b>
<b>4</b>	April 22nd <b>Exam 1</b>  <b>HW 3b Due</b>	April 23rd	April 24th <b>Chapter 25 Electric Potential</b>  <b>HIP 3 Due</b>	April 25th <b>Lab 4: Electric Potential Energy</b>  <b>Rough Draft Returned</b>	April 26th  <b>HW 4a Due</b>
<b>5</b>	April 29th <b>Chapter 25</b>  <b>HW 4b Due</b>	April 30th	May 1st <b>Chapter 26 Potential and Field</b>  <b>HIP 4 Due</b>	May 2nd <b>Lab 5: Electric Current</b>  <b>Formal Report Due</b>	May 3rd  <b>HW 5a Due</b>
<b>6</b>	May 6th <b>Chapters 26 and 27 Current and Resistance</b>  <b>HW 5b Due</b>	May 7th	May 8th <b>Chapter 27</b>  <b>HIP 5 Due</b>	May 9th <b>Lab 6: RC Circuits with Formal Report</b>	May 10th  <b>HW 6a Due</b>
<b>7</b>	May 13th <b>Chapter 28 Fundamental of Circuits</b>  <b>HW 6b Due</b>	May 14th	May 15th <b>Chapter 29 Magnetic Field</b>  <b>HIP 6 Due</b>	May 16th <b>Lab 7: Earth's Magnetic Field</b>  <b>Formal Report Due</b>	May 17th  <b>HW 7a Due</b>
<b>8</b>	May 20th <b>Exam 2</b>  <b>HW 7b Due</b>	May 21st	May 22nd <b>Chapter 30 Electromagnetic Induction</b>  <b>HIP 7 Due</b>	May 23rd <b>Lab 8: RL Circuits</b>  <b>Formal Report Returned</b>	May 24th  <b>HW 8a Due</b>
<b>9</b>	May 27th <b>Memorial Day No Class</b>	May 28th  <b>HW 8b Due</b>	May 29th <b>Chapters 30 &amp; 31 EM Fields and Waves</b>  <b>HIP 8 Due</b>	May 30th <b>Lab Exam</b>	May 31st
<b>10</b>	June 3rd <b>Chapter 31</b>  <b>HW 9a Due</b>	June 4th	June 5th <b>Chapter 32 AC Circuits</b>  <b>HIP 9 Due/HW 9b Due</b>	June 6th <b>Lab 9: Make an Electric Motor</b>	June 7th  <b>HW 10 Due HIP 10 Due EC HW Due</b>
<b>11</b>	June 10th <b>Final Exam 5pm - 6:50pm MH 108</b>	June 11th	June 12th	June 13th	June 14th