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: TBA (or available by appointment)
Office: https://linnbenton.zoom.us/my/physics.heather, Password: Physics

Course Information

CRN: 15776
8am – 10am on MW, 8am – 11am on R
Number of credits: 5
Classroom: https://linnbenton.zoom.us/j/96583119902, Password: PH213

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.

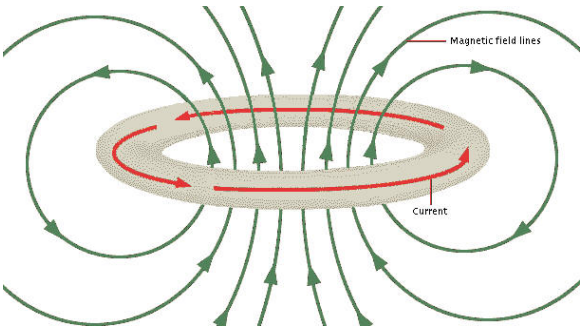
Course Materials

Required:

- Textbook: *Physics for Scientists and Engineers*, 4th ed., by Knight
- Access to MasteringPhysics with a valid access code
- PH 213 Lab Kit

Course Description

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



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 213, we focus on electricity and magnetism. One hundred years ago, 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:	30%
Final Exam:	20%
Labs:	20%
Hand-In HW:	20%
Mastering HW:	10%

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 there may be one or two formal reports. Formal reports may be submitted as a group. A formal report is a typed up synopsis of your lab for that day. We will use a blend of simulations and the lab kits each week. The lab will be written up submitted to Gradescope.

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.

Homework: Homework comes from the end of the chapters in our textbook and are to be completed online at masteringphysics.com. Access to this website comes with your textbook. The course code this term is: **PH213SUMMER2020**

Hand-In Problems (HIPs): HIPs will be posted on Moodle. 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. Homework will be written up and submitted to Gradescope each week.

Late Assignment Policy

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

Plan for the term due to COVID-19:

I plan to continue to hold class as scheduled remotely. I will use both synchronous and asynchronous teaching utilizing Moodle, Zoom, and Gradescope. Any teaching done synchronously will be recorded in the event you are unable to "attend" class. I do hope to connect with each of you at least once per week throughout the term. I understand that it may look different for different individuals.

Those who plan to watch the recordings later in the day, you can expect the videos and slides to be posted by noon each lecture day. You can hold me accountable to this.

Class Policies

Behavior and Expectations

You are held accountable to the Student Code of Conduct, which outlines expectations pertaining to academic honesty (including cheating and plagiarism), classroom conduct, and general conduct.

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 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.

Roadrunner Resource Center

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 for support (Resources@linnbenton.edu, 541-917-4877, or visit the website https://www.linnbenton.edu/current-students/student-support/roadrunner-resource-center.php). 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/student-resources/lb-lunch-box.php

Other due to COVID-19:

The college has an amazing FAQ page about how the term will work (and how to access basic needs resources, such as food and rent if you need them).

If you do not have access to a computer, call the LBCC library at 541-917-4630. If you do not have internet access, there are many options.

I understand that many of you have not taken an online/remote/virtual course before. I am also new to the online environment. I will be extremely flexible and willing to help you in any way I can. My goal is to find a way for all students to succeed!

A note on Zoom: I know not everyone will be able to participate, but I hope many of you will. (It is okay if you have kids at home or pets!) Zoom uses your computer (or phone) camera and audio, so you can see me and other students. In this time of isolation, Zoom can really connect us and help to develop a class community. To get started with Zoom, all you need to do is go here, and sign in with your LBCC email and password. This will create your Zoom account automatically. Your first use of Zoom will require a one-time download. The Zoom mobile app works similarly.

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.

Note: Changes are much more likely to occur this term due to troubleshooting new solutions for labs and activities in a science classroom. I will do my best to not change things around too much, but please be warned and flexible if things do need to change. My expectations for you are highly relaxed due to the many changes and I ask for the same in return.

PH 213 Tentative Schedule

Week	Monday	Wednesday	Thursday Lab
1	June 29th **Chapter 22** **Electric Charge** **& Electric Force**	July 1st **Chapter 22**	July 2nd **Lab 1: Electric Charges** **HW 1a Due**
2	July 6th **Chapter 23** **The Electric Field** **HW 1b Due**	July 8th **Chapter 23** **HIP 1 Due**	July 9th **Lab 2: The Electric Field** **HW 2a Due**
3	July 13th **Chapter 24** **Gauss' Law** **Hw 2b Due**	July 15th **Chapter 24** **HIP 2 Due**	July 16th **Lab 3: Gauss' Law** **HW 3a Due**
4	July 20th **Exam 1** **HW 3b Due**	July 22nd **Chapter 25** **Electric Potential** **HIP 3 Due**	July 23rd **Lab 4: Electric Potential Energy** **HW 4a Due**
5	July 27th **Chapter 25** **HW 4b Due**	July 29th **Chapter 26** **Potential and Field** **HIP 4 Due**	July 30th **Lab 5: Electric Current** **HW 5a Due**
6	Aug 3rd **Chapters 26 and 27** **Current and Resistance** **HW 5b Due**	Aug 5th **Chapters 27 and 28** **Fundamentals of Circuits** **HIP 5 Due**	Aug 6th **Lab 6: RC Circuits** **HW 6a Due**
7	Aug 10th **Exam 2** **HW 6b Due**	Aug 12th **Chapter 29** **Magnetic Field** **HIP 6 Due**	Aug 13th **Lab 7: Earth's Magnetic Field** **HW 7a Due**
8	Aug 17th **Chapter 29** **HW 7b Due**	Aug 19th **Chapter 30** **Electromagnetic Induction** **HIP 7 Due**	Aug 20th **Lab 8: Mass of an Electron** **HW 8a Due**
9	Aug 24th **Chapter 30** **HW 8b Due**	Aug 26th **Chapters 30 and 31** **EM Fields and Waves** **HIP 8 Due**	Aug 27th **Lab 9: Make an Electric Motor** **HW 9a Due**
10	Aug 31st **Chapter 31** **HW 9b Due**	Sept 2nd **Chapter 32** **AC Circuits** **HIP 9 Due**	Sept 3rd **Final Exam** **HW 10 Due** **EC HW Due**