

University Physics II

PHYS-2326

Fall 2020 Sections 52A CRN-17968, 52B CRN-17936 3 Credits 08/24/2020 to 12/10/2020 Modified 09/02/2020

Meeting Times

Lecture

Monday, Wednesday, 12:00 PM to 1:15 PM, SCHW 220 / Remote

All courses with a face-to-face component will be enhanced with simultaneous remote instruction in Fall 2020. For example, a course with 30 or fewer students that meets twice a week would on the first day have one group face-to-face one day with the other group watching live on Zoom remotely and then the face-to-face and remote groups would swap the second day. This limits face-to-face meetings to 15 or fewer students at a time.

This class breaks into two sections: 52A and 52B, where on Mondays: 52A is face-to-face and 52B is live-remote and then on Wednesdays: 52A is live-remote and 52B is face-to-face.

	Mondays	Wednesdays
Section 52A	Face-to-Face on Campus	Live Videoconference
Section 52B	Live Videoconference	Face-to-Face on Campus

In order to access your course remotely, you should follow the following procedure:

- 1) Log in to eCampus.
- 2) Access the course like you would normally to find the content and syllabus.
- 3) Click on "Zoom" in the blue horizontal bar near the top.
- 4) A time-sorted list of current and upcoming scheduled meetings should be displayed. Find the meeting that corresponds to your class and there should be a button to join that meeting. This should automatically connect you to the Zoom meeting.

It is quite possible, even likely, that some days face-to-face classes will need to be canceled and the class will be done only remotely. If anyone in a class gets sick, then that class, including me, is quarantined. Moreover, if anyone in any of my classes gets sick, then I am quarantined and the class will be held remotely. Check the News on the front page of the eCampus class page every day before coming to class.

It is also possible that if there may be a significant surge in infections causing the entire college to switch again, like last Spring, to all remote. If so we will proceed with a live-remote classroom and successfully complete the semester. Much is uncertain, but I am very confident we will have a successful semester.

Contact Information

Professor: Dr. Terrence Honan

Email: thonan@blinn.edu

Office: SCHW 430H

Phone: 979-209-7420

Office Hours

Monday, Tuesday, Wednesday, Thursday, 3:00 PM to 4:00 PM, by Zoom

<https://blinn-edu.zoom.us/j/6600538582> (<https://blinn-edu.zoom.us/j/6600538582>)

Description

3 lecture hours per week; 48 total contact hours. Credit; 3 semester hours.

Principles of physics for science, computer science, and engineering majors, using calculus, involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics.

Requisites

Prerequisites:

PHYS 2325 University Physics I (lecture)

MATH 2414 Calculus II (4 SCH version)

Core Curriculum Statement

This course is not a core curriculum course.

Outcomes

1. Articulate the fundamental concepts of electricity and electromagnetism, including electrostatic potential, potential difference, magnetic field, induction, and Maxwell's Laws.
2. State the general nature of electrical forces and electrical charges, and their relationship to electrical current.
3. Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.
4. Apply Kirchoff's Laws to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
5. Calculate the force on a charged particle between the plates of a parallel-plate capacitor.
6. Apply Ohm's law to the solution of problems.
7. Describe the effects of static charge on nearby materials in terms of Coulomb's Law.
8. Use Faraday's and Lenz's laws to find the electromotive forces.
9. Describe the components of a wave and relate those components to mechanical vibrations, sound and decibel level.
10. Articulate the principles of reflection, refraction, diffraction, interference and superposition of waves.
11. Solve real-world problems involving optics, lenses, and mirrors.

Materials

- **Required Textbook:** Young and Freedman, University Physics, 15th edition. The full two-semester e-book including Mastering Physics may be purchased for around \$115 through the Mastering Physics link in eCampus. Because of my extensive interactive lecture notes, I discourage students from buying the expensive paper text.
- **Required Homework System:** Students must purchase an access key to Mastering Physics, the textbook publisher's online homework system. If you have a copy of Mastering Physics from the previous semesters then it should still be valid. Students should log in to Mastering Physics only through eCampus (there is a link on the front page of eCampus) and those who need to purchase a copy can also do so through the eCampus link.
- **Scientific Calculator:** Students must have a proper scientific calculator with them for every class and exam.
- **Online Course:** Computer with webcam and reliable internet access. **REQUIRED:**
 - a full computer (not a Chromebook, tablet, or smartphone),
 - a webcam and microphone (for simultaneous remote participation and test proctoring),
 - headphones (if using a computer on campus)
 - reliable internet access
- **photo ID** - students are required to show photo Identification (such as you Blinn ID or official photo ID) when taking online testing.

Students are encouraged to cover confidential information such as ID number, address, etc.

- **Interactive Lecture Notes:** [Lecture notes](#) will be provided in two formats. For printing a standard .pdf format file will be posted. An interactive version will also be available as an .nb file format; to open these one must have a computer (Windows, OS X or Linux) with *Wolfram Player* installed on it. To download this *free* player go to: www.wolfram.com/player/. Students may bring notebook computers to class but must use them only for following these notes.
- **Lecture Videos:** Video lectures will be provided for each chapter in the lecture notes. I will make voice-over recordings as I scroll through the notes. The videos for each chapter are broken into several segments that are shorter than a typical face-to-face lecture. The video links for a given chapter will be in the same submodule with the chapter's lecture notes.
- **Other Web resources:** [problems with solutions](#), the [exam formula list](#) and [previous exams with answers](#). All these resources including the interactive lecture notes are also available in eCampus under Content > Table of Contents > Chapters
- **Mathematica and Wolfram Alpha Pro:** Blinn now has an unlimited site license to Mathematica and to Wolfram Alpha Pro. Students may download free copies of these programs for their personal computers. The download links can be found here: [Mathematica/AlphaPro Download](#)
- **Microsoft Office:** Through Blinn students may also download a copy of the Office 365 Suite.
- **CampusClear:** All students must download and install the phone app CampusClear. You must certify with that app every day before you come to campus. It is a very easy process.

☰ Course Requirements

There will be four major exams, group quizzes, online homework and a cumulative final.

- **Major Exams and Final:** The four major exams and final will be closed book/closed note tests. A formula list will be provided; the [exam formula list](#) can be found at the web site and on eCampus.
- **Take-home Group Quizzes:** The quiz grade will consist many of 30-point quizzes. There will be no make-up quizzes, for any reason. The lowest quiz grade will be dropped. Quizzes are unproctored and open book / open note. Students may discuss quizzes amongst themselves. After dropping one, all the remaining quiz grades will be added and rescaled to 100 points. Students will submit the quizzes in the eCampus Dropbox shown in the submodule for that specific quiz. The quiz must be submitted as a properly-scanned single PDF document. To create the single PDF file, students must use a scanner or a phone app like Adobe Scan, Google Drive (has a built in feature), Clear Scan, Office Lens or Cam Scanner. It is the burden of the student to guarantee the PDF file is readable. It is certainly fine to use a tablet with stylus to do the entire quiz without printing or scanning but the final product must be a single PDF file. Any submission other than a single, readable, PDF file will not be graded. The due date is very rigid. Posted solutions will be available after the deadline, so late submissions will not be accepted.
- **Online Homework:** We will use the textbook publisher's online homework system, Mastering Physics. Each assignment will have a due date. One assignment will be dropped, the one that gives the student the maximum benefit. Mastering Physics will not be reopened at the end of the semester; assignments must be completed by the due date for credit. The final point total for the semester will be rescaled to 100 points.

✓ Evaluation

Criteria for Grading

There will be 4 major exams; the lowest will be dropped and the remaining three will each be worth 16%. The group quiz grade is 10% and the Mastering Physics homework grade is 5%. The remaining 27% is the cumulative final exam.

Category	Percent
Four Major Exams	16% ×(3 best)
Group Quizzes	10%
Online Homework	15%

Final Exam	27%
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The grading system of Blinn College is as follows*:		
A	90 - 100	Superior
B	80 - 89	Above Average
C	70 - 79	Average
D	60 - 69	Passing
F	< 60	Failing
*from Board Policy Manual EGA(LOCAL)		

Blinn College Policies

All policies, guidelines, and procedures in the [Blinn College Catalog \(http://catalog.blinn.edu/\)](http://catalog.blinn.edu/), [Blinn College Board Policies \(http://pol.tasb.org/Home/Index/1204\)](http://pol.tasb.org/Home/Index/1204), and the [Blinn College Administrative Regulations \(https://www.blinn.edu/administrative-regulations/\)](https://www.blinn.edu/administrative-regulations/) are applicable to this course.

[Specific information on civility, attendance, add/drop, scholastic integrity, students with disabilities, final grade appeal, alternative retailers, campus carry and proctoring arrangements and cost. \(http://www.blinn.edu/syllabus-policies/\)](http://www.blinn.edu/syllabus-policies/)

Notice of any action taken under these protocol and procedures, by Blinn College or its employees, may be delivered by hand, through the U.S. Postal Service, or electronically to the student's Blinn Buc e-mail account. Notice shall be deemed received upon actual receipt, on deposit in the U.S. Mail, or upon entering the information processing system used by Blinn College for Blinn Buc e-mail accounts, whichever first occurs.

Information about the changes Blinn has made to the Fall semester: [Back with Blinn \(https://www.blinn.edu/back-with-blinn/index.html\)](https://www.blinn.edu/back-with-blinn/index.html).

* Course Policies

[Please read: Fall 2020 General Course Policies. \(http://www.blinn.edu/back-with-blinn/course-policies.html\)](http://www.blinn.edu/back-with-blinn/course-policies.html)

Attendance policy: You must attend class each class period either live or remotely via zoom as scheduled. If, on some day, you wish to take class remotely instead of live, please contact me via email. Each class day, I will take attendance for live students, zoom will record students who attend remotely and I will transfer this to my attendance roster at a later date.

Since attendance can occur remotely, excused absences will generally not be given. Exceptions are rare and at the discretion of the instructor. If you have an unusual situation that may prevent your attendance please contact the instructor. Exceptions may be rare, but I am much more willing to work with you to find solutions if I'm contacted early. Proof may be required.

Any student who accumulates more than 4 absences will be dropped from the class. Exceptions are rare and at the discretion of the instructor.

Conflict Resolution: If a conflict arises with your instructor, you must follow proper procedure. First attempt to resolve the issue directly with your instructor. If the issue is not resolved, then you may proceed to make an appointment with the Department Head (Ms. Rachel Sanchez rachel.sanchez@blinn.edu). The three of us will have a meeting where we will try to resolve the issue. If your issue is still not resolved, please consult the Blinn College website Student Rights and Responsibilities,

<https://www.blinn.edu/complaint/index.html> and submit a written complaint via the Student Complaint Portal. You can also find this site by doing a web search for "Blinn college Student Complaints." In the portal you will find names and contact information for Blinn College employees who can assist you with your complaint. Do not go directly to the Dean with complaints.

COVID-19 Precautions: When on campus, all students and Blinn faculty and staff must wear a face mask. I will enforce this in the classroom without exception; students not in compliance will be asked to leave class. Everyone must have a proper mask covering both the mouth and nose at all times. Masks with valves that allow you to exhale freely are not allowed in class. Clear plastic face protection may be worn IN ADDITION to the face mask but not as a substitute. If there is some medical reason why you cannot wear a proper mask, then you must document that with the Office of Disability Services and obtain the appropriate paperwork from them.

Eating and Drinking: Eating and drinking are not allowed in classrooms. This will be rigidly enforced because of the COVID-19 precautions. **Laboratory Safety:** Because this class meets in a laboratory room, all Physics laboratory safety rules must apply. It is the policy of the Natural and Physical Sciences Division that students must wear proper attire whenever in the laboratory. This excludes open-toed shoes (or one-toed shoes with socks.) Failure to do so will result in students being sent home from the laboratory with a zero on the resulting assignment. The Food and Drink prohibition will be enforced strictly. Any drink container even empty ones, cannot be visible; hide it in a bag.

Testing Procedure for Major Exams and the Final Exam: All exams are closed book, closed note.

Taking Exams online

- You will be monitored with the Honorlock system for each exam. This is a webcam-based system that monitors you with an AI proctor and on occasion a live proctor might jump in. The entire session is recorded and I review these videos, paying most attention to the flags from the AI system.
- You must have a full computer (not a Chromebook, tablet, or smartphone) with a working webcam and microphone. You cannot use your phone for a camera.
- Make sure your broadband connection is sufficiently robust. You will have a time window to take the exam and make sure you choose a time when no one else who sharing your broadband connection dominates the bandwidth (i.e. streaming video or lengthy downloads) during your exam.
- You must have a cleared work zone in which no one else will enter for the duration of the test. The work zone must be a cleared desk or a table; you cannot take the exam sitting on a bed or on the floor.
- You must remain in-front of the camera for the duration of the test. **NO bathroom breaks.** *Please* use the restroom beforehand.
- You are allowed to have a scientific calculator. Clear the memory before the test. (Remember to check settings: radians or degrees.)
- You may have a printed copy of the equation sheet (2 sheets, single-sided or one sheet two-sided). No handwritten annotations are allowed on these sheets. The formula list must be printed; I will not link it.
- You will be allowed 2 blank sheets of scratch paper.
- You will have to do a room scan and show your ID before the test starts. The room scan must clearly show your cleared desktop/work space. Your ID can have ID numbers & birth-dates covered up. You will also need to show your equation sheets, blank work sheets and calculator. Test time does not start until after this process is over.
- Your eyes must remain on the monitor, or the work pages in front of you. Looking off to the side or up to the side for extended times, or reaching out of the region in front of you can result in a failed test, with a grade of zero.
- Please ensure your camera is panned back to show your face and part of your front. Having the camera too close can result in "face-not-clearly-visible" alerts by the AI system. This could trigger a pop-in visit from a moderator. Your test time does NOT stop during a live pop-in visit.
- It's advisable not to wear shirts with faces on them, or sit in front of pictures or posters with faces showing, as this may cause an "other-person-in-the-room" alert by the AI.
- No phone, headset, or second computer can be anywhere near you.
- No other person should enter the camera area or converse with you.
- No books, or notes (other than you annotated equation sheet.) are allowed.
- Turn-off any other programs running on your computer. Turn-off/disable any alerts, email, social or communications programs. These are not allowed to be running. You may not have any other websites open. Only one monitor can be connected. These programs may delay the start of your test, or may cause you to fail the test if the alerts go off during the exam.
- If you are having any issues with Honorlock during the exam, click the Honorlock Help button on the screen.

How to Succeed in this Course: Science courses may be challenging and difficult. Most successful students spend two to four hours studying per week for each credit hour of the course.

Key Points

- Have access to all the materials and technology required for this course (webcam, microphone, computer, reliable internet, etc).
- Attend all classes. Each lecture builds on the previous lecture. Stay ahead of the material.
- Come to class prepared by reading the textbook and/or lab manual beforehand and taking notes before class to improve success.
- If you have a question during lecture, go ahead and ask it. Chances are that at least three other students have this same question.
- Know your deadlines and course policies by looking at the syllabus, instructor announcements, and eCampus dates, schedules, and news items.
- Work through lots of practice problems in addition to your homework.
- Form study groups with your peers.
- Ask your professors for help, visit office hours, and, if needed, request an appointment to see your instructor one-on-one.
 - Be prepared when you visit with your instructor and have questions related to content ready.
- Seek help from Blinn College's tutoring services, if needed.
- Be responsible for your own learning by actively engaging in the course.

Schedule

Course Content and Approximate Schedule

Chapter from Lecture Notes	Textbook Chapter
A - Electric Charge and Fields	21
B - Gauss's Law	22
C - Potential and Potential Energy	23
D - Capacitance	24, except 24.2
E - Current, Resistance and DC Circuits	25, 26 except 26.4, 24.2
F - Magnetism	27, 28
G - Faraday's Law and Electromagnetism	29
H - Inductance and Transient Circuits	30, 26.4
I - AC Circuits	31
J - Electromagnetic Radiation	32
K - Geometric Optics	33, 34
L - Interference, Diffraction and Polarization	35, 36

Wk.	Day/Date	Material Covered	Lec. Mins.	Weekly Contact Hours
1	Mon. 8/24	Review Syllabus, Start Chapter A	75	3
	Wed. 8/26	Continue Chapter A	75	
2	Mon. 8/31	Finish A, Start Chapter B	75	3
		Quiz 1 (thru A.3 Disc. Dist.) - due 11:59		
		Finish Chapter B		

Wk.	Wed. 9/2 Day/Date	Material Covered	75 Lec. Mins.	Weekly Contact Hours
		MP: Electric Charges and Fields - due 11:59		
3	Mon.9/7	Labor Day Holiday	75	3
	Wed. 9/9	Start Chapter C	75	
		MP: Gauss's Law - due 11:59		
		Quiz 2 (thru B)		
4	Mon. 9/14	Finish Chapter C	75	3
	Wed. 9/16	Start Chapter D	75	
		MP: Potential and Potential Energy - due 11:59		
		Quiz 3 (thru Chapter C) - Due 11:59 PM		
Fri. 9/18	Test 1 – Chapters A through C	-		
5	Mon. 9/21	Finish Chapter D, Start Chapter E	75	3
	Wed. 9/23	Continue Chapter E	75	
		MP: Capacitance - due 11:59		
		Quiz 4 (D thru E.2) - due 11:59 PM		
6	Mon. 9/28	Finish Chapter E	75	3
		MP: Current and Resistance - due 11:59 PM		
		Quiz 5 (thru E.4) - due 11:59 PM		
	Wed. 9/30	Finish E, Start F	75	
MP: DC Circuits - due 11:59 PM				
7	Mon. 10/5	Chapter F (thu F.2) - due 11:59 PM	75	3
	Wed. 10/7	Continue Chapter F	75	
		MP: Mag. Fields and Mag. Forces - due 11:59		
		Quiz 6 (thru F.2) - due 11:59 PM		
Fri. 10/9	Test 2 – Chapters D through F.2	-		
8	Mon. 10/12	Finish Chapter F	75	3
	Wed. 10/14	Start Chapter G	75	
		Quiz 7 - due 11:59 PM		
9	Mon. 10/19	Continue Chapter G	75	3
		MP: Sources of Magnetic Fields - due 11:59		
		Finish G		

Wk.	Day/Date	Material Covered	75 Lec. Mins.	Weekly Contact Hours
	Wed. 10/21		75	Weekly Contact Hours
		Quiz 8 - due 11:59 PM		
10	Mon. 10/26	Finish Chapter G	75	3
	Wed. 10/28	Start Chapter H	75	
		MP: Faraday's Law and Electrodynamics		
		Quiz 9 (thru G) - due 11:59		
Fri. 10/30	Test 3 – F.3 through Chapter G	-		
11	Mon. 11/2	Finish Chapter H, Start I	75	3
		MP: Inductance and Transient Circuits		
	Wed. 11/4	Continue Chapter I	75	
		Quiz 10 - due 11:59		
12	Mon. 11/9	Finish Chapter I, Start Chapter J	75	3
	Wed. 11/11	Continue Chapter J	75	
		Quiz 11		
13	Mon. 11/16	Finish Chapter J	75	3
		MP: AC Circuits - due 11:59		
	Wed. 11/18	Start Chapter K	75	
		MP: Electromagnetic Waves - due 11:59		
		Quiz 12 (thru J) - due 11:59		
Fri. 11/20	Test 4 – Chapters H, I, J	-		
14	Mon. 11/23	Finish Chapter K, Start L	75	3
		MP: Light in a Medium - due 11:59		
	Wed. 11/25	Thanksgiving Break	75	
	Mon. 11/30	Last Day to Drop with a Q		
15	Mon. 11/30	Chapter L	75	3
		MP: Geometric Optics - due 11:59		
		Quiz 13 - due 11:59		
	Wed. 12/2	Finish Material	75	
		MP: Interference and Diffraction - due 11:59		
Quiz 14 - due 11:59				
16		Cumulative Final -	150	3

Wk.	Day/Date	Material Covered	Lec. Mins.	Weekly Contact Hours
			Total	48

***Note:** In the Carnegie Hours system, 50 minutes = 1 contact hour.