

University Physics II Phys 252 syllabus

Spring 2023

(4 credits)

Prereq: PHYS 251&251L or ME 221&222

Coreq: MATH 166

Instructional team

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Course Description

Physics 252 is a detailed introduction to electromagnetism, waves, and optics. The 4 credit course for engineering/science students requires an understanding of Math 166 and Phys 251&251L (or ME 221&222). There are three lectures each week with regular HW assignments and other outside class-time required work.

Course goals

Students completing Physics 252 should be able to solve electrostatics, electrodynamics, circuits, and optics problems that require both conceptual and mathematical understanding of the material. Students must develop qualitative and quantitative reasoning skills necessary to answer novel questions that were not explicitly discussed in class. Students must be able to provide alternative solutions, check answers for consistency, and identify mistakes in their incorrect lines of reasoning (if appropriate).

Prerequisites

Math 165 (prereq/coreq)

Class Hours and attendance via zoom

9:00 am - 10:50 am Monday, AGHILL 112

9:00 am - 9:50 am Wednesday and Friday, AGHILL 112

You can join the class on zoom. Please follow the link:

Join Zoom Meeting

<https://ndsu.zoom.us/j/91984842300?pwd=SDRNam5tWm8rVjRGQmd5ZVZhZUI5dz09>

Meeting ID: 919 8484 2300

Passcode: 25223 (to remember the passcode: 252 is a physics class number; 23 is the current year)

Office Hours:

Wednesday 1:00 pm - 2:00 pm and Friday 10:00 am - 11:00 am. Since office hours attendance is low, please email me in advance. Zoom office hours are possible.

Office hours will be held during the times specified above. However, you are welcome to contact me via email to arrange a different meeting time. In addition, physics graduate students will also hold office hours, specific time slots will be announced later.

Course materials

1. Textbook (optional): Halliday, D.; Resnick, R.; Walker, J. *Fundamentals of Physics*, any edition ed. Wiley., (full version)
2. PointSolutions app.
3. Scientific calculator.

Course format

Phys 252 meets three times a week in a large lecture hall. There are no small group discussion sessions associated

with Phys 252. However, we would like to provide opportunities for you to think about the material in class, share your thoughts with classmates, and provide feedback on your learning to the instructional team. As such, we will be using PointSolutions (formerly known as Turning Point Web).

Pointsolutions/Turning Point Web works for students who attend class in person OR online. NDSU students have free access to Turning Point licenses. We will use a web-based Turning Point option, which allows all students to participate in class, those who are physically present on campus and those who participate via zoom. You do NOT need to purchase any hand-held “clickers”, but you will need a device capable of connecting to the internet (phone, iPad, laptop, etc). If that is an issue, please let me know. You will also need to download the app on your device. Follow a few steps described in the link below to create an account and to download the app.

<https://kb.ndsu.edu/page.php?id=101669>

Please be prepared to use/test the Turning Point app on the first day of class.

Attendance

Attendance is not required, but you are encouraged to attend and participate by using Turning Point Web regardless of your attendance choice, in-person or online. However, participation is voluntary, and no credit will be assigned for attendance or clicker participation.

How to succeed in this class

Do not memorize the material or solutions to problems. Think about your reasoning. Science (and physics in particular) is not about memorization. It is about the ability to think, make mistakes, recognize when mistakes are made, recover from these mistakes, and move forward.

Please check out a set of five short videos on how people learn and on effective strategies for learning.

<http://www.youtube.com/playlist?list=PL85708E6EA236E3DB>

The videos are created by Stephen L. Chew, a cognitive psychologist at Samford University. The videos discuss common student misconceptions about learning (memorization of facts, reading lecture notes as opposed to processing information, *etc.*). The videos also include discussions of effective strategies for academic success. There is a sequence of 5 episodes, you can watch all of them in under 30 minutes. I am extremely impressed by the videos. I think you will enjoy the videos as well. Check them out!

Homework assignments

Regular web-based ([LON-CAPA](#)) HW (due approximately every 10 days).

Ungraded web-based assignments

We would like to learn more about what ideas and concepts related to Phys 252 you know well and what material needs to be discussed in class at a deeper level. To help us gain this knowledge and to give you opportunities to practice applying ideas learned in class, we will ask you to complete short weekly *ungraded* assignments (15-30 min long). You are *not* expected to do any reading or studying prior to each assignment because we want to learn how you *think* about the material (not necessarily what you read about it in a textbook, or whether or not you are correct). However, you will be expected to explain your answers or reasoning and make an effort to answer each question included on these web-based assignments. Your effort and not the correctness of your answers will contribute 10% to your final grade. Participation in these assignments is usually beneficial for the students since they 1) give students an opportunity to recall relevant material prior to coming to class, 2) recognize what students do and do not know, and 3) practice applying new concepts prior to course exams.

A link to each web-based assignment will be emailed to you. Each assignment will also be announced in class and on Blackboard. Typically, these assignments will be open each week over the weekend, Friday – Tuesday.

Exams.

Exams will be in person, in class, in a traditional paper-based format.

All exams will have a mix of multiple-choice questions (you will get credit for correct answers only) and free-response questions (you will be asked to explain your reasoning and show your work; you will be given credit for

partially correct answers as well). To allow for partial credit on free-response questions, each exam question will be worth 5-7 points. However, since only *percentages* contribute to calculating your final grade in the course, only the percentage of points earned on each exam is relevant, *not* the absolute number of points.

Final exam will be comprehensive (will cover all topics discussed in the course).

Tentative exam dates: February 10, March 24, and April 26. The final is comprehensive on May 12, 8 am.

Grading information

Your final grade in physics 252 will be determined on the following basis:

Homework: 40%

Exams: 50% total (lowest exam score will be dropped, but *not* the final)

Ungraded web-based assignments: 10%

Extra credit HW problems: 2%

Letter Grading:

89.5 to 100% = A

79.5 to 89.4% = B

69.5 to 79.4% = C

59.5 to 69.4% = D

Health and Safety Expectations

Do not come to class if you are sick. Attendance via zoom is available. All course resources will remain accessible through Blackboard, including zoom recordings and lecture slides.

Copyright of Course Materials

According to NDSU Policy 190 on Intellectual property, recording the lectures in this course is prohibited with your own personal devices (without prior express approval from the instructor). All recordings and course materials posted in the Blackboard cannot be used for anything other than personal use for learning.

Special Considerations

Students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor as soon as possible. Extra time on exams must be requested by formal letter from the NDSU department of disability services and administered through that department.

Veterans and student soldiers with special circumstances or who are activated are encouraged to notify the instructor in advance.

Academic Responsibility

All work in this course must be completed in a manner consistent with NDSU University Senate Policy, section 335: Code of Academic Responsibility and Conduct.