

University Physics II Phys 252 syllabus
Fall 2020
(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 four lectures each week with regular HW assignments and other outside the class-time required work.

Course goals

Students completing Physics 252 should be able to solve waves, 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

11:00am - 11:50am MoTuWeFr Askanase Auditorium

For synchronous class attendance via zoom, please follow the link:

<https://ndsu.zoom.us/j/94440663596?pwd=bXJ3L3JhNmppY29NaVpCemZEZ0tIQ09>

Meeting ID: 944 4066 3596

Passcode: Phys252

Office Hours via zoom

Monday, Wednesday, and Friday after class, 12:00pm - 1:00pm.

You may meet with me via zoom during the office hours specified above. Follow the link below to log into zoom.

Join Zoom Meeting (for office hours)

<https://ndsu.zoom.us/j/96332012395?pwd=ZG04dE1Jb2JrdGpLZUZuTEZlandyQT09>

Meeting ID: 963 3201 2395

Passcode: Phys252

Office hours will be held during the times specified above. However, you are welcome to contact me via email to arrange a different time to meet. In addition, teaching assistants will also hold zoom 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. Turning Point app.
3. Scientific calculator.

Course format

Phys 252 meets four 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. Given that small group interactions are not possible due to physical distancing, we implemented two teaching techniques: Turning Point Web and Google doc.

- a. **Turning Point Web.** All NDSU students have free access to Turning Point license. 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>

We will use Turning Point to record your attendance and seat assignment in class. So, please be prepared to use/test the Turning Point app on the first day of class.

- b. **Google doc.** Below is a link to a google doc which will serve as an interactive space for this class. You are strongly encouraged to use this doc to ask questions during class, answer questions posed by others, comment on the material, etc. During problem-solving or “clicker question” exercises, you are strongly encouraged to use this space to explain your thought processes. Consider questions such as “Why is your answer the one you chose? What led you to believe that this answer is correct?” During class, teaching assistants will monitor the doc and provide just-in-time feedback to the instructor. Your participation in the google doc is very important to us for receiving feedback on your learning and for helping you learn more productively.

Everybody with the link can edit, so you can choose to log in anonymously as a striped raccoon or a fearless squirrel.

https://docs.google.com/document/d/1L0FYh69sfebT9yzGiKEXz1FBg1Vh_WvH5RuVpeHLmw8/edit?usp=sharing

Attendance

Attendance is not required, however, participation in “clicker” questions (either in class or synchronously via zoom) will contribute up to 5% to the final grade. If you attend class in person, you will be asked to use Turning Point Web to record your seat during each class. This is done to accommodate contact tracing in case of illness or exposure.

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 pre-tests

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 about your background, we will ask you to complete short weekly *ungraded* pre-tests (~15 min long). You are *not* expected to do any reading or studying prior to taking each pre-test 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 pre-test question. Your effort and not correctness of your answer will contribute 5% to your final grade. Taking pre-tests is usually beneficial for the students since pretests 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) get an idea about what is coming up in class. It is worth taking pre-tests.

A link to each pre-test will be emailed to you. Each pre-test will also be announced in class and on Blackboard.

Graded quizzes.

Instead of traditional three midterms and a final, we will have regular short online quizzes. Approximately every 2 weeks, you will be asked to take a short quiz (~20-30 minutes long). You may receive different versions of the quiz. Questions will appear on the screen one at a time so that you have to submit an answer to a question before moving to the next one. We recognize that this approach is not ideal, but it provides flexibility for students who are unable to attend class in person to take the quiz under equitable conditions.

Students must take the quizzes individually; no collaborations are allowed.

All quizzes 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 quiz question will be worth 5-7 points. However, since only *percentages* contribute to the calculation of your final grade in the course, only the percentage of points earned on each quiz is relevant, *not* the absolute number of points.

Grading information

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

Homework: 40%

Quizzes: 50% total

Ungraded work, points are assigned based on student participation efforts regardless of the correctness of their responses: 10%

- In-class participation efforts (via Turning Point Web): 5%
- Pre-test participation efforts: 5%

Extra credit HW problems: 5%

Extra Credit HW could be used to make up points lost due to missing a class or not completing a pre-test.

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

The following link provides web resources for information on COVID-19 and NDSU's response.

https://www.ndsu.edu/admission/fall_2020_prelim_plan

- NDSU **requires students to wear face coverings in classrooms.** Wearing face coverings helps reduce the risk to others in case you are infected but do not have symptoms.
- You must properly wear a face covering (covering both the mouth and nose) for the entirety of the class.
- If you fail to properly wear a face covering, you will not be admitted to the classroom. However, you may choose to participate in the class remotely (see the zoom link above).
- Students who cannot wear a face covering due to a medical condition or disability may seek accommodation through Disability Services (701-231-8463; <https://www.ndsu.edu/disabilityservices/>).
- Disinfecting supplies are provided for you to disinfect your learning space. You may also use your own disinfecting supplies.
- Students should observe social distancing guidelines whenever possible. **While seated in Askanase Auditorium, students should occupy every other seat.**
- In accordance with NDSU Policy 601, failure to comply with instructions, including this syllabus, may be handled according to the Code of Student Conduct resolution process and may result in disciplinary sanctions.
- **Do not bring food and drinks in the class** unless you have documented accommodation through Disability Services. Remember, you have an option to participate via zoom.

If you are unable to attend the class due to illness or possible exposure to COVID-19

Do not come to class if you are sick. Please protect your health and the health of others by staying home and participate in class remotely. For information on COVID-19, symptoms, testing, and steps to stay healthy see https://www.ndsu.edu/studenthealthservice/covid_19/.

- Do not come to class if you have been exposed to individuals who tested positive for COVID-19 and/or you have been notified to self-quarantine due to exposure.
- If you are absent from class as a result of a COVID-19 diagnosis or quarantine, remember that this course is set up so that you can participate and complete all the work remotely.
 - You can attend the class remotely via zoom (see the link above)
 - You can submit assignments and take web-based quizzes remotely.
 - Other remote learning options will be determined on a case-by-case basis.

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.