

## 1 Course Description:

The second semester of calculus based introductory physics. Per the NDSU bulletin, we will be studying:

*“Electric charge, field, potential, and current; magnetic field; capacitance; resistance; inductance; RC, RL, LC and RLC circuits; waves; optics.”*

**Prerequisites:** PHYS 251 or ME 222

**Corequisites:** MATH 166

**Credit Hours:** 4

## 2 Instructor Information:

**Instructor:** Nekeisha Johnson

**Email:** nekeisha.johnson@ndsu.edu

**Office:** South Engineering 318C (Digitally at a Google Meet, link provided on Blackboard)

**Office Hours:** TBD - I will release a poll on the first day of classes - or by appointment

## 3 Course Materials:

**Text(s):** [University Physics: Volume II](#) and [University Physics: Volume III](#)

These books are available for free online at [openstax.org](https://openstax.org), and are linked above.

We will be covering chapters 5-16 of Volume II, and chapters 1-4 of Volume III.

We will also be using Blackboard and LON-CAPA. LON-CAPA can be accessed by selecting the appropriate server at [http://www.ndsu.edu/physics/lon\\_capa](http://www.ndsu.edu/physics/lon_capa). Your user name is everything to the left of the @ in your NDSU email address - if your email is john.doe.3@ndsu.edu, then your LON-CAPA username is john.doe.3. You will be prompted to create your own password by following the “Forgot Password” option. For assistance, contact me, or the lab technician Paul Omernik (Paul.Omernik@ndsu.edu).

## 4 Course Goals and Learning Objectives:

There is one big goal that I have for you during this course. That is:

1. To integrate and apply principles of electricity and magnetism (charge, field, potential, current, circuits, waves, etc.) to solve conceptual and practical problems.

Learning outcomes will be presented as we move through the course, however some examples of these outcomes may be:

1. Explain qualitatively the force electric charge creates
2. Solve for the electric field based on a changing magnetic flux in time

## 5 Evaluation Procedures and Criteria:

I will be using a points-based, approach to grading this course. A total of 130,000 points will be available during the course. Earn points to reach your final goal! Final grades will be as follows:

A	100,000+
B	90,000 - 99,999
C	70,000 - 89,999
D	40,000 - 69,999
F	0 - 39,999

Points will be available in the following ways:

<b>Quizzes</b>	48,000
<b>Tests</b>	48,000
<b>Checkpoints</b>	32,000
<b>Introduction</b>	2,000

- **Quizzes:** 16 at 3,000 each = 48,000 pts

You may notice that homework is not worth any points - that's because I want you to be able to do your best on the homework, but still have room to make mistakes - that's how we learn! Instead, I will give a brief quiz after each of the 16 chapters that we'll be covering. These quizzes will be 2-3 questions about topics from the chapter, that should seem familiar if you've done the homework. This is my way of finding out if you figured out the material, eventually! So contact me, work with your classmates, let's figure out these problems! These quizzes are supposed to examine your understanding of each chapter, individually. You will have 20 minutes for each quiz, and they should be taken within 2 days of when you are expected to have finished the chapter.

- **Tests:** 3 at 16,000 each = 48,000 pts

There will be 3 tests over the course of 8 weeks. These tests will be examining your ability to connect the material from multiple chapters all together. They will be broken down as follows:

- Test 1: Electricity (chpt 5-10) (16,000 pts)
- Test 2: Magnetism (chpt 11-16) (16,000 pts)
- Test 3: Optics (chpt 1-4) (16,000 pts)

Each test will be roughly 4x bigger than a quiz, so around 10 problems (split between calculation and conceptual) connecting the material in each subtopic. *While the tests are not explicitly cumulative, learning is cumulative, and material from a previous section may be critical to solving a current problem.* Tests will be available all day on the day they are listed, and you will have 1 hour to complete them.

- **Checkpoints:** 16 chapters at 2,000 each = 32,000 pts

Between every section of videos, you will be asked to respond to a "Checkpoint Question" - these are conceptual questions that you should be able to answer based on the videos and reading the book. You will submit your response to these questions, and then be presented with my answer to the question. You will then be asked to reflect on whether we agree, and explain how (if at all) you would opt to amend your answer. The number of checkpoints vary

by chapter, but earnest completion (as in, not spamming the keyboard) of all checkpoints will earn you 1,000 points per chapter. These questions will also help you practice answering conceptual questions in a no-risk environment before answering similar questions on the tests.

- **Introduction:** 1 at 2,000 each = 2,000 pts

You will be asked to send me an introduction email from whatever your preferred email address is, therefore setting up a channel of communication between the two of us. Since I won't be able to get to know you in person, at least I can try to get to know you digitally!

## 6 Attendance

Since this course is online, attendance is not mandatory. I'm not even sure how you would - I expect you to participate in the class, and that's attendance in this instance!

Veterans and student service members with special circumstances or who are activated are encouraged to notify the instructor as soon as possible and are encouraged to provide Activation Orders.

## 7 Calendar

According to the NDSU Registrar website, the important dates are:

June 16 - Classes begin

June 19 - Last day to add classes or drop without 'W' at 100% refund

June 24 - Last day to submit requests for Audit, Pass/Fail, Payments due for summer balances

June 30 - Last day to add summer courses

July 3 - Last day to withdraw to 0 credits at 75% refund, no classes

July 16 - Last day to withdraw to 0 credits at 50% refund

July 22 - Last day to drop with 'W' record

August 7 - Last day of classes

August 11 - Final grades due (noon) and available online (late evening)

## 8 Accommodations

Any 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 and contact the Disability Services Office ([www.ndsu.edu/disabilityservices](http://www.ndsu.edu/disabilityservices)) as soon as possible.

## 9 Academic Honesty Statement

The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at [www.ndsu.edu/academichonesty](http://www.ndsu.edu/academichonesty).

## **10 Tentative Course Outline:**

This outline is subject to change. As I record class materials, some sections are becoming much more intense and things are shifting slightly. The expected schedule will have roughly 1 hour of video content per day, and I'm aiming for 4-8 homework questions per day as well. The checkpoints depend on how many sections make up 1 hour of video.

Week	Content
Week 1	M <i>No Classes</i> T §5.1-5.3 W §5.4-5.5 R §5.6-6.1 F §6.2-6.4, <b>Introduction due</b>
Week 2	M §7.1-7.3 T §7.4-7.6 W §8.1-8.2 R §8.3-8.5 F §9.1-9.2
Week 3	M §9.3-9.5 T §9.6-10.2 W §10.3-10.5 R <b>Exam 1</b> F <i>No Classes - 4th of July</i>
Week 4	M §11.1-11.2 T §11.3-11.5 W §11.6-12.1 R §12.2-12.4 F §12.5-12.7
Week 5	M §13.1-13.3 T §13.4-13.5 W §13.6-14.1 R §14.2-14.4 F §14.5-14.6
Week 6	M §15.1-15.3 T §15.4-15.6 W §16.1-16.3 R §16.4-16.5 F <b>Exam 2</b>
Week 7	M §1.1-1.4 T §1.5-1.7 W §2.1-2.3 R §2.4-2.6 F §2.7-2.8
Week 8	M §3.1-3.3 T §3.4-4.1 W §4.2-4.4 R §4.5-4.7 F <b>Exam 3</b>