

Summer 2022 Syllabus - Physics 1320 (Calculus-based Physics II) – Section 101

GENERAL INFORMATION

Instructor: Brian Rashap

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Office Hours: Wednesday 17:00 – 18:00 in SRC Room 205

COURSE DESCRIPTION

A calculus level treatment of classical electricity and magnetism. It is strongly recommended that this course is taken at the same time as Calculus-based Physics II laboratory.

Prerequisite: [PHYS 1310](#). **Pre- or corequisite:** [MATH 1520](#). **Recommended:** [PHYS 1320L](#).

MATERIALS

Required

- University Physics, Volume 2, by OpenStax College (free as a pdf download at <https://openstax.org/details/books/university-physics-volume-2>)
- Expert TA Account
See the 'Expert TA' section in the 'Day 1' Learning Module for more information.
- A scientific calculator is required.

Highly Recommended

- OpenStax + SE phone app for Android or Apple
- [Brightspace Mobile App](https://www.d2l.com/the-best-mobile-learning-experience/) (<https://www.d2l.com/the-best-mobile-learning-experience/>)

Suggested Textbook

- University Physics by Young and Freedman, 11th or 12th edition, (Amazon Used ~ \$25)

Free Online Textbooks

- Electricity and Fields: <https://archive.org/details/ost-physics-cp/page/n93/mode/2up>
- Electricity, Magnetism, and Thermodynamics: <https://archive.org/details/ost-physics-physics/page/n17/mode/2up>
- Electricity and Magnetism: <https://archive.org/details/ost-physics-cbphysicsiib24/mode/2up>

LEARNING OUTCOMES

The overall objective is that the student be able to describe physical phenomena using a variety of models and develop certain analytical skills associated with problem solving. By the end of the course the student should be able to:

- Apply the concepts of electric charge, electric field and electric potential to solve problems.
- Sketch the electric field in the vicinity of point, line, sheet, and spherical distributions of static electric charge.
- Sketch the magnetic field in the vicinity of line, ring, sheet, and solenoid distributions of steady current.
- Describe the relationship between electric field and electric potential.
- Calculate the Lorentz force on a moving charge for simple geometries of the fields and use it to analyze the motion of charged particles.
- Apply the integral forms of Maxwell's equations.
- Calculate the energy of electromagnetic fields.
- Analyze DC circuits.

- Describe and apply the laws of thermodynamics

COURSE REQUIREMENTS

The material covered in this course is structured into 14 instructional modules. There will be homework assignments assigned each Wednesday that will be due at 23:59 the following Wednesday.

- Please note that computer issues and loss of internet are not acceptable excuses for incomplete assignments, see *Back Up Plan* in the *Day 1 Learning Module* in CNM Brightspace to assist you in creating a back-up plan in the event you experience computer/internet issues.
- Attendance: According to CNM regulations, students enrolled for credit or audit are expected to attend all class sessions. Students who miss the equivalent of 15% of contact time may be dropped from the course by the instructor. But it is ultimately the student's responsibility to withdraw from the course. Absences from class do not relieve students from responsibility for missed assignments, material covered in class, or exams.
- Homework (Expert TA): Solving homework problems is essential for learning and for exam preparation. Online homework will be assigned for each module using [Expert TA](#). The homework due dates for each module are listed in the schedule at the end of the syllabus. You will need to purchase an access code before the 14-day trial period ends. Late homework can be submitted one day after the due date with a 10% penalty. Homework will not be accepted after this point.
- Midterm Exams: There will be two in-class midterm exams. The exams will be closed book (i.e., not textbook, computer, tablet, phone, etc). You will be allowed one 8½" x 11" sheet of paper where you can have applicable equations and diagram. The exams will be given during the first hour on the days indicated on the course schedule below. It is mandatory that you attend class on the day of the exam, as no make-up exam will be given.
- Final Exam: There will be a comprehensive final exam given on the last day of class. You will be given the entire class time to complete the final. Similar to the midterms, the final will be closed book (i.e., not textbook, computer, tablet, phone, etc). You will be allowed one 8½" x 11" sheet of paper where you can have applicable equations and diagram. It is mandatory that you attend class on the day of the final exam, as no make-up exam will be given.

COURSE GRADING

The grades will be assigned based on the standard scale:

A = 90 – 100% B = 80 – 89.9% C = 70 – 79.9% D = 60 – 69.9% F = 0 – 59.9%

Grades will be calculated according to the following scheme:

Homework:	30%
Midterm 1:	20%
Midterm 2:	20%
Final:	30%

12-Week PHYS 1320 Schedule

Week	Day	Module
1	16-May	Introduction ExpertTA – see Expert TA file in the Day 1 Module in Brightspace Module 1: Ch. 5 – Electric Charges and Fields
	18-May	Module 1 Continued Module 2: Ch. 6 – Gauss’s Law
2	23-May	Module 2: Continued
	25-May	Module 3: Ch. 7 – Electric Potential
3	30-May	Holiday – No Class
	1-Jun	Module 3: Continued
4	6-Jun	Module 4: Ch. 8 – Capacitance
	8-Jun	Module 5: Ch. 9 – Current and Resistance Review – Modules 1 - 4
5	13-Jun	Midterm 1
	15-Jun	Module 5 Continued
6	20-Jun	Holiday – No Class
	22-Jun	Module 6: Ch. 10 – Direct-Current Circuits
7	27-Jun	Module 6 Continued Module 7: Ch. 11 – Magnetic Forces and Fields
	29-Jun	Module 7 Continued
8	4-Jul	Holiday – No Class
	6-Jul	Module 8: Ch. 12 – Sources of Magnetic Fields Review – Modules 5 - 8
9	11-Jul	Midterm 2
	13-Jul	Module 9: Ch. 13 – Electromagnetic Induction
10	18-Jul	Module 9: Continued Module 10: Ch. 16 – Electromagnetic Waves
	20-Jul	Module 10: Continued
11	25-Jul	Module 11: Ch. 1 – Temperature and Heat Module 12: Ch. 2 – The Kinetic Theory of Gases
	27-Jul	Module 13: Ch. 3 – The First Law of Thermodynamics Module 14: Ch. 4 – The Second Law of Thermodynamics
12	1-Aug	Review
	3-Aug	Final Exam

Academic Integrity:

The physics and engineering faculty have worked hard to create a course that both supports you and provides, **and maintains**, the rigor necessary to build the skill set you need to be successful at the next level.

To protect course integrity, we have added the following measures to the course syllabus.

1. The sharing of any course content with people not enrolled in the course is strictly forbidden. One example of unauthorized sharing of course content is the uploading of homework, quiz, or test problems/answers to websites which include, but are not limited to, chegg.com or slader.com
2. Working on any course assessments (quizzes and exams) with other humans, or by accessing the internet (apart from the course textbook), is strictly forbidden.

For academic violations, the instructor may either: 1) Impose an academic sanction up to and including a “0” on the assignment or assessment; or 2) Contact the Dean of Students to coordinate a more severe penalty such as an “F” for the course.

The details of CNM's Academic Integrity Policy can be found at

<https://www.cnm.edu/depts/dean-of-students/academic-integrity-1/academic-integrity-policy>

Faculty Feedback: The Faculty feedback system allows your instructor to securely provide feedback on your performance in this course. If your instructor uses it, you may be contacted by a CNM Academic/Achievement Coach to follow up on the feedback. You can read more about the system here: [link](#).

Disability Statement: We will accommodate students with disabilities documented by the CNM Disability Resource Center. During the first two weeks of the semester, those students should inform the instructor of their particular needs.

PaperCut: PaperCut is an element of the sustainability effort at CNM. Its purpose is to reduce paper usage. Each student has an online account with an allotment of 150 free printer pages per term. If this allotment runs out, additional pages may be purchased by the student. For more information, go to the PaperCut website: <http://cnm.edu/papercut>.

Commit to graduate! Graduating with an associate's degree or certificate will make you more employable and will increase your earning potential for a lifetime. Getting your degree or certificate is your reward for the hard work and dedication you put into your studies at CNM. Set your graduation date today! Learn more at <http://cnm.edu/graduation>.

Classroom Disruption: Due to the intensity of the information in the lecture and laboratory classes, classroom disruptions will not be tolerated. In CNM classrooms and laboratories, all cellular telephones and pagers must be turned off or switched to silent or vibrator mode. Electronic entertainment devices are to be turned off and headphones removed. Students being disruptive will be asked to leave the class.

COVID-19 Protocols: Please read the most updated [Campus Safety Protocols](#) are on the CNM website. The website explains the vaccine policy and requirement, the daily health assessments, and face masks.