

## PHYS 1320, Calculus-Based Physics II Syllabus

### GENERAL INFORMATION:

Instructor: Barbara Gilbert CRN: 83883 Section: 102  
Office: JS 312M Email: [bgilbert4@cnm.edu](mailto:bgilbert4@cnm.edu)  
Class Location: L 201 Class time: M & W 3:30-5:15 pm  
Office Phone: (505) 224-4000 ext. 53014 Cell: (505) 417-9368 (text)  
Office Hours: Wednesdays 2:15 - 3:15 pm in JS 312M  
Class website: [www.barbsphysics.net](http://www.barbsphysics.net), check regularly!

### 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](#).

### Registration Deadlines

- The last day to drop without a "W" appearing on a transcript is Monday, 1/27/2020.
- The last day for a refund is Monday, 1/27/2020.
- The last day to drop with a "W" is Friday, 3/27/2020.
- The last day to change grading option is Friday, 3/27/2020, and can't be done online.

### Text/Materials

- **Textbook: University Physics, Volume 2, by OpenStax College (free as a pdf download at <https://openstax.org/details/books/university-physics-volume-2>)**
- Please **always** have a scientific, preferably graphic, calculator with you at all times.

### 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

### Course Requirements

- **Attendance:** According to CNM regulations, students enrolled for credit or audit are expected to attend all class sessions. Attendance is taken daily at the beginning of class. If you come in after attendance has been taken, please inform me of your attendance after class. Students that come in more than 10 minutes late are considered absent for the class. Students who miss the equivalent of 15%, or 5 classes, may be dropped from the class. Students must keep in mind, however, that it is ultimately their responsibility to withdraw from the course. Absences from class do not relieve students from responsibility for missed assignments, material covered in class or exams.
- **Collaborative In-Class Sessions:** We will be engaging in collaborative work most of our class meetings. Be respectful of your yourself, your peers and your environment. Come well prepared and ready to contribute. Clean your area before you leave class.
- **Weekly Summaries:** In college, the recommended study-time you need to spend outside of class should be 2.5-3 times the number of course credit hours, for this course you need to be engaged with physics for 10-12 hours each week outside of class. We will *never* be able to cover all of the material from each chapter in class. At the beginning of each week, you will print out and submit a one-page typed summary, in your own words, of the content/concepts from the prior week's material. For example, at the beginning of week 2, you will need to submit a summary of chapter 5. Please make these summaries single spaced and use 12-point font. Always include general formulas from each chapter **making use of the Equation Editor in MS Word**, accessed via "Insert -> Equation". Come by my office hours if you need assistance. Please save these chapter summaries in a Physics 1320 folder on your computer, they will serve well in assessment preparation. It is strongly advised that students complete the chapter summary prior to engaging with the homework. Late summaries will not be accepted, if you are unable to attend, please send the summary via email before the end of the classtime.
- **Homework:** Homework will be assigned on a weekly basis. The homework assignments and solutions can be found on our class website, [barbsphysics.net](http://barbsphysics.net), under the homework tab. Answers to the odd numbered problems are in the back of your book. Each homework score will range from 0 to 10 points. Doing the homework is very important for digesting the material and crucial to performing well on the quizzes, midterm and final exam. Late homeworks will not be accepted, if you are unable to attend, please send the homework via email before the end of the classtime.
- **Quizzes:** Approximately twelve quizzes will be administered during the semester. Quizzes will be primarily based on in-class problems and homework. Your class attendance/participation, your summaries AND completing your homework are important to doing well on the quizzes. Both problem-solving skills and a conceptual understanding are important to your success. There may be multiple choice questions, free response problems, and/or brief explanations. You may continually build on an 8"x11" one-sided formula-only sheet that you can use for each successive quiz, the midterm exam and the final exam. Formulas will not be supplied for any of the assessments. There will be no make-up quizzes.

- **Midterm Exam:** A mandatory comprehensive midterm exam will be given on **Wednesday March 4<sup>th</sup> from 3:30 pm to 5:30 pm, in L 201**. You may continually build on an 8"x11" one-sided **formula-only** sheet that you can use for each quiz, the midterm exam and the final exam.
- **Final Exam:** A mandatory comprehensive final will be given on the last day of class. In the event that CNM closes on the day of the final exam, the final grade will be calculated based on all work assessed up to that point in the course. Students may generate an 8"x11" two-sided formula sheet for the final exam. You may continually build on an 8"x11" one-sided **formula-only** sheet that you can use for each quiz, the midterm exam and the final exam. All students must receive a grade above 50% on the final exam in order to pass this course. **Our final exam will be on Wednesday, April 22<sup>nd</sup> from 3:30 pm to 5:30 pm, in L 201.**

**Grading Policy:** The grades will be assigned based on the standard scale:

A = 90 – 100%    B = 80 – 89%    C = 70 – 79%    D = 60 – 69%    F = 0 – 59%

Grades will be calculated according to the following scheme:

- Quiz average, with the lowest score dropped, will yield 25% of your semester grade.
- Homework average with the lowest score dropped yields 10% of your semester grade.
- Weekly summaries average, with the lowest score dropped yields 10% of your semester grade.
- Collaboration participation average yields 5% of your semester grade. This grade will be based on how well prepared you were for class, and how effectively you participated in each collaborative session.
- Midterm yields 25% of your semester grade.
- Final exam yields 25% of your semester grade.

**Note: All students must receive a grade above 50% on the final exam in order to pass this course.**

**In the event CNM closes on the day of the final exam, final grades for students will be calculated based on all work assessed up to that point in the course.**

### COURSE SCHEDULE

Week	Dates	Topic
1	M 1/13 W 1/15	Ch.5 – Electric Charge and Fields Ch.6 – Gauss’s Law
2	M 1/20 W 1/22	<b>Martin Luther King Day – No school</b> Ch.6 – Gauss’s Law (Con’t)
3	M 1/27 W 1/29	Ch.7 – Electric Potential
4	M 2/3 W 2/5	Ch.8 – Capacitance Ch.9 – Current and Resistance
5	M 2/10 W 2/12	Ch.9 – Current and Resistance (con’t) Ch.10 – Direct-Current Circuits

6	M 2/17 W 2/19	Ch.11 – Magnetic Forces and Fields
7	M 2/24 W 2/26	Ch.12 – Sources of Magnetic Fields
8	M 3/2 W 3/4	Review <b>Comprehensive MIDTERM, Chapters 5-12, on Wednesday, 3/4/2020, 3:30-5:30 pm in L 201</b>
9	M 3/9 W 3/11	Ch.13 – Electromagnetic Induction (selected topics) Ch.14 – Inductance (selected topics)
10	M 3/16 W 3/18	Ch.15 – Alternating-Current Circuits (selected topics) Ch.16 – Electromagnetic Waves (selected topics)
11	M 3/23 W 3/25	Ch.1 – Temperature and Heat
12	M 3/30 W 4/1	Ch.2 – Kinetic Theory of Gases
13	M 4/6 W 4/8	Ch.3 – The First Law of Thermodynamics
14	M 4/13 W 4/15	Ch.4 – The Second Law of Thermo (selected topics)
15	M 4/20 W 4/22	Review <b>Comprehensive FINAL EXAM on Wednesday, 4/22/2020, 3:30-5:30 pm in L-201</b>

NOTE: Selected topics to be covered, as time permits, are at the discretion of the instructor.

**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.

**Academic Integrity:** Academic dishonesty will not be tolerated. As a CNM student you agree to adhere to the CNM Integrity Policy, please see the following link for details.

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

**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>.

**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](#).

**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>.

**Smoke-free campus:** In an effort to respect all students, CNM has created smoke-free zones as well as designated smoking areas at all CNM locations. The use of tobacco products, including the use of chewing tobacco and e-cigarettes is limited to the designated smoking areas and banned from all other areas. View CNM's policy on smoking at <http://www.cnm.edu/about/smoke-free-campus>. View a map of the designated smoking areas at <http://www.cnm.edu/about/smoke-free-campus/designated-smoking-areas>.