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Fall 9-1-2016

PHSX 207N.01: College Physics II

Alexander Bulmahn

University of Montana, Missoula, alexander.bulmahn@umontana.edu

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|-----------------|--|
| PROFESSOR: | Dr. Alex Bulmahn |
| OFFICE: | 226 CHCB (inside of room 225) |
| PHONE: | 243-2076 |
| EMAIL: | alexander.bulmahn@umontana.edu |
| LECTURE: | MTWR 12:00-12:50 pm, Charles H. Clapp Building 231 |
| OFFICE HOURS: | MW 1:30-2:30, T 10:30-11:30, and by appointment |
| COURSE WEBSITE: | Grades and other materials will be posted on the Moodle site for this course |
| PREREQUISITE: | M122 or M151, PHSX 205N |
| COREQUISITE: | PHSX 208N |

Overview

The goal of this course is to give you a sound introduction to electricity and magnetism, waves, optics, and modern physics. This will include studying basic concepts in physics and development of problem solving skills. It is essential that you keep up with the material from the start as the concepts presented in this course build on each other.

Learning Objectives

Upon completion of this course you should have:

- improved your critical thinking and problem solving skills.
- gained both a quantitative and qualitative understanding of physics.
- gained the ability to use previously learned concepts in new contexts.
- gained an appreciation of physics.

Required Materials

You will need the following materials for the course:

- College Physics: A Strategic Approach, 3rd Edition, Knight/Jones/Field
- Access to Mastering Physics, the online homework system we will use in this course

Expectations

This is a university science course and it will be taught at that level. The use of mathematics will be necessary for understanding the topics that we will cover, like it is in any science course. The mathematics we will use in this course are algebra, geometry, and trigonometry and it is imperative that you are comfortable with these to be successful in this course.

Attendance, while not mandatory, is *highly recommended*. Homework assignments and exams will be based on material that is presented in lecture.

To be successful in this class, time will need to be spent outside of lecture reviewing information from the course. It is recommended that you keep up with the reading assignments that are posted on the schedule to gain a better understanding of the concepts being presented in lecture. Weekly homework assignments also make up a large portion of your overall grade. These assignments will usually take 3-5 hours to complete so don't wait until the last minute to start your homework. Remember that at the UM, one "unit" represents 3 hours of work by the student including class time. Being a four unit course, you can expect to put around 12 hours per week into the course to be successful.

Grading

Your grade for the course will be based on weekly homework assignments, three midterm exams, and a final exam. Midterm exams will be held Monday evenings in Urey Lecture Hall.

Late homework will not be accepted and make up exams will only be given in extreme circumstances. The grading for the course will be broken down as follows:

| | |
|----------------|----------------------|
| Homework: | 30% |
| Midterm Exams: | 15% each (45% total) |
| Final Exam: | 25% |

This course can only be taken with the traditional grading option. The letter grades in this course will be based on a curve, giving you the grade that you earn. The curve will be determined by the performance of the class as a whole, but I do not have a set number of A's, B's, etc. predetermined. *Note: the last day to add or drop the course via Cyberbear is September 19th. The last day to drop the course without the Dean's signature is October 31st.*

Course Etiquette

In order to keep the environment conducive for learning please:

- arrive on time. Lectures will begin promptly at 12:00.
- do not start packing your things early as this can be very distracting to your fellow students. I will not keep you late and lectures will end by 12:50.
- keep cell phones set to vibrate, silent, or off and keep them put away throughout the lecture. I promise that you will get more out of the course if you do not spend lecture time texting and updating your facebook page.

Course Guidelines and Policies

Student Conduct Code

The Student Conduct Code at the University of Montana embodies and promotes honesty, integrity, accountability, rights, and responsibilities associated with constructive citizenship in our academic community. This Code describes expected standards of behavior for all students, including academic conduct and general conduct, and it outlines students' rights, responsibilities, and the campus processes for adjudicating alleged violations. [Full student conduct code.](http://www.umt.edu/vpsa/policies/student_conduct.php)

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Disability Modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](https://www.umt.edu/dss/default.php). <https://www.umt.edu/dss/default.php>
If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Registering for Mastering Physics

1. Go to the [mastering physics website](http://www.masteringphysics.com) (www.masteringphysics.com)
2. Click the STUDENT link under REGISTER
3. Click the button for yes, I have an access code, or no and purchase an access code
4. Create a User Name and Login that you will use for the rest of the semester
5. Enter your Mastering Physics access code. You may need the schools zip code which is 59812.
6. Choose the course text, College Physics: A Strategic Approach, 3rd Edition, Knight/Jones/Field. (Only if you are purchasing an access code from the website)
7. Complete the registration
8. Login to Mastering Physics
9. Join the course using the Course ID—**MPBULMAHN94180**

Tentative Schedule

| Week | Dates | Topic | Reading |
|------|------------|---|-----------------------------------|
| 1 | 8/29—9/2 | Electric Charge and Force | Ch. 20 |
| 2 | 9/5—9 | Electric Field and Gauss' Law | Ch. 20 |
| 3 | 9/12—16 | Electric Potential and Capacitors | Ch. 21 |
| 4 | 9/19—23 | Current and DC Circuits | Ch. 22 & 23 |
| 5 | 9/26—30 | Magnetic Fields Midterm Exam #1, Mon. 9/26 | Ch. 24 Exam in 231 CHCB |
| 6 | 10/3—7 | Magnetic Forces | Ch. 24 |
| 7 | 10/10—14 | Electromagnetic Induction | Ch. 25 |
| 8 | 10/19—23 | AC Circuits | Ch. 26 |
| 9 | 10/24—28 | Electromagnetic Waves Midterm Exam #2, Mon. 10/24 | Ch. 25 Exam in 231 CHCB |
| 10 | 10/31—11/4 | Wave Optics | Ch. 17 |
| 11 | 11/7—11 | Ray Optics | Ch. 18 |
| 12 | 11/14—18 | Optical Instruments | Ch. 19 |
| 13 | 11/21—25 | Special Relativity Midterm Exam #3, Mon. 11/21 | Ch. 27 Exam in 231 CHCB |
| 14 | 11/28—12/2 | Special Relativity | Ch. 27 |
| 15 | 12/5—9 | Modern Physics | TBA |
| 16 | 12/12 | Course Wrap-up | |
| | 12/14—20 | Finals Week Final Exam 8:00-10:00 am, Thursday 12/15 | Exam in 231 CHCB |