

Fall 9-1-2018

## PHSX 207N.01: College Physics II

Eijiro Uchimoto

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# PHYSICS 207N – College Physics II 2018

Autumn Semester

## LECTURES

Mon, Tue, Wed. & Thu. 8:00 – 8:50 a.m., CHCB 131

## INSTRUCTOR

Eijiro ('Ebo') Uchimoto

Office: CHCB 127 (Tel. No. 243-6223)

Email: [eijiro.uchimoto@umontana.edu](mailto:eijiro.uchimoto@umontana.edu)

Office Hours: Mon. 10 – 11 a.m., Tue. 2 – 3 p.m., Wed. 3 – 4 p.m., Thu. 1 – 2 p.m.,  
Fri. 11 a.m. – 12 noon (and by appointment)

## SCOPE

- Detailed studies of electricity, magnetism, optics, relativity and quantum physics at the introductory level
- Development of physical intuition and problem solving skills necessary for analyzing a wide range of phenomena in these areas of physics

## OUTCOME

- Will have acquired thorough and coherent understanding of electricity, magnetism, optics, relativity and quantum physics at the introductory level
- Will have acquired physical intuition and problems solving skills necessary to tackle a wide range of basic and applied problems in these areas of physics
- Will have acquired solid physics background to pursue advanced study in life, health and earth sciences and closely related fields

## NUMBER OF CREDITS

4 credits

## PREREQUISITES

Successful completion of PHSX 205N - College Physics I, or equivalent

## PRE/COREQUISITE

PHSX 208N – College Physics II lab, or equivalent

## TEXTBOOK

Physics, Principles with Applications, 7<sup>th</sup> edition by Giancoli,

## HOMEWORK

Reading assignments and problem sets to be announced in class

Take-home quizzes to be handed out in class

## EXAMS

**Five midterm exams (8:00 – 8:50 a.m., Fri. 9/14, Fri. 10/5, Fri. 10/19, Fri. 11/9 & Fri. 11/30)**

**Final exam (8:00 a.m. – 10:00 a.m. on Tue. 12/11)**

## 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)  
[http://www.umt.edu/vpsa/policies/student\\_conduct.php](http://www.umt.edu/vpsa/policies/student_conduct.php)

### Course Withdrawal

Students may use Cyberbear to drop courses through the first 15 instructional days of the semester. Beginning the 16<sup>th</sup> instructional day of the semester through the 45<sup>th</sup> instructional day, students use paper forms to drop, add and make changes of section, grading option or credit. PHSX 207N may not be taken as credit/no-credit.

### Disability Modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](#). 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.

### Grading Policy

Your grade will be based on the following:

50-minute exams	60 % (4 best scores, 15 % each)
Take home quizzes:	10 % (drop three lowest scores)
Final exam:	30%

Typical cutoffs for the final course grade:

A-/B+	83%
B-/C+	72%
C-/D+	58%
D-/F	45%

## TENTATIVE COURSE OUTLINE

Date	Topics
<b>Week 1: Aug 28 – 31</b>	overview of the course electric charge, Coulomb's law, electric field, field lines (Chapter 16)
<b>Week 2: Sept 4 – 6</b>	electric potential, electric potential energy, electric field and electric potential, capacitance (Chapter 17)
<b>Week 3: Sept 10 – 13</b>	electric current, Ohm's law, resistance electric power (Chapter 18)
<b>Sept 14</b>	<b>Exam #1</b>
<b>Week 4: Sept 17 – 20</b>	alternating current resistor combinations, batteries, Kirchhoff's laws, capacitor combinations (Chapter 18) (Chapter 19)
<b>Week 5: Sept 24 – 28</b>	RC circuits magnets, magnetic field, Ampere's law (Chapter 19) (Chapter 20)
<b>Week 6: Oct 1 – 4</b>	magnetic force on electric current, magnetic force on moving electric charge (Chapter 20)
<b>Oct 5</b>	<b>Exam #2</b>
<b>Week 7: Oct 8 – 11</b>	electromagnetic induction, Faraday's law transformers (Chapter 21)
<b>Week 8: Oct 15 – 18</b>	electromagnetic waves geometric optics, laws of reflection and refraction (Chapter 22) (Chapter 23)
<b>Oct 19</b>	<b>Exam #3</b>
<b>Week 9: Oct 22 – 26</b>	lens and mirrors, lens combinations (Chapter 23)
<b>Week 10: Oct 29 – Nov 1</b>	more on lens combinations wave optics, interference and diffraction (Chapter 23) (Chapter 24)
<b>Week 11: Nov 5,7,8</b>	more on wave optics (Tue. Nov 6 – No class, Election Day) (Chapter 24)
<b>Nov 9</b>	<b>Exam #4</b>
<b>Week 12: Nov 13 – 15</b>	Einstein's special relativity (Mon. Nov 12 – No class, Veteran's Day) (Chapter 26)
<b>Week 13: Nov 20,21</b>	early quantum theory (Chapter 27)
	THANKSGIVING BREAK (Nov. 22 – 24)
<b>Week 14: Nov 26-29</b>	Photon's interactions with matter atomic models (Chapter 27)
<b>Nov 30</b>	<b>Exam #5</b>
<b>Week 15: Dec 3-6</b>	introduction to quantum mechanics review (Chapter 28)
<b>Week 16: Dec 11</b>	<b>FINAL EXAM</b>