

# Physics 204 – College Physics II (Algebra-based)

## Syllabus

Spring 2022

### COURSE INFORMATION

Course Name:	Physics 204 – College Physics II (algebra-based; 5 credits)
Course Schedule:	Lectures: Tuesday, Thursday, & Friday from 9:00 – 9:50 a.m. Discussions: Wednesday from 9:00 – 9:50 a.m. and 10:00 – 10:50 a.m. Laboratory: Online, Asynchronous
Prerequisites:	PHYS 203 (or equivalent) or consent of instructor.
Required text:	College Physics, 2020 edition by OpenStax ( <a href="https://openstax.org/details/books/college-physics">https://openstax.org/details/books/college-physics</a> )
Required Materials:	scientific or graphing calculator (ideally one that can solve quadratic equations)

This course will provide a general overview of electricity, magnetism, optics, and topics in modern physics. This course is intended for students majoring in business, elementary education, medical technology, and pharmacy. This class is not recommended for students majoring in the physical sciences or engineering. General Education Designations: GDR: NS; GEP: NSC

### INSTRUCTOR INFORMATION

Name:	Dr. Aaron Steffen
Office:	381C
Google Voice Phone:	715-600-1099
E-mail:	aaron.steffen@uwsp.edu
Office Hours:	Monday through Thursday; 1:00 – 1:50 p.m. (or by appointment)

Aaron's Brief Biography: I am a native of Sheboygan, Wisconsin. I received a B.S. degree in Physics and Mathematics from UW-Eau Claire and my M.S. and Ph.D. in Astronomy from UW-Madison. Before moving into teaching I worked as a postdoctoral research scientist at both Penn State and NASA's Spitzer Science Center (located on Caltech's campus). I am interested in understanding the multi-wavelength properties and evolution of super-massive black holes in the centers of galaxies.

## COURSE STRUCTURE

**Lecture** - I presume that everyone will attend all of the lectures and labs. Students are responsible for any materials (notes, handouts, etc...) they may have missed due to an absence. A tentative schedule is listed below.

Week of	Chapter(s)
Jan 24 – 28	Chapter 18: Electric Charge and Electric Field
Jan 31 – Feb 4	Chapter 19: Electric Potential and Electric Field
Feb 9 – 11	Chapter 20: Electric Current, Resistance, and Ohm's Law
Feb 14 – 18	Chapter 21: Circuits and DC Instruments
Feb 21 – 25	Chapter 22: Magnetism
Feb 28 – Mar 5	Chapter 23: Electromagnetic Induction, AC Circuits, etc..
Mar 7 – 11	Chapter 24: Electromagnetic Waves
Mar 14 – 18	Chapter 25: Geometric Optics
Mar 21 – 25	<i>Spring Break</i>
Mar 28 – Apr 1	Chapter 26: Vision and Optical Instruments
Apr 4 – 8	Chapter 27: Wave Optics
Apr 11 – 15	Chapter 28: Special Relativity
Apr 18 – 22	Chapter 29: Introduction to Quantum Physics
Apr 25 – 29	Chapter 30: Atomic Physics
May 2 – 6	Chapter 31: Radioactivity and Nuclear Physics
May 9 – 13	Chapter 32: Medical Applications of Nuclear Physics
May 18	<b>Final Exam</b>

**Labs** - Laboratory activities are designed to give students a hands-on experience with the concepts being covered in lecture. The experiments are designed to be completed during each lab session.

Week of	Lab #	Laboratory Experiment
Jan 24 – 28	0	Setting up Pivot Online
Jan 31 – Feb 4	1	Forces and Electric Charge I
Feb 7 – 11	2	Forces and Electric Charge II
Feb 14 – 18	3	Electric Field
Feb 21 – 25	4	Ohm's Law Simulation
Feb 28 – Mar 4	5	RC Circuits
Mar 7 – 11	6	RL Circuits
Mar 14 – 18	7	Joly Photometer: Brightness vs Distance
Mar 21 – 25		<i>Spring Break</i>
Mar 28 – Apr 1	8	Angle of Refraction
Apr 5 – 8	9	Convex and Concave Curved Mirrors
Apr 11 – 15	10	Light Diffraction
Apr 18 – 22	11	Gas Emission Spectra
Apr 25 – 29	12	Photoelectric Effect with Lasers
May 2 – 6	13	Radioactive Decay and Half-Life
May 9 – 13	...	Lab Make Up Week

**Grading** - Your final grade will be based on the following grading scheme:

- Classroom Participation – 3%
- Homework Quizzes – 12%
- Laboratory Experiments – 15%
- Midterm Exams (3) – 15% each
- Comprehensive Final Exam – 25%

The grading scale is as follows:

$93\% \leq A$	$80\% \leq B- < 83\%$	$67\% \leq D+ < 60\%$
$90\% \leq A- < 93\%$	$77\% \leq C+ < 80\%$	$60\% \leq D < 67\%$
$87\% \leq B+ < 90\%$	$73\% \leq C < 77\%$	F < 60%
$83\% \leq B < 87\%$	$70\% \leq C- < 73\%$	

**Homework** - Homework problems will be distributed at the beginning of the semester. Approximately 18-20 homework problems will be assigned each week. To encourage you to do your homework, a weekly homework quiz will be given during the day the discussion section is scheduled.

**Exams** - There will be three mid-term exams in addition to a comprehensive final exam. The mid-term exams are online, 1 hour tests. You will be allowed to use your textbook, your personal notes, the constant sheet provided by the instructor, and a scientific calculator.

**Final Exam** - The final exam is scheduled for May 18. This will be a comprehensive final exam. You will be allowed to use your textbook, your personal notes, the constant sheet provided by the instructor, and a scientific calculator.

## CLASSROOM CONDUCT

To make the classroom environment more conducive to learning the following list of rules will be enforced in all lectures and labs.

**Talking** - Questions for the instructor are always encouraged. In lecture, asking a neighbor a quick question to clarify a point made in class is acceptable, conversations unrelated to the course material are not. In lab (and in some peer activities in lecture) discussions are encouraged, but please try to stay on-topic as a courtesy to your lab partners and neighbors.

## MISCELLANEOUS ITEMS

**Additional Resources** - There are additional resources available outside of the classroom that everyone can access if they desire additional help.

- Please feel free to stop in my office with any questions you may have.
- If you believe that your textbook isn't clear on a certain topic, try reading how that topic is presented in a textbook written by another author. Alternative textbooks are available in the physics study area (Room 384).
- Physics and Math tutoring is available online through the main campus.

**Academic Misconduct** - It is each student's responsibility to know the University of Wisconsin System's policy on Academic Misconduct. Any cheating will invoke disciplinary action. You can download and review the policy from the following website:

[www.legis.state.wi.us/rsb/code/uws/uws014.pdf](http://www.legis.state.wi.us/rsb/code/uws/uws014.pdf)