

Physics 240 – University Physics I (Calculus-based)

Syllabus

Fall 2023

COURSE INFORMATION

Course Name:	Physics 240 – University Physics I (calculus-based; 5 credits)
Course Schedule:	Lectures and Discussion: Monday, Tuesday, Wednesday, & Friday from 1:00 – 1:50 p.m.
Prerequisites:	MAT 120 (Calculus I) or concurrent registration with consent of instructor.
Required text:	University Physics I, Volume 1; 2021 edition by OpenStax (https://openstax.org/details/books/university-physics-volume-1) University Physics I, Volume 2; 2021 edition by OpenStax (https://openstax.org/details/books/university-physics-volume-2)
Required Materials:	scientific or graphing calculator

This course will provide a general overview of motion, force, energy, momentum, fluids, wave motion, and sound. This course is meant for students going into the physical sciences and engineering.

INSTRUCTOR INFORMATION

Name:	Dr. Aaron Steffen
Office:	381C
E-mail:	aaron.steffen@uwsp.edu
Office Hours:	Monday, Wednesday, or Friday 9 - 9:50 a.m. (or by appointment)

Name:	Dr. Ken Menningen
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Office Hours:	By appointment

Brief Biography: Aaron is a native of Sheboygan, Wisconsin. He 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 Aaron worked as a postdoctoral research scientist at both Penn State and NASA's Spitzer Science Center (located on Caltech's campus). Aaron 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. *Sections in italics are from Volume 2.*

Date	Chapter/Sections	Date	Chapter/Sections	Date	Chapter/Sections
9/5	Introduction	10/10	9.4 – 9.5	11/14	16.3 – 16.4
9/6	1.1 – 1.3	10/11	9.6 – 9.7	11/15	16.5 – 16.6
9/8	1.4 – 1.7	10/13	10.1 – 10.3	11/17	17.1 – 17.2
9/11	2.1 – 2.2	10/16	10.4 – 10.5	11/20	17.3 – 17.4
9/12	2.3 – 2.4	10/17	10.6 – 10.7	11/21	17.5 – 17.6
9/13	3.1 – 3.2	10/18	10.8 – 11.1	11/22	17.7 – 17.8
9/15	3.3 – 3.4	10/20	11.2 – 11.3	11/24	<i>Thanksgiving</i>
9/18	3.5 – 3.6	10/23	12.1 – 12.2	11/27	<i>1.1 – 1.2</i>
9/19	4.1 – 4.3	10/24	12.3 – 12.4	11/28	<i>1.3 – 1.4</i>
9/20	4.4 – 4.5	10/25	13.1 – 13.2	11/29	<i>1.5 – 1.6</i>
9/22	5.1 – 5.3	10/27	13.3 – 13.4	12/1	<i>2.1 – 2.2</i>
9/25	5.4 – 5.5	10/30	13.5 – 13.6	12/4	<i>2.3 – 2.4</i>
9/26	5.6 – 5.7	10/31	13.7	12/5	<i>3.1 – 3.2</i>
9/27	6.1 – 6.2	11/1	14.1 – 14.2	12/6	<i>3.3 – 3.4</i>
9/29	6.3 – 6.4	11/3	14.3 – 14.4	12/8	<i>3.5 – 3.6</i>
10/2	7.1 – 7.2	11/6	14.5 – 14.6	12/11	<i>4.1 – 4.2</i>
10/3	7.3 – 7.4	11/7	15.1 – 15.2	12/12	<i>4.3 – 4.4</i>
10/4	8.1 – 8.3	11/8	15.3 – 15.4	12/13	<i>4.5 – 4.6</i>
10/6	8.4 – 8.5	11/10	15.5 – 15.6	12/15	<i>4.7</i>
10/9	9.1 – 9.3	11/13	16.1 – 16.2	12/19	Final Exam

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 in about three hours. Labs will be due Friday at 11:59 p.m.

Week of	Lab #	Laboratory Experiment
9/4 – 9/8	0	<i>Sign Up for Pivot Interactives</i>
9/11 – 9/15	1	Ping Pong Ball Bazooka
9/18 – 9/22	2	Free Fall Five
9/25 – 9/29	3	Intro to Vectors: 2D Constant Velocity
10/2 – 10/6	4	Constant Acceleration: Dry Ice Puck on a Ramp
10/9 – 10/13	5	Fan Cart: Force & Acceleration
10/16 – 10/20	6	Introduction to Angular Motion
10/23 – 10/27	7	Centripetal Force Introduction
10/30 – 11/3	8	Elastic Potential Energy
11/6 – 11/10	9	Analyzing Collisions
11/13 – 11/17	10	Springs 1, 2, & 3: Period vs Mass/Amplitude/Spring Constant
11/20 – 11/24	...	<i>Thanksgiving</i>
11/27 – 12/1	11	Applying Boyle’s Law
12/4 – 12/8	12	Gas Laws: Pressure & Temperature
12/11 – 12/15	...	<i>Last week of classes</i>

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

- Homework Quizzes – 15%
- 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 each discussion section.

Exams - There will be three mid-term exams in addition to a comprehensive final exam. The mid-term exams are one hour, open-book tests.

Final Exam - The final exam is scheduled for December 19. This will be a two-hour, open-book, comprehensive final exam.

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.

Eating/Drinking - Small snacks and drinks will be initially allowed in the classroom. Large meals (subs, burgers, pizza, etc..) are not permitted. Each student is responsible cleaning any mess they may make. If abused, this privilege will be revoked.

Cell phones - The use of cell phones is not permitted in class. This includes talking, texting, surfing, blogging, and using social media apps. If you require an exception to this cell phone ban (volunteer firefighter, expecting a birth, undercover CIA operative, etc...) you must let me know before the start of class. If you forget to turn off your cellphone and it rings in class, you are expected to turn it off at that time. If it rings again during the same class you will be asked to leave for the duration of that class.

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).

- While physics tutoring is not typically offered, students can receive math tutoring.

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