PHYS 2210
(601)
Physics for Scientists and Engineers I

Fall 2017
Syllabus

University Mission:

Utah Valley University is a teaching institution which provides opportunity, promotes student success, and meets regional educational needs. UVU builds on a foundation of substantive scholarly and creative work to foster engaged learning. The university prepares professionally competent people of integrity who, as lifelong learners and leaders, serve as stewards of a globally interdependent community.

Faculty Name: Vern Hart PhD
Contact Information: vhart@uvu.edu
Office Location: SB 243q
Office Hours: M – 1:00-2:00
T – 1:00-2:00
W – 1:00-2:00
R – 1:00-2:00
F – 1:00-2:00
Or by appointment

Course Description

A calculus-based treatment of introductory physics for scientists and engineers. Topics include mechanics, fluid physics, thermodynamics, vibrations, and waves. Includes 1 hour of recitation per week.

Course Prerequisites

MATH 1210

Course Co-requisites

PHYS 2215

Meeting Dates/Times

Lecture:	T 6:00-8:00 – PS 004
	R 6:00-7:10 – PS 004
Recitation:	T 8:00-9:00 – PS 004
Lab:	R 7:20-9:00 – PS 001

Required Textbooks/Materials

University Physics with Modern Physics (Young) 14th edition: 9780134151793

Course Management System

Course information and grades will be available via the course website on the Canvas platform.

Policy on Late work

No late work will be accepted unless prior arrangements are made with the instructor.

Homework

Homework will be administered online through the "Mastering Physics" system. The course ID is: **VHARTPHYS2210F17**. Physics is hard and I strongly encourage you to work in groups. Avoid spending too much time stuck on a single problem (#frustrating). Try various problems and approaches and bring your questions to Dr. Hart during recitation or office hours.

Exams

There will be two in-class exams and a non-comprehensive final exam, the dates of which are listed on the calendar. These exams will focus primarily on the chapters covered in their respective units (also listed on the calendar). Exams will be administered in class. Exams are closed-book with no published material, class handouts, and/or scanned/photocopied materials allowed unless otherwise indicated. Useful equations will be provided with each exam.

Class Conduct

Students are expected to conduct themselves in a manner consistent with the expectations of the professor and the university. Participation is also expected as it enhances the learning environment for all students.

Grading Scale

A	93-100
A-	90-92
B+	86-89
B	83-85
B-	80-82
C+	76-79
C	73-75
C-	70-72
D+	66-69
D	63-65
D-	60-62
F	<60

Lecture Attendance Policy

Students are expected to attend lectures whenever possible. While credit will not directly be given for attendance, beneficial information such as help with homework or sample exam questions will often be presented and discussed in class.

Lab Attendance and Grading

Credit will be given for lab attendance. As written lab reports will not be required, the lab grade is based entirely on attendance and participation. Students who are actively engaged (i.e., no cell phones) and participating during the entire lab will receive full credit.

Grade Weighting

Homework	25%
Tests	40%
Final Exam	20%
Labs	15%

Media

Please be respectful of others in your use of electronic media including cell phones, tablets, etc. Laptops and other devices are welcomed if used for instructional purposes.

Accessibility

Students who need accommodations because of a disability may contact the UVU Office of Accessibility Services (OAS), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the OAS office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677.

Academic Integrity

Students in this course will be expected to maintain the highest levels of academic integrity. Any instances of cheating or plagiarism will be investigated and could result in significant penalties.

Important Dates

- Labor Day – September 4
- Last day to adjust schedule – September 7
- Graduation application deadline – October 6
- Fall break – October 19-21
- Thanksgiving holiday – November 20-25
- Reading Day – December 8

Course Objectives

These are the skills, facts, and relationships you should understand and be able to apply upon completion of the course.

1. Understand the scientific method and the role which science plays in society.
2. Understand inertia and be able to apply it to equilibrium problems.
3. Describe linear motion and solve for dynamic variables.
4. Be familiar with Newton's 2nd Law of Motion and how it is related to gravitation principles.
5. Be familiar with Newton's 3rd Law of Motion and describe reactions.
6. Identify varying types of collisions and apply them to conservation of momentum.
7. Compare types of energy and use them to solve conservation problems.
8. Describe rotational motion and understand centripetal force.
9. Identify sources of gravitational fields and apply the universal law of gravitation.
10. Solve the cannonball problem and describe projectile motion.
11. Compare temperature and heat and describe thermal expansion.
12. Identify methods of heat transfer and compare differences.
13. Be familiar with phases of matter and their relevant physical properties.
14. Identify various thermodynamic processes and recognize their curves on a PV diagram.
15. Describe vibration and understand its relationship to traveling waves.
16. Understand properties of periodic systems, such as frequency and period.
17. Understand the physical propagation of sound waves and other wave phenomena.
18. Identify sources of sound and describe their physical characteristics.

Course Calendar

(Students will be given notification prior to any changes)

Week	Date	Course Topic	Chapter
1	08/22	Units, Physical Quantities, and Vectors	1
	08/24	Motion Along a Straight Line	2
2	08/29	Motion Along a Straight Line	2
	08/31	Motion in Two or Three Dimensions	3
3	09/05	Motion in Two or Three Dimensions	3
	09/07	Newton's Laws of Motion	4
4	09/12	Applying Newton's Laws	5
	09/14	Work and Kinetic Energy	6
5	09/19	Work and Kinetic Energy	6
	09/21	Potential Energy and Energy Conservation	7
6	09/26	Momentum, Impulse, and Collisions	8
	09/28	Momentum, Impulse, and Collisions	8
10/03		**Exam 1**	1-8
7	10/05	Rotation of Rigid Bodies	9
8	10/10	Dynamics of Rotational Motion	10
	10/12	Dynamics of Rotational Motion	10
9	10/17	Equilibrium and Elasticity	11
10/19		**Fall Break**	
10	10/24	Fluid Mechanics	12
	10/26	Gravitation	13
11	10/31	Periodic Motion	14
	11/02	Mechanical Waves	15
12	11/07	Sound and Hearing	16
11/09		**Exam 2**	9-16
13	11/14	Temperature and Heat	17
	11/16	Temperature and Heat	17
11/20-11/25		**Thanksgiving Holiday**	
14	11/28	Thermal Properties of Matter	18
	11/30	The First Law of Thermodynamics	19
15	12/05	The Second Law of Thermodynamics	20
	12/07	The Second Law of Thermodynamics	20
12/08		**Reading Day**	
12/12		**FINAL EXAM 5:00 PM**	17-20