

CHAMINADE UNIVERSITY PHY-251-01-1: UNIVERSITY PHYSICS I COURSE SYLLABUS – FALL 2018
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Instructor: Matthew Cochran
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Office: Henry Hall Office 7
Office Phone: 739-8361
Course Time: Monday, Wednesday, and Friday from 8:30 to 9:20
 Tuesday 1:30 to 2:20
Course Room: Henry Hall 223
Prerequisites: MA-210 Concurrent enrollment in PHY-251L is assumed.
Required Text: R. Knight, *Physics for Scientists and Engineers* 3rd ed., Pearson, New York, 2013.
 ISBN-10: 0321844351, ISBN-13: 978-0321844354 (The 4th ed is fine too.)
Other Materials: Scientific calculator

COURSE DESCRIPTION:

This course is the first part of a year-long introductory physics sequence focusing on the application of physical principles, logical reasoning, and mathematical analysis needed to understand a broad range of natural phenomena. Topics include classical mechanics, fluid dynamics, and thermodynamics.

EVALUATIONS AND GRADING SCALE:

Exam 1	25%	} lowest of these four dropped
Exam 2	25%	
Exam 3	25%	
Homework and Quizzes	25%	
Final	25%	
90% – 100%	A	
80% – 90%	B	
70% – 80%	C	
60% – 70%	D	
0% – 60%	F	

Incomplete grades (I) will be given in accordance with college regulations as outlined in the college catalog. Withdrawals (W) from the class are the responsibility of the student and deadlines are set by the college.

EXAMS:

There will be four examinations as part of the requirements for the course. The exams will be, by necessity, cumulative. Physics is sequential and its concepts must be learned in order. Material for exams will be drawn primarily from homework problems. Hence, the best way to review for an exam is to review homework assignments.

Make-up exams will only be given under extenuating circumstances beyond the student's control. Persons missing an exam due to illness or injury must present a doctor's certificate. Make-up exams must be completed within one week of the scheduled exam date or on the day the student returns to school (whichever comes first). Scheduling is the responsibility of the student.

HOMEWORK AND QUIZZES:

To be successful in this course, it is essential that you complete all homework assignments. Be prepared to spend three hours or more on homework every week. If you are having trouble, get help from the instructor or your classmates. Do not fall behind. Homework is due at the beginning of class. Late homework is not accepted.

A ten-minute quiz will be given most weeks. Material for the quizzes will be drawn from material covered during the previous week. Quizzes may be given at the beginning of class, so arrive on time. Make-up quizzes are not given.

ATTENDANCE:

Regular attendance is expected of all students. Read material prior to lecture. If a topic is still not clear after it has been discussed in class, ask questions. Time will be spent working through homework problems and reviewing for exams in addition to lecturing. You will work with partners in class. It is important that partners engage in discussion of their work and avoid working as isolated individuals.

COURSE OBJECTIVES:

Upon successful completion of the course, students will demonstrate:

1. The ability to apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world;
2. The ability to interpret multiple scientific representations (e.g., verbal descriptions, diagrams, graphs, and formulas) and translate between them;
3. An understanding of mechanics (e.g., translational motion, forces and equilibrium, work, energy, and momentum);
4. An understanding of the principles of thermodynamics and fluids;
5. The ability to apply physics principles to understand humans, living systems, and scientific instrumentation.

MUSIC DEVICES AND MOBILE PHONES:

Unless specifically permitted by your instructor, use of music devices and mobile phones is prohibited during all Natural Science and Mathematics classes at Chaminade, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class.

ADA ACCOMMODATIONS:

Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from CUH Counseling Center (Dr. June Yasuhara, 735-4845) by the end of the third week of classes. Failure to provide written documentation will prevent your instructor from making necessary accommodations. Please refer any questions to the Dean of Students.

WEEKLY SCHEDULE:

Week	Date	L#	Topic	Reading 4 ed	Reading 3 ed
1	Aug 20	1	Course intro; Motion diagrams		
	Aug 21	2	Position; Velocity	1.1 to 1.4	1.1 to 1.4
	Aug 22	3	Acceleration; Units	1.5 to 1.8	1.5 to 1.9
	Aug 24	4	Velocity in 1D	2.1 to 2.3	2.1 to 2.4
2	Aug 27	5	Acceleration in 1D	2.4	2.4
	Aug 28	6	Free fall	2.5	2.5
	Aug 29	7	Inclined plane; Two-step problems	2.6	2.6
	Aug 31	8	Vectors; Trig review	3.1 to 3.4	3.1 to 3.4
3	Sep 03	H1	Labor Day – No Class		
	Sep 04	9	Vectors; Trig review		
	Sep 05	10	Motion in two dimensions	4.1	4.1 & 4.2
	Sep 07	11	Projectile motion	4.2	4.3
4	Sep 10	12	Angular velocity; Circular motion	4.5 & 4.6	4.5 & 4.6
	Sep 11	13	Forces and Newton's laws	5.1 to 5.6	5.1 to 5.6
	Sep 12	14	Review		
	Sep 14	E1	EXAM 1		
5	Sep 17	15	Free body diagrams	5.7	5.7
	Sep 18	16	Statics	6.1	6.1
	Sep 19	17	Mass and weight	6.2 & 6.3	6.2 & 6.3
	Sep 21	18	Friction and drag	6.4 & 6.5	6.4 & 6.5
6	Sep 24	19	Second law examples	6.6	6.6
	Sep 25	20	Newton's third law	7.1 to 7.3	7.1 to 7.3
	Sep 26	21	Ropes and Pulleys	7.4	7.4
	Sep 28	22	Dynamics in two dimensions	8.1 & 8.2	8.1 & 8.2

WEEKLY SCHEDULE:

Week	Date	L#	Topic	Reading 4 ed	Reading 3 ed
7	Oct 01	H2	Discoverers' Day – No Class		
	Oct 02	22	Energy; Work	9.1 to 9.3	11.1 to 11.9
	Oct 03	23	Work done by a spring	9.4	
	Oct 05	24	Thermal energy; Power	9.5 & 9.6	
8	Oct 08	25	Potential energy	10.1 to 10.3	10.1 to 10.7
	Oct 09	26	Conservation of energy	10.4 & 10.5	
	Oct 10	27	Review		
	Oct 12	E2	EXAM 2		
9	Oct 15	28	Impulse and momentum	11.1	9.1
	Oct 16	29	Conservation of momentum	11.2 to 11.4	9.2 to 9.4
	Oct 17	30	Explosions; Momentum in 2D	11.5 & 11.6	9.5 & 9.6
	Oct 19	31	Torque	12.5	12.5
10	Oct 22	32	Torque and statics	12.8	12.8
	Oct 23	33	Angular momentum	12.11	12.11
	Oct 24	34	Fluids; Pressure	14.1 & 14.2	15.1 & 15.2
	Oct 26	35	Measuring pressure	14.3	15.3
11	Oct 29	36	Buoyancy	14.4	15.4
	Oct 30	37	Fluid dynamics	14.5	15.5
	Oct 31	38	Moles; Temperature	18.1 to 18.3	16.1 to 16.3
	Nov 02	39	Ideal gasses	18.4	16.5
12	Nov 05	40	Ideal gas processes	18.5	16.6
	Nov 06	41	Work and gasses	19.1 & 19.2	17.1 & 17.2
	Nov 07	42	Review		
	Nov 09	E3	EXAM 3		
13	Nov 12	H3	Veteran's Day – No Class		
	Nov 13	43	Heat and the First Law of Thermodynamics	19.3 & 19.4	17.3 & 17.4
	Nov 14	44	Thermal properties of matter	19.5	17.5
	Nov 16	45	Calorimetry	19.6	17.6
14	Nov 19	46	Specific heat of gasses	19.7	17.7
	Nov 20	47	Heat transfer mechanisms	19.8	17.8
	Nov 21	48	Molecular sped and collisions	20.1	18.1
	Nov 23	H4	Thanksgiving Recess – No Class		
15	Nov 26	49	Pressure in a gas	20.2	18.2
	Nov 27	50	Temperature	20.3	18.3
	Nov 28	51	Thermal energy and specific heat	20.4	18.4
	Nov 30	52	Review		
Finals	Dec 06	FE	CUMULATIVE FINAL – 8:30 to 10:30		