CHAMINADE UNIVERSITY
PHY-251-02-1: UNIVERSITY PHYSICS I
COURSE SYLLABUS – FALL 2016

Instructor: Matthew Cochran
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Office: Henry Hall Office 7
Office Phone: 739-8361
Course Time: Monday, Wednesday, and Friday from 9:30 to 10:20
Friday from 1:30 to 2:20
Course Room: Wesselkamper 120 and Henry Hall 225
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
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	20%
Exam 2	20%
Exam 3	20%
Final	20%
Quizzes and Homework	20%

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.

QUIZZES:
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.

HOMEWORK:
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.

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, the student will be able to:

- Solve problems involving linear and rotational mechanics using algebra and trigonometry
- Solve problems involving pressure and fluid dynamics using algebra and trigonometry
- Solve problems involving heat and thermodynamics using algebra and trigonometry

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 ACCOMODATIONS:
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 and review procedures at:

www.chaminade.edu/student_life/sss/counseling_services.php

WEEKLY SCHEDULE:

Week	Date	L#	Topic	Reading	Due
	Aug 22	1	Course Intro; Motion Diagrams		
1	Aug 24	2	Position; Velocity; Acceleration	1.1 to 1.7	
	Aug 26	3	Units	1.8	
	Aug 29	4	Velocity in 1D; **Q1**	2.1 to 2.3	**HW1**
2	Aug 31	5	Acceleration in 1D	2.4 to 2.6	
	Sep 02	6	Vectors; Trig Review	3.1 to 3.4	
	Sep 05	**H1**	**Labor Day – No Class**		
3	Sep 07	7	Motion in Two Dimensions; **Q2**	4.1 to 4.3	**HW2**
	Sep 09	8	Projectile Motion	4.1 to 4.3	
	Sep 12	9	Circular Motion; **Q3**	4.5 & 4.6	**HW3**
4	Sep 14	10	Review		
	Sep 16	**E1**	**EXAM 1 – Chapters 1 to 4**		
	Sep 19	11	Forces and Newton's Laws	5.1 to 5.7	
5	Sep 21	12	Free Body Diagrams	5.1 to 5.7	
	Sep 23	13	Statics	6.1	
	Sep 26	14	Mass and Weight; **Q4**	6.2 & 6.3	**HW4**
6	Sep 28	15	Friction and Drag	6.4 to 6.6	
	Sep 30	16	Second Law Examples		
	Oct 03	17	Newton's Third Law; **Q5**	7.1 to 7.3	**HW5**
7	Oct 05	18	Ropes and Pulleys	7.4	
	Oct 07	19	Dynamics in Two Dimensions	8.1 & 8.2	
	Oct 10	**H2**	**Discoverers' Day – No Class**		
8	Oct 12	20	Fictitious Forces	8.4	
	Oct 14	**E2**	**EXAM 2 – Chapters 5 to 8**		
	Oct 17	21	Momentum and Impulse	9.1 & 9.2	
9	Oct 19	22	Conservation of Momentum; Momentum in 2D	9.3 to 9.6	
	Oct 21	23	Conservation of Energy	10.1 to 10.3	
	Oct 24	24	Hook's Law and Energy; Elastic Collisions; **Q6**	10.4 to 10.7	**HW6**
10	Oct 26	25	Work; Dot Product	11.1 to 11.3	
	Oct 28	26	Work and Potential Energy; Power	11.4 to 11.6	
	Oct 31	27	Torque; **Q7**	12.5	**HW7**
11	Nov 02	28	Torque and Statics	12.8	
	Nov 04	29	Simple Harmonic Motion	14.1 to 14.4	
	Nov 07	30	Simple Harmonic Motion Examples	14.5 & 14.6	
12	Nov 09	**E3**	**EXAM 3 – Chapters 9 to 12, 14**		
	Nov 11	**H3**	**Veteran's Day**		
	Nov 14	31	Fluids; Density; Pressure	15.1 to 15.4	
13	Nov 16	32	Buoyancy; Dynamics	15.4 to 15.5	
	Nov 18	33	Ideal Gas Law	16.1 to 16.4	
	Nov 21	34	Ideal Gas Processes; **Q8**	16.5	**HW8**
14	Nov 23	35	Work and Ideal Gasses	17.1 & 17.2	
	Nov 25	**H4**	**Thanksgiving Recess – No Class**		
	Nov 28	36	Heat and the First Law of Thermodynamics; **Q9**	17.3 & 17.4	**HW9**
15	Nov 30	37	Thermal Properties of Matter	17.5 & 17.6	
	Dec 02	38	Review		
Finals	Dec 05	**FE**	**CUMULATIVE FINAL – 11:00 to 1:00**		