CHAMINADE UNIVERSITY
PHY-251: UNIVERSITY PHYSICS I
COURSE SYLLABUS – FALL 2011

Instructor: Matthew Cochran
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Office: Henry Hall room 7
Office Phone: 739-8361
Course Time: Tuesday and Thursday from 10:00 to 11:20 and Thursday from 5:30 to 6:20
Course Room: Henry Hall 227 for lecture, Henry Hall 203 for 4th hour
Prerequisites: MA-210 Concurrent enrollment in PHY-251L is assumed.
Required Text: R. Knight, *Physics for Scientists and Engineers,* 2nd ed., Pearson, New York, 2008.
Other Materials: Scientific Calculator

COURSE DESCRIPTION:

This course is the first part of a yearlong 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%
Exam 4 . . . . 20%
Quizzes. 10%
Homework 10%

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. Makeup exams will only be given under extenuating circumstances beyond the student's control.

QUIZZES:
A ten minute quiz will be given most Tuesdays. Material for the quizzes will be drawn from material covered during the last 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.

ATTENDENCE:
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.

TENTATIVE WEEKLY SCHEDULE:

Week	Date	L#	Topic	Reading	Due
1	Aug 23	1	Intro; Units; Sig Figs		
	Aug 23	2	Motion Diagrams	1.1 to 1.8	
	Aug 25	3	Position; Velocity; Acceleration		
2	Aug 30	4	Uniform Motion; Calculus; **Q1**	2.1 to 2.3	**HW1**
	Aug 30	5	Constant Acceleration	2.4 to 2.7	
	Sep 01	6	Constant Acceleration		
3	Sep 06	7	Vectors; **Q2**	3.1 to 3.4	**HW2**
	Sep 06	8	Kinematics in Two Dimensions	4.1 to 4.3	
	Sep 08	9	Projectile Motion Examples		
4	Sep 13	10	Circular Motion; **Q3**	4.5 to 4.7	**HW3**
	Sep 13	11	Review		
	Sep 15	**E1**	**EXAM 1 – Chapter 1 to 4**		
5	Sep 20	12	Forces and Newton's Laws	5.1 to 5.7	
	Sep 20	13	Free Body Diagrams		
	Sep 22	14	Statics	6.1 to 6.3	
6	Sep 27	15	Mass; Weight; **Q4**	6.2 & 6.3	**HW4**
	Sep 27	16	Friction and Drag	6.4 to 6.6	
	Sep 29	17	Second Law Examples		
7	Oct 04	18	Newton's Third Law; **Q5**	7.1 to 7.5	**HW5**
	Oct 04	19	Newton's Third Law	7.3 to 7.4	
	Oct 06	20	Uniform Circular Motion	8.1 to 8.3	
8	Oct 11	21	Circular Motion; **Q6**	8.4 to 8.7	**HW6**
	Oct 11	22	Review		
	Oct 13	**E2**	**EXAM 2 – Chapter 5 to 8**		
9	Oct 18	23	Impulse and Momentum	9.1 to 9.6	
	Oct 18	24	Collisions		
	Oct 20	25	Energy	10.1 to 10.7	
10	Oct 25	26	Work; **Q7**	11.1 to 11.9	**HW7**
	Oct 25	27	Power; Example Problems		
	Oct 27	28	Rotational Motion	12.1 to 12.7	
11	Nov 01	29	Torque; Vectors; **Q8**	12.8 to 12.11	**HW8**
	Nov 01	30	Statics; Example Problems		
	Nov 03	31	Simple Harmonic Motion	14.1 to 14.4	
12	Nov 08	32	Simple Harmonic Motion; **Q9**	14.5 to 14.8	**HW9**
	Nov 08	33	Review		
	Nov 10	**E3**	**EXAM 3 – Chapter 9 to 12, 14**		
13	Nov 15	34	Fluids; Density; Pressure	15.1 to 15.4	
	Nov 15	35	Buoyancy; Dynamics	15.4 to 15.6	
	Nov 17	36	Example; Problems		
14	Nov 22	37	Ideal Gas; **Q10**	16.1 to 16.6	**HW10**
	Nov 22	38	Ideal Gas		
	Nov 24	**H2**	**Thanksgiving**		
15	Nov 29	39	First Law; **Q11**	17.1 to 17.6	**HW11**
	Nov 29	40	First Law	17.7 to 17.8	
	Dec 01	41	Review		
Finals	Dec 05	**E4**	**8:30 to 10:30 – EXAM 4 – Chapters 15 to 17**		