CHAMINADE UNIVERSITY
PHY-251: UNIVERSITY PHYSICS I
COURSE SYLLABUS – FALL 2010

Instructor: Matthew Cochran
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Office: Henry Hall room 7
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Office Hours: After class (specific times will be announced) or by appointment
Course Time: Tuesday and Thursday from 9:30 to 10:50 and Thursday from 5:00 to 5:50
Course Room: Henry Hall 227
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	15%
Exam 2	15%
Exam 3	15%
Exam 4	15%
Quizzes	15%
Homework	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 previous 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 will be given at the beginning of class, so arrive on time. Make-up quizzes are not given. However, your lowest score will be dropped.

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. However, your lowest score will be dropped.

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.

STUDENT LEARNING OUTCOMES:
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	Wed or Fri Lab
1	Aug 24	1	Intro; Units; Sig Figs	1.1 to 1.8		Lab 1: Units and Significant Figures
	Aug 26	2	Position; Velocity; Acceleration			
	Aug 26	3	Solving Problems in Physics			
2	Aug 31	4	Uniform Motion; Calculus; **Q1**	2.1 to 2.3	**HW1**	Lab 2: Acceleration of Gravity
	Sep 02	5	Constant Acceleration	2.4 to 2.7		
	Sep 02	6	Acceleration Examples			
3	Sep 07	7	Vectors; **Q2**	3.1 to 3.4	**HW2**	Lab 3: Motion of a Ball
	Sep 09	8	Kinematics in Two Dimensions	4.1 to 4.3		
	Sep 09	9	Projectile Motion Examples			
4	Sep 14	10	Circular Motion; **Q3**	4.5 to 4.7	**HW3**	Lab 4: Projectile Motion I
	Sep 16	11	2D Motion Examples			
	Sep 16	12	Review for Exam			
5	Sep 21	**E1**	**EXAM 1 – Chapter 1 to 4**		**HW4**	Lab 5: Projectile Motion II
	Sep 23	13	Forces and Newton's Laws	5.1 to 5.7		
	Sep 23	14	Free Body Diagrams			
6	Sep 28	15	Statics; Mass; Weight; **Q4**	6.1 to 6.3	**HW5**	Lab 6: Friction (formal)
	Sep 30	16	Friction and Drag	6.4 to 6.6		
	Sep 30	17	Second Law Example Problems			
7	Oct 05	18	Newton's Third Law; **Q5**	7.1 to 7.5	**HW6**	Lab 7: Cart Dynamics
	Oct 07	19	Circular Motion	8.1 to 8.7		
	Oct 07	20	Review for Exam			
8	Oct 12	**E2**	**EXAM 2 – Chapter 5 to 8**		**HW7**	Lab 8: Collisions
	Oct 14	21	Impulse and Momentum	9.1 to 9.6		
	Oct 14	22	Collisions			
9	Oct 19	23	Energy; **Q6**	10.1 to 10.7	**HW8**	Lab 9: Impulse and Momentum
	Oct 21	24	Work	11.1 to 11.9		
	Oct 21	25	Power; Example Problems			
10	Oct 26	26	Rotational Motion; **Q7**	12.1 to 12.7	**HW9**	Lab 10: Statics
	Oct 28	27	Torque; Vectors	12.8 to 12.11		
	Oct 28	28	Statics; Example Problems			
11	Nov 02	29	Simple Harmonic Motion; **Q8**	14.1 to 14.4	**HW10**	Lab 11: Hooke's Law
	Nov 04	30	Simple Harmonic Motion	14.5 to 14.8		
	Nov 04	31	Review for Exam			
12	Nov 09	**E3**	**EXAM 3 – Chapter 9 to 12, 14**		**HW11**	Lab 12: Simple Harmonic Motion (formal)
	Nov 11	**H1**	**Vetran's Day**			
	Nov 11					
13	Nov 16	32	Fluids; Density; Pressure; **Q9**	15.1 to 15.4	**HW12**	Lab 13: Buoyancy
	Nov 18	33	Buoyancy; Dynamics	15.4 to 15.6		
	Nov 18	34	Example; Problems			
14	Nov 23	35	Ideal Gas; **Q10**	16.1 to 16.6	**HW13**	**Thanksgiving**
	Nov 25	**H2**	**Thanksgiving**			
	Nov 25					
15	Nov 30	36	First Law; **Q11**	17.1 to 17.6	**HW14**	Lab 14: Specific Heat
	Dec 02	37	First Law	17.7 to 17.8		
	Dec 02	38	Review for Exam			
Finals	Dec 05	**E4**	**8:00 to 10:00 – EXAM 4 – Chapters 15 to 17**			