PHYS 311- (Undergraduate) Theoretical Mechanics II (3 credits)

Department of Physcis & Astronomy, University of Hawaii

Instructor: Prof. Pui K. Lam

Spring Semester 2010

http://www2.hawaii.edu/~plam/ph311

Time: TuTh 9:00 - 10:15 a.m.
Place: WAT 114
Instructor: Prof. Pui K. Lam (956-2988; plam@hawaii.edu)
Office Hours: MTuW 10:00 - 11: a.m. at WAT 433
Grader: None

Text: "Classical Dynamics of Particles and Systems" by Thornton and Marion, Fifth Edition, Thomson (2004). Website http://info.brookscole.com/thornton

Pre-req: Ph310 (or instrcutor's consent)

Course Outline:

Application of Hamilton's principles (Lagrangian mechanics) to a set of non-relativistic classical mechanics problems:

- Two particles interacting via a central-force potential - Ch.8
- Dynamics of a system of particles - Ch.9
- Aside: Motion relative a non-inertial reference frame - Ch.10
- Rigid body approximation - Ch.11
- N Coupled Oscillators - Ch.12
- Continuous Medium Approximation; Waves - Ch.13

Special Theory of Relativity - Ch.14

Student Learning Outcomes-

At the successful completion of this course a student is expected to have:

- A good understanding of Newtonian (non-relativistic) mechanics in terms of the Hamilton's principles
- A good understanding of the fundamental difference between non-relativistic and relativistic mechanics
- A set of mathematical skills to solve a varitey of problems in mechanics

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COURSE GRADE:

Based on an absolute scale.

Total (100%) = Homework (35%) + (Midterm 1+ Midterm 2 + Final=(60%)) +Reading questions (5%)

Exams (2 midterms, 1 final):

Midterms: 15 conceptual questions (2 pts each), 2 calculational problems (35 pts each)

** The conceptual question part of the midterm and final is cumulative.

A sheet of **hand-written** note (8.5" x 11") is allowed.

* The combined % for Midterm 1+ Midterm 2 + Final=60%; the highest score=25%, middle score=20%, lowest score=15%

Homework:

Is is extremely important that students practice what they learn and keep up with the lecture materials. I try to structure the homework policy to faciliate that goal. A few homework problems will be assigned at each lecture (homework topics refect the lecture materials) and **are due at the beginning of the next lecture. In fact, by random drawing, you will be ask to work out a homewrok problem on the board and you will be graded for the problem (each students has about 7 minutes per problem; you must show your writtten work, I don't want to you to waste time on the board). I do not collect these homework. At the end of each chapter, a regular set of homework will be assigned and will be collected.**

Reading assignment questions:

Email me 3 questions by **5 p.m. on Sunday**.

96-100 (A+), 91-95 (A), 86-90 (A-)

81-85 (B+), 76-80 (B), 71-75 (B-)

66-70 (C+), 61-65 (C), 56-60 (C-)

51-55 (D+), 46-50 (D), 41-45 (D-)

<40 (F)

No "incomplete" (I Grade) will be given.

Homework Answer Format:

In between formulae, there should be narrative explaining what you are doing (pretend you are writing a solution manual). If I don't know what you are doing or trying to do, I can't give you credits.

Tentative Course calendar:

Physics 311 Spring 2010
Tentative Course Calendar:

Month	Date	Day	Materials
Jan.	12	Tu	Overview, 8.1,8.2,8.3
	14	Th	8.4,8.5,8.6,8.7
	19	Tu	8.8,8.9,8.10
	21	Th	9.1,9.2,9.3,9.4
	26	Tu	9.5,9.6,9.7,9.8
	28	Th	9.9,9.10,9.11
Feb.	2	Tu	10.1,10.2
	4	Th	10.3,10.4
	9	Tu	Review
	11	Th	Midterm 1
	16	Tu	11.1,11.2,11.3
	18	Th	11.4,11.5,11.6,11.7
	23	Tu	11.8,11.9,11.10
	25	Th	11.11,11.2
March	2	Tu	12.1,12.2,12.3
	4	Th	12.4,12.5,12.6
	9	Tu	12.7,12.8,12.9
	11	Th	Review
	16	Tu	Midterm 2
	18	Th	13.1,13.2
			Spring Break 3/22-3/26
	30	Tu	13.3,13.4,13.5
April	1	Th	13.6,13.7
	6	Tu	13.8,13.9
	8	Th	14.1,14.2
	13	Tu	14.3,14.9**
	15	Th	14.4,14.5,14.6
	20	Tu	14.7,14.8,14.11**
	22	Th	14.1
	27	Tu	Some concepts on GR
	29	Th	Some concepts on GR
May	4	Tu	Review
	13	Th	Final Exam 9:45.-11:45a.m.