PHY5240 Advanced Classical Mechanics

Tue. Thur. 1400-1515 GC 275B Instructor: Dr. Wang, CP-216, Tel. 73064

Office Hours: 900-1200, M,W,F Textbook: None Listed Reference: Classical Mechanics 3rd ed. by Goldstein (G) Reference: Intro. Classical Mechanics by Morin (M) <u>textbook</u> Reference: Classical Dynamics of Particles.. 5th ed. by Thornton (T) Homeworks are assigned and maybe collected 20% Exams: one mid-term exam, 35%, cumulative final, 45%.

Course Description and Objectives:

A limeric by David Morin:

There once was a classical theory of which quantum disciples were leery. They said, "Why spend so long On a theory that's wrong?" Well, it works for your everyday query!

Week

Subject

Chapter

Week-1 (Aug. 21)	strategies and new tools (for problem solving)	(M)-1
Week-2 (Aug. 28)	analytical and numerical solutions	MATHEMATICA
Week-3 (Sep. 4)	Euler-Lagrange equation of motion (general)	(G) - 1
Week-4 (Sep. 11)	Math: calculus of variations	(M)-6
Week-5 (Sep. 18)	Lagrange equation and conserved quantities	(G)-2
Week-6 (Sep. 25)	constraints and non-conservative forces	(G)-2
Week-7 (Oct. 2)	two-body central force problem	(T)-8
Week-8 (Oct. 9)	review and mid-term	
Week-9 (Oct. 16)	examples of central force problem	(G)-3
Week-10 (Oct. 23)	motion of rigid-body	(G)-4
Week-11 (Oct. 29)	rigid-body dynamics	(T) - 11
Week-12 (Nov. 6)	rigid-body dynamics examples	(G)-5
Week-13 (Nov. 13)	small oscillations and chaotic motions	(G)-6
Week-14 (Nov. 20)	Legendre transformation and Hamiltonian dynamics	(G)-8
Week-15 (Nov. 27)	canonical transformation	(G)-9
Final Exam Week (Dec. 4)	FINAL* Dec. 6th, Thur. 1200-1400	

^{*}Please check for changes in schedule on Panthersoft pages.