

TENTATIVE SCHEDULE FOR PHYSICS 410, Fall 2014					
Date	Mtg.#	Reading Assignment	Topic	HW Due	Exams
Week 1					
9/2	1	1: Newton's Laws of Motion	Introduction, conceptual review of mechanics		
9/4	2	1	Math review, vector equations etc., Drag Forces	#0	
Week 2					
9/9	3	2: Projectiles and Charged Particles	Drag, Analytical solutions for projectile motion		
9/11	4	2	Charged particle in B, E fields	#1	
Week 3					
9/16	5	3: Momentum and Angular Momentum	Rockets, angular momentum, moment of inertia		
9/18	6	4: Energy	Impulse, work, kinetic, and potential energy	#2	
Week 4					
9/23	7	4	Energy conservation and applications, damped oscillators		
9/25	8	5: Oscillations	Driven damped oscillators, resonance, Frequency domain analysis	#3	
Week 5					
9/30	9	9: Mechanics in Noninertial Frames	Apparent forces in accelerating and rotating frames		
10/2	10	9	Describing rotational motion and dynamics	#4	
Week 6					
10/7	11	6: Calculus of Variations	Euler-Lagrange equation, The brachistochrone		
10/9	12	7: Lagrange's Equations	Lagrange's Equations; basic applications	#5	
Week 7					
10/14	13	7	More applications of Lagrange's equations / Review		
10/16	14	1-6, 9	Chapters 1-6, 9 (roughly)		EXAM #1
Week 8					
10/21	15	7	Lagrangian Problem Solving, Constraints and conservation laws		
10/23	16	8: Two-Body Central Force Problems	Equivalent one-dimensional problem, Conservation of ang. mom.	#6	
Week 9					
10/28	17	8, 14	All about orbits; Impact parameter and scattering angle		
10/30	18	14: Collision Theory	Total and differential cross sections; Rutherford scattering	#7	
Week 10					
11/4	19	13: Hamiltonian Mechanics	Hamilton's equations		
11/6	20	13	Applications of Hamiltonian mechanics	#8	
Week 11					
11/11	21	10: Rotational Motion of Rigid Bodies	Total angular momentum; rotation about a fixed axis		
11/13	22	10	The moment-of-inertia tensor, precession of a top	#9	
Week 12					
11/18	23	11: Coupled Oscillators and Normal Modes	Linear examples; coupled modes / Review		
11/20	24	11	The double pendulum and other examples	#10	
Week 13					
11/25	25	15: Special Relativity	State-space orbits and Poincare sections; Postulates; time dilation; length contraction		
11/27		THANKSGIVING	THANKSGIVING!		
Week 14					
12/2	26	12: Nonlinear Dynamics and Chaos	Period doubling; chaos		
12/4	27	7-8, 10-11, 13-14	Chapters 7-8, 10-11, 13-14		EXAM #2
Week 15					
12/9	28	15	Relativistic momentum and energy		
12/11	29	15	Relativistic Dynamics, Review and discussion	#11	
12/16	30	Comprehensive Chaps. 1 through 15	FINAL EXAM [8 AM to 10 AM]		FINAL EXAM