

TENTATIVE SCHEDULE FOR PHYSICS 410, Fall 2015					
Date	Mtg.#	Reading Assignment	Topic	HW Due	Exams
<b>Week 1</b>					
9/1	1	1: Newton's Laws of Motion	Introduction, conceptual review of mechanics		
9/3	2	1	Math review, vector equations etc., Drag Forces	#0	
<b>Week 2</b>					
9/8	3	2: Projectiles and Charged Particles	Drag, Analytical solutions for projectile motion		
9/10	4	2	Charged particle in B, E fields	#1	
<b>Week 3</b>					
9/15	5	3: Momentum and Angular Momentum	Rockets, angular momentum, moment of inertia		
9/17	6	4: Energy	Impulse, work, kinetic, and potential energy	#2	
<b>Week 4</b>					
9/22	7	4	Energy conservation and applications, damped oscillators		
9/24	8	5: Oscillations	Driven damped oscillators, resonance, Frequency domain analysis	#3	
<b>Week 5</b>					
9/29	9	9: Mechanics in Noninertial Frames	Apparent forces in accelerating and rotating frames		
10/1	10	9	Describing rotational motion and dynamics	#4	
<b>Week 6</b>					
10/6	11	6: Calculus of Variations	Euler-Lagrange equation, The brachistochrone		
10/8	12	7: Lagrange's Equations	Lagrange's Equations; basic applications	#5	
<b>Week 7</b>					
10/13	13	7	More applications of Lagrange's equations / Review		
10/15	14	1-6, 9	<b>Chapters 1-6, 9 (roughly)</b>		<b>EXAM #1</b>
<b>Week 8</b>					
10/20	15	7	Lagrangian Problem Solving, Constraints and conservation laws		
10/22	16	8: Two-Body Central Force Problems	Equivalent one-dimensional problem, Conservation of ang. mom.	#6	
<b>Week 9</b>					
10/27	17	8, 14	All about orbits; Impact parameter and scattering angle		
10/29	18	14: Collision Theory	Total and differential cross sections; Rutherford scattering	#7	
<b>Week 10</b>					
11/3	19	13: Hamiltonian Mechanics	Hamilton's equations		
11/5	20	13	Applications of Hamiltonian mechanics	#8	
<b>Week 11</b>					
11/10	21	10: Rotational Motion of Rigid Bodies	Total angular momentum; rotation about a fixed axis		
11/12	22	10	The moment-of-inertia tensor, precession of a top	#9	
<b>Week 12</b>					
11/17	23	11: Coupled Oscillators and Normal Modes	Linear examples; coupled modes / Review		
11/19	24	7-8, 10, 13-14	<b>Chapters 7-8, 10, 13-14</b>		<b>EXAM #2</b>
<b>Week 13</b>					
11/24	25	11	The double pendulum and other examples		
11/26		<b>THANKSGIVING</b>	THANKSGIVING!		
<b>Week 14</b>					
12/1	26	15: Special Relativity	State-space orbits and Poincare sections; Postulates; time dilation; length contraction		
12/3	27	12: Nonlinear Dynamics and Chaos	Period doubling; chaos	#10	
<b>Week 15</b>					
12/8	28	15	Relativistic momentum and energy		
12/10	29	15	Relativistic Dynamics, Review and discussion	#11	
12/15	30	Comprehensive Chaps. 1 through 15	<b>FINAL EXAM [8 AM to 10 AM]</b>		<b>FINAL EXAM</b>