Syllabus (modified on 4/29/19): Phys 1005 – spring 2019

Instructor:	Prof. Kai Shum	Phone:	718-951-5000 Ext. 1227
Lec. Room:	IA-137 (sec. ME); 329NE (sec. MT)	Time:	Mon/Wed (ME:11:00-11:50am); (MT, 12:50-1:40pm)
Reference Books:	1. *Physics Matters* by J. Trefi & R. Hazen, 2007 J. Wiley & Sons 2. Chapters by OpenStax College (Rice University) http://userhome.brooklyn.cuny.edu/kshum	Office Hours:	2:30 – 3:30 pm on Tues.
Department:	Physics	Office:	2156f N
Lab. Assignment:	http://depthome.brooklyn.cuny.edu/physics/phylabs_new.html	Instructor's e-mail:	kshum@brooklyn.cuny.edu

Planned work:

Week of	Topics	Exp. #	Exp. Description	Problems & Exercises
1/28,30	Kinematics of 1D/2D motion (Point-mass concept, coordinates, distance, displacement, speed/velocity, &inertial frames)	1	Intro: theory/verification (L = pi*D)	Assigned in class
2/4,6	Newton's 1st law, two-object problems, Acceleration, and de-accretion	2	Average speed: $v = \Delta x/\Delta t$	Assigned in class
2/11,13	Vertical motions with gravitational acceleration $a = \pm$ g (g = 9.8 m/s^2)	3	v^2 ~ Δx	Assigned in class
2/18(cc) 2/20	2D projectile motions			Assigned in class
2/25,27	2D projectile motions, Dynamics of motion: Newton's 2nd ($\mathbf{F}_{net} =$ ma) and 3rd law (action/reaction forces)	4	Range = $v_{0x} \times \Delta t$	Assigned in class
3/4,6	3/4 cc, 3/6 - Review,	5	Newton's 2nd law	
3/11,13	**Exam#1 (3/11)**, 3/13 - Solutions of exam#1	6	Kinetic and potential energy	Assigned in class
3/18,20	Gravitational force/normal force/friction force/tension, Action/reaction force, concepts of systems/sub-systems	7	Simple pendulum	Assigned in class
3/25,27	Energetics of motion: kinetic energy, gravitational potential energy, thermodynamics (1st law, heat, heat-capacity, temperature)	8	Heat & temperature (Q = m c ΔT; Q = R_h Δt)	Assigned in class
4/1,3	Thermodynamics (2nd law, latent-heat of evaporation/fusion), Ray-optics (mirrors)	9	Latent-heat of evaporation (Q = L_v Δm)	Assigned in class
4/8,10	Review, Ray-optics, **Exam#2 (4/10)**	10	Imaging by a flat mirror ($\Theta = \Theta'$)	
4/15,17	Solutions of exam#2, Coulomb's law/Electric field/potential, electric current/power, ohm's law	11	Index of refraction	Assigned in class
4/22	Spring Recess (4/19-28)			
4/29	Resistors in series and in parallel, nuclear physics	12	Ohm's law (V = IR); P=IV	Assigned in class
5/6	Ray-optics (spherical mirror imaging)	13	Radioactivity	
5/13	Final review	14	Lab exam (or spherical mirror imaging)	
5/15	Reading day/final-exam			
	Grades: Lec.-exams 40%, lab. 28%, and final 32%			