PHYS 101H      Summer 2016 Study Guide for Final

Final exam format will be similar to past tests; will consist of MC questions, questions, and problems.

Study the past two tests (Test #1 and Test #2) and the related materials.

Atomic bonding, metallic crystal structures (SC, FCC, and BCC), and calculating density.

Electrostatics and Electric Field (Chap 12): Electric charges (positive and negative), test charge, conductors, insulators, semiconductors, superconductors, Coulomb’s law, and electric field.

* Drawing electric field lines of point charges and a pair of charges.
* Charging by contact and by induction.
* How to find the net force on charges using Coulomb’s law. 
* Applications of electrostatics.

Electricity and Electric Circuits (Chap 13): Electromotive force, resistance, electric current, electric power, alternating current, transformers, and household circuits.

* How to use Ohm's law in circuit analysis. I = Q/t, V = IR, P = IV
* How to use an ammeter and a voltmeter in a circuit.
* Combining resistors to find the equivalent resistance.
* Estimating the cost of electricity.
* Electricity generation and transmission.

Chapters 16 & 17: Electromagnetic waves, light & color, wave fronts & rays, law of reflection, image formation in plane mirrors, concave, and convex mirrors, dispersion, rainbow, lenses, focal length & power of a lens, human eye & vision defects of the human eye, magnifier, compound microscope, and telescope.
 $v=$ λf $n= \frac{c}{v}$

Use of mirror/lens equation and the equation for magnification in solving image formation problems with plane, concave, and convex mirrors and lenses.

 **     **Drawing ray diagrams to show the focal point and focal length of spherical mirrors and lenses. Drawing ray diagrams to show the formation of images in spherical mirrors and lenses.

Understand the following: Real image, virtual image, focal point, focal length, index of refraction, nearsightedness, and farsightedness.