1st EXAM ANNOUCEMENT

Date: **September 22, 2010**
Time: **7:15 – 8:30 PM**

Content of the 1st Exam:

Duncan & Tyler	Chapter 1, 2, 3.1, 3.3, & 4.1
Supplement:	In-class Lectures, Powerpoint Presentations, Notes, Handouts, In-class activities, Homework Assignments, Media (such as DVD programs, etc)

Regulation:

- You can use an additional sheet of HAND-WRITTEN notes (not exceeding 8 x 11 inch) for exam # 1
- You can use a calculator.
- You can use a language dictionary.

Important Topics Covered:

Chapter 1:
- Scientific Methodology
- Scientific Notation
    - Powers of Ten, Significant Figures
- Reading Graphs

Chapter 2:
- Angles, Angular Measurements
- Relation between Angular Sizes and Distances
- Different Types of Galaxies
    - Morphology & Hubble Tuning Fork Diagram
    - Basic Properties
- Properties of Light
    - Speed of Light (Relation between, speed, frequency, & wavelength)
    - Energy of Light (photon)
    - Electromagnetic Spectrum
    - Spectroscopy
    - Types of Spectra (continuous, emission, and absorption)
- Doppler Effect
- Stellar Parallax

Chapter 3:
- Potential and Kinetic Energy
    - Conservation of Energy

  - Forms of Energy
- Atomic Structure
  - Protons, Neutrons, Electrons
  - Isotopes
  - Electronic Transitions (absorption, emission, ionization)
- Phases of Matter (solid, liquid, solid, plasma)
- Concepts of Heat and Temperature
- Thermal (blackbody) Radiation
  - Wien's Law
    - Peak/Max Wavelength and Temperature
  - Stefan-Boltzmann's Law
    - Blackbody Energy-Flux
- Inverse-Square Law
  - Observed Energy-Flux (brightness)
  - Relations between Luminosity, Brightness, & Magnitude
- The Scale of the Universe
  - Solar System
  - Milky Way
  - Galaxies
  - Clusters of Galaxies
  - Superclusters & Voids

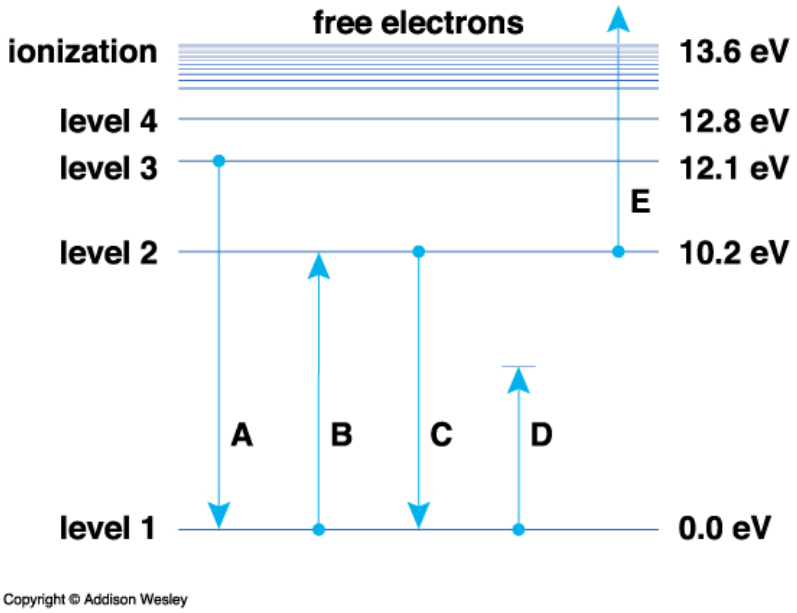
Chapter 4:
- Kepler's 3 Laws
- Gravity & Gravitational Binding Energy
- Escape Velocity

Telescope:
- Types of Telescope (refractor & reflector)
- Properties of Telescope
  - Light-gathering Power, Angular Resolution, & Magnification

Format of Exams #1:

It will consist of two parts. Multiple Choices and written question(s) with multiple parts that will require you to utilize all the concepts you have learned from those chapters. **Some** questions in the exam will be directly from those chapters. The following is an example of the type of question you may need to answer during the exams.

1. Explain why astronomers are interested in blackbody radiation.
2. The bright star Sirius A has a surface temperature of 10,000 K. What kind of radiation does Sirius A predominately emit? How much more energy is emitted each second from each square meter (energy flux) of Sirius A's surface than from each square meter of the Sun's surface? [Hint: Use Wien's Law & Stefan-Boltzmann Law.]
3. The following is the energy level diagram of hydrogen:



a). Which transition(s) will produce absorption?
b). Which transition(s) will produce emission?
c). Which transition(s) will not be possible?

General Study Tips:

You can add the following phases in any topic to guide your study (especially those *Key Ideas* section at the end of the chapter):

- Define …
- Explain …
- Relate …
- Give an example of …
- Demonstrate the principle of …
- How to solve …