

# **Astronomy 115 Midterm Exam**

Monday, Oct. 17

Please bring a Scantron form: **882-E**

Test will be closed book and notes. 50 questions.

Topics Covered Include:

**Chapter 1:** Scale of the universe. Light years, light minutes, constellations, daily motions of Sun & stars. Celestial Poles & Equator, Ecliptic Plane, Zodiac, Annual motion of the Sun, Seasons, Moon phases. Solar & Lunar Eclipses.

**Chapter 2:** Scientific method, planetary motions. Ptolemy's geocentric theory. Heliocentric theory. Copernicus, Tycho, Kepler. Explanations for retrograde motion. Galileo. Kepler's 3 laws of planetary motion. Newton's theory of gravity. Orbits. AU

**Chapter 3:** Light/Electromagnetic Spectrum. Wavelength, Telescopes: reflecting, refracting. Light gathering power, diameter & area. Resolving power. Effect of Earth's atmosphere on different types of light.

**Chapter 4:** Thermal radiation (Blackbody spectrum). Wien's Law. Atoms & Light, Bohr Model, Elements & Spectra, Emission, Absorption & Continuum Spectra. Doppler effect.

**Chapter 5:** Sun's approx. size & composition. The Sun's Atmosphere: Convection, Photosphere, Chromosphere, Corona, Magnetic fields & sunspot cycle. Nuclear Fusion,  $E=Mc^2$

**Chapter 6** Parallax, Apparent Magnitudes, Inverse Square Law, Absolute Magnitude, HR Diagram, Stellar Masses.

**Not on test:**

**Sections** 1:6-1:8, 3:12-3:17, 5:8-5:10, 6:10-6:13

**Topics:** Precession, Calendars, Time Zones, Annular Eclipses, Opposition, Conjunction, Synodic Period, Equations for: Torque, Kinetic Energy, Potential Energy & Gravitational Force, Conic Sections, Interference, Newtonian vs. Cassegrain. CCDs. Stephan-Boltzman Law, Radioactive Dating, Balmer & Lyman lines, Solar Neutrino Problem, Solar Models, Luminosity Classes. Chapter 7

**NOTE:** First Extra Credit Assignments are due Oct 17