I. Introduction and Historical Background
   What is astronomy
   Ancient astronomy
   Geocentric model – Ptolemy
   Heliocentric model – Copernicus
   Tycho Brahe
   Kepler – Kepler’s 3 Laws
   Galileo – observations vs. geocentric model
   Newton – law of gravity, laws of motion
   Orbital motion – why?

II. The Night Sky
    The Earth in space – rotation on axis
    revolution about sun
    tilt of axis and origin of seasons
    Celestial Sphere
    ecliptic
    celestial equator
    celestial poles
    solstices, equinoxes
    Precession
    Solar vs. sidereal time
    orbit of moon, phases
    eclipses of Sun & Moon – Why?

III. Electromagnetic radiation, optics, and telescopes
    EM spectrum
    wavelength, frequency, velocity of light
    inverse square law
    Doppler effect
    Optics – formation of an image
    refraction & reflection

    Telescopes – optical and radio
    atmospheric windows

IV. Solar System
    membership
    formation
    extrasolar planets
    Terrestrial planets
Earth – plate tectonics
Moon – surface, ages, origin

atmospheres – origin, greenhouse effect

Mercury, Venus, Mars – surface condition
evidence for water

giant planets and their satellites
   Jupiter – atmosphere, composition
       4 Galilean satellites/terrestrial
   Saturn – rings, Roche limit, Titan
   Uranus & Neptune – atmosphere

   Pluto & trans-Neptunian objects/Kuiper Belt – dwarf planets
   No longer a major planet – why?

V. Interplanetary material
   Asteroids – asteroid belt
   Comets – composition, orbits, tail & nucleus
       Halley’s comet
   Meteors & meteor showers

   Role of impacts – K-T event
       Tunguska
       Comet Shoemaker – Levy 9