

PHYS 436

Syllabus:

This course will cover the following topics:

1. The General Theory of Relativity: basics for cosmology.
 - a. The RW metric, the Friedmann equation.
 - b. Redshift of light
 - c. Cosmological yardsticks and candles
2. Dynamics of the Universe
 - a. Known and unknown contents
 - b. Expansion characteristics vs. content
 - c. The Dicke coincidences
3. Thermal history of the Universe
 - a. Nucleosynthesis and constraints on baryon content
 - b. Baryogenesis
 - c. The cosmic microwave background
4. Characterizing the dark matter:
 - a. Galactic Dynamics
 - b. Cluster Dynamics
 - c. Gravitational lensing
 - d. The CMB
5. Characterizing the “Dark Energy”:
 - a. Type 1a supernovae
 - b. The CMB
 - c. Cluster counting
6. Inflation
 - a. Theoretical motivations
 - b. Observational support... of sorts.
 - c. Potential future measurements.