

Astronomy I: Course Syllabus

I Introduction

Scientific Notation, Understanding Powers of 10 □ A Virtual Tour

II Our Universe

Formation of the Universe, Big Bang Theory and Proof, Age and Size of the Universe

Lab: “The Big Bang”

Lab: “Size of the Universe”

Quiz: Universe

III Evolution of the Universe

The Ultimate Fate of the Universe, Shape and relation to fate

Test: Universe

IV Light

The Nature of Light, Electromagnetic Spectrum, Light Speed, Wien’s Law

Quiz: Light

V Galaxies

Types, Evolution, and Sizes of Galaxies

Lab: “The Structure of Galaxies”

Reading: “Galaxies and the Universe”

Research Project and Presentation: Galaxies

VI The Milky Way Galaxy

Formation and Structure, Hubble’s Law, Dark Matter

Exam: Galaxies

VII Stars

Star Formation and Nuclear Fusion, Properties and Structure of Stars, Measuring Distance, Constellations

Lab: “Understanding Parallax”

VII Classification of Stars

Classification and Types of Stars, H-R Diagram, Life Cycle of Stars, Black Hole

3 Labs: “Spectral Class of Stars”, “H-R Diagram”, “Star Magnitude”

Readings: “The Life Cycle of Stars”, “Monster Black Hole”

Research Project and Presentation: Stars

Quiz: Stars

IX Our Sun

Surface Features and Facts, Virtual Tour

Exam: Stars

X Time Travel

Is it Possible? Light, Gravity and Einstein's Theory of Relativity

Reading: "How Time's Arrow can be Reversed"

Essay: Time Travel

Exam: Time Travel

XI Exobiology

The Search for Life in the Universe, The Drake Equation, Exoplanets and the Habitable Zone, What Does Life Need?

Research Project and Presentation: Exoplanets

Several Readings

Exam: Exobiology

The Final Exam is cumulative!