

ASTRONOMY AND ASTROPHYSICS

Course Code: PY1551.2

OPEN COURSE

Offered by

DEPARTMENT OF PHYSICS

Contact Faculty: Dr. Anjana P S

CONSISTS OF FOUR UNITS

UNIT I - Introduction to Astronomy

UNIT II - History of Modern Astronomy

UNIT III-The Solar system

UNIT IV -The Outer Universe



UNIT I - INTRODUCTION

What is Astronomy ?

Branches of Astronomy

The celestial sphere and stellar magnitudes:

constellations, stellar magnitudes, apparent magnitudes

The celestial coordinate system – Precession of Earth's axis

Astronomy = law of stars is a natural science that deals with **celestial objects** (such as stars, planets, comets, nebulae, star clusters and galaxies)

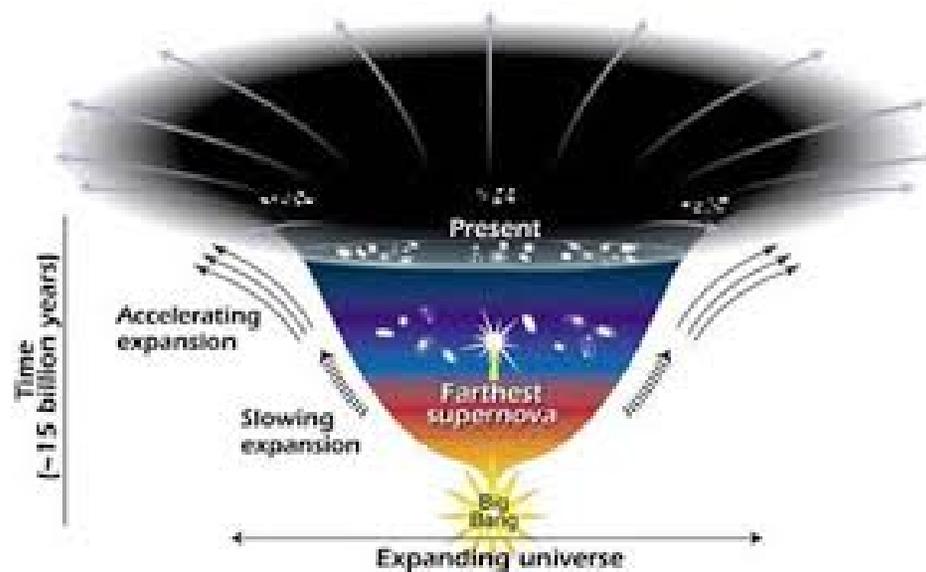
and phenomena that originate outside the atmosphere of Earth

Astrophysics - Branch of astronomy that deals with the **physics of the universe**,

including the **physical properties** (luminosity, density, temperature and chemical composition) of celestial objects such as stars, galaxies, and the interstellar medium, as well as their interactions.

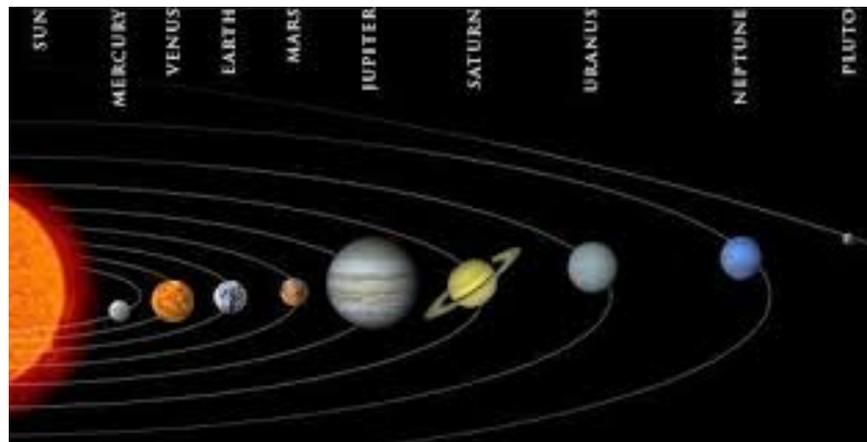
UNIT I I - HISTORY OF MODERN ASTRONOMY

- Ptolemy's model of Universe
- Copernican and Galilean contributions
- Laws of planetary motion: Tycho Brahe's observations,
- Kepler's laws
- Newton and his law of Universal law of Gravity



UNIT I II – THE SOLAR SYSTEM

- **Formation of solar system: Nebular hypothesis**
- **The Sun: Physical properties – Internal structure**
- **Solar atmosphere - Sun spots – Solar wind, prominences and flares**
- Physical characteristics of planets in solar system**
- **Earth's motion and Seasons - Lunar and Solar eclipses**
- **Brief familiarisation of solar system objects: Satellites, Asteroid belt, Kuiper belt, Comets and Meteorites**



UNIT I V – OUTER UNIVERSE

- **Properties of stars: luminosity, colour and surface temperature**
- **Spectral types of stars**
- **Hertzsprung-Russel diagram**
- **Evolution of a Sun-like star**
- **Fate of highmass stars: Supernova, Neutron stars and Black holes**
- **Brief familiarization of Milky Way galaxy, Types of galaxies according to shape.**

THANK YOU