

## **Week 1-2: Introduction to Astronomy**

History of Astronomy

Importance of Astronomy

Branches of Astronomy

## **Week 3-4: Celestial Coordinates and Motions**

Celestial Coordinate Systems

Earth's Rotation and Revolution

Apparent Motion of Celestial Objects

## **Week 5-6: Solar System Overview**

Characteristics of the Sun

Formation of the Solar System

Planetary Orbits and Characteristics

## **Week 7-8: Planetary Observations**

Naked-eye Observations

Observing Planets with Binoculars

Observing Planets with Telescopes

## **Week 9-10: Star Formation and Classification**

Stellar Formation Mechanisms

Hertzsprung-Russell Diagram

Spectral Classification of Stars

## **Week 11-12: Stellar Observations**

Observing Stars with the Naked Eye

Using Binoculars for Star Observation

Introduction to Telescopic Observations

## **Week 13-14: Galaxy Types and Structure**

Classification of Galaxies

Milky Way Structure

Extragalactic Astronomy

## **Week 15-16: Cosmological Concepts**

Big Bang Theory

Expansion of the Universe

Dark Matter and Dark Energy

## **Week 17-18: Observing Tools**

Types of Telescopes

Binoculars and Their Use

Star Charts and Sky Maps

## **Week 19-20: Observing Sessions**

Planning an Observation Session

Locating Celestial Objects

Keeping Observational Records

## **Week 21-22: Exoplanets and Astrobiology**

Detection Methods for Exoplanets

Characteristics of Habitable Planets

The Search for Extraterrestrial Life

## **Week 23-24: Advanced Astrophysics**

Black Holes and Their Properties

Neutron Stars and Pulsars

Gravitational Waves and Their Detection

