

II SEM PHYSICS

Astronomy

Time: 2 hrs./week + 01 Hr tutorial Max Marks:

Content Hrs

Unit – 1 -History and Introduction

Chapter 1

Ancient Astronomy

Greek Observations, Sumerian Observations, Mayan Observations, Arabic Observations, Chinese Observations

2

Chapter 2

Indian Astronomy

Vedic Astronomy, Ancient Astronomy – Aryabhata, Varahamihira, Bhaskara
Astronomy in Indian Scriptures, Precession of the Equinox, Celebrations of
Equinox

2

Chapter 3

Medieval & Modern Astronomy

Invention of Telescopes, Models of the Solar System & Universe,
Observations by Tycho Brahe, Kepler, Galileo, Herschel and Other, Modern
Astronomy

2

Chapter 4

Optical tools for Astronomy

Pin Hole, Binoculars, Telescopes & Imaging.

1

Chapter 5

Mathematical Methods of Observations

Angular Measurement, Trigonometric functions, Stellar Parallax

1

Chapter 6 Observational Terminologies

Cardinal Directions, Azimuth, Altitude, Measurements using Compass and
Hand. Equatorial Co-ordinates, Light years, Magnitude, Colors etc.

2

Unit – 2: Unit 2: Observations of the Solar System

Chapter 7.

The Sun

Ecliptic and the Orientation of the Earth, Seasons - Solstices and Equinox,
Observations of the Sun from Earth during seasons. Eclipses, Zero-shadow
day, Sunspots

1

Chapter 8

The Moon

Earth-Moon system – Phases, Lunar Eclipses, Ecliptic and Lunar Orbital
Plane – Nodes, Lunar Month, Full Moon Names

1

Chapter 9.

Inner Planets: Mercury & Venus

Observational History, Observational Windows, Appearance, Apparitions,

Elongations, Superior Conjunctions, Inferior Conjunctions, Transits.

2

Chapter 10

Outer Planets

Outer Planets: Mars, Jupiter & Saturn

Observational History. Observational Windows, Appearance, Frequency of Oppositions Oppositions, Conjunctions, Moons Eclipses. Galilean Moons, Saturn's Rings

2

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Unit III Major Astronomy Observations

Chapter 11

March to June

Prominent Stars and Constellations Visible during this period,
Methods of Spotting.

2

Chapter 12

June to September

Prominent Stars and Constellations Visible during this period,
Methods of Spotting.

2

Chapter 13

September to December

Prominent Stars and Constellations Visible during this period,
Methods of Spotting.

2

Chapter 14

December to March

Prominent Stars and Constellations Visible during this period,
Methods of Spotting.

2

Reference Books:

1. The Stargazer's Guide - How to Read Our Night Sky by Emily Winterburn
2. A guide to the Night Sky – Beginner's handbook by P.N. Shankar
3. The Complete Idiot's guide to Astronomy by Christopher De Pree and Alan Axelrod

Text Books

1. P. N. SHANKAR A GUIDE TO THE NIGHT SKY
<https://www.arvindguptatoys.com/arvindgupta/nightskyshankar.pdf>
2. Biman Basu, Joy of Star Watching, National Book Trust of India 2013

References Books

Christopher De Pree :The Complete Idiot's Guide to Astronomy, Penguin USA, 2008
Emily Winterburn, The Stargazer's Guide: How to Read Our Night Sky, Constable and Robinson, 2008

Activities

SI No Experiment

- 1 Measuring Seasons using Sun's Position.
- 2 Measuring Distance using Parallax
- 3 Estimation of the Stellar Diameter using Pin Hole
- 4 Measuring Height of an Object Using Clinometer.
- 5 Star spotting using constellation maps

6 Constellation spotting using Skymaps

7 1. Estimation of 'Suitable Periods' to observe deep sky objects using Planisphere.

8 Estimation of the Size of the Solar System in using Light Years.

9 Identification of Lunar Phases across a year.

10 Measuring Constellation of the Sun using Night Skymaps or Planispheres. [onomy](#)