

# Astronomy in Ancient, Medieval and Early Telescopic Era of India - Video course

## COURSE OUTLINE

This short course consists of 5 sessions of 90 minutes duration each. The contents are as follows:

**First Session** – Importance and relevance of the subject; rediscovery of ancient Indian astronomy and related issues and debates; basics of positional astronomy – the solar system and the markers in the sky, sun, planets and the moon, important terminologies, features and the coordinate systems, precision of the equinox and its effects, eclipses, comets and meteors.

**Second Session**- Pre Siddhaantic astronomy- Pre Vedic, Vedic and Vedaanga periods; 5 year Yuga system; ayanas; months; tithis and seasons; time units; sun and moon's motion; nakshatra system; Vedaanga Jyotish.

**Third Session**- Siddhaantic astronomy; important siddhaantic astronomers – Aryabhatta I, Varahamihira, Brahmagupta, Bhaskar and others; interaction with Greek astronomy – 7 day week system and the Zodiacal signs; Yuga, Mahayuga and Kalpa system and epochs; determination of ahargana, tithi and nakshatra; mean motion of the sun, moon and planets; corrections to find out true positions; ayanachalana and zero-precision year; alphabetical representation of numbers and Katapayaadi system.

**Fourth Session** – Astronomy in medieval India; interaction with west Asian astronomy; Zij astronomy in medieval India; Astrolabes and armillary spheres; instruments for naked-eye astronomy; Jai Singh and his observatories; late siddhaantic astronomy and Samanta Chandra Sekhar.

**Fifth Session** – Astronomy in early telescopic era of India; introduction of telescope in India; the Great Trigonometric Survey of India and use of telescopic astronomy; observation of transit of Venus and Mercury from India; the first telescopic observatory of India; archaeoastronomy and chronology of ancient India and the antiquity; originality of the Indian nakshatra system and the ancient Indian astronomy; nature of interaction with western astronomy and evidence of independent development; concluding remarks.



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General

Pre-requisites:

Class 10 with science

Coordinators:

**Prof. Amitabha Ghosh**

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## References:

1. Main textbook used , “Astronomy”, Vol I Part 2 of “History of Science in India”, by Amitabha Ghosh, The National Academy of Sciences India and Rama Krishna Mission Institute of Culture, Gol Park, Kolkata, 2014
2. Other texts used , (a) “ Indian Astronomy-An Introduction” by , S. Balachandra Rao, Universities Press, 2000,(b) “ Bharatiya Jyotishs Sastra” by ,Shankar Balakrishna Dixit (Eng Translation), India Meteorological Department, New Delhi,1968
3. Other references can be found in the main text (i)