DEPARTMENT OF MATHEMATICS				*Certificate Course*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Total Contact Hours**	**CIA**	**Ext**	**Total**
	Certificate course	21MATC05	ASTRONOMY	2	30	50	50	100

Learning Objectives:

- To introduce the student to space science.
- To familiarize the learner with the important of the planets, sun, moon and stellar universe.
- To give a brief history of Astronomy.
- To achieve a highest degree of scientific literacy.

Learning Outcomes:

Learners will be able to

- Acquire concept of spherical trigonometry.
- Gains knowledge regarding celestial sphere and diurnal motion
- Familiar with the Earth, the moon and its properties.
- Study the concepts of Kepler's laws and its properties
- Analyze the characteristics of sidereal and synodic month and classify the successive phases of moon

UNIT - I:

Introduction – Spherical Trigonometry – Sphere – Great circles and Small circles – Axis and poles of a circle – Distance between two points on a sphere –Angle between two circles – Angular radius or Spherical radius-Spherical figures – Spherical triangle - Polar triangle – Relation between the elements of a spherical triangle and its polar triangle – Some properties of spherical triangles.

UNIT - II:

Celestial sphere – Diurnal motion, celestial axis and equator – Celestial horizon – Zenith and Nadir – Celestial meridian – Cardinal pints – Northern and Southern hemispheres – Eastern and Western hemispheres – Visible an invisible hemispheres – Declination circles – Verticals – Parallactic angle – Transit or Culmination – Due east and Due west – Due south and due north – Annual motion of the sun, ecliptic, obliquity – First point of Aries and first point of Libra- Equinoxes and solstices.

UNIT - III:

Celestial Co- ordinates – Horizontal system – Equatorial system – Meridian system –Ecliptic system – Sidereal times – West hour angle of a body expressed in time units – Latitude of a place – Morning and Evening stars – Circumpolar stars.

UNIT - IV:

The Earth – The Zones of Earth – Terrestrial latitudes and longitudes – Date line – Shape of earth – Geographical and geocentric latitudes of a place – Geographical and Nautical miles – Radius of earth – Dip of horizon – Twilight

UNIT - V:

Kepler's laws - Verification of first law- Newton's deductions – Equation of time – Seasons – Calendar. The moon- Synodic and sidereal periods – Phase of moon. Eclipses – Lunar eclipse and Solar eclipse

TEXT BOOK:

Astronomy(Reprint - 2007) by Prof. S. Kumaravelu and Prof. SusheelaKumaravelu

Course Designer:

Dr. K.M.Dharmalingam, Associate Professor, Department of Mathematics.