DEPARTMENT OF PHYSICS				*Certificate Course*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Total Contact Hours**	**CIA**	**Ext**	**Total**
	Certificate course		The Science of Telescope Making	2	30	50	50	100

Objective:
To create enthusiasm for the students to construct one of the fascinating instrument in the subject of optics "The Telescope".

Learning Outcomes:
After the successful completion of the course students will be able to,
- ❖ Work with the traditional way of mirror making process of the telescopes.
- ❖ Construct the Newtonian form of telescopes.
- ❖ Explore objects of the sky by using their own telescopes.

Unit - I: Basic Optics and Telescopes
Geometrical optics – Aspherical surfaces – Refraction at spherical surfaces – Mirrors – Planar mirrors – Aspherical mirrors – Spherical mirrors – Definition of a perfect objective – The Rayleigh criterion – Principal types of telescopes – Refractor Vs. Reflector as the amateur's telescope.

Unit - II: Tools and Accessories
The mirror blank and Tool – Abrasives – Polishing materials – The Polishing lap – Making the lap – Advantages of a telescope window – Choice of glass – Role of the eyepiece and its selection – The Barlow lens – Finders.

Unit - III: Making the Mirror
Form of the main mirror in the Newtonian telescope – Working of optical surfaces and theories concerning polishing – Preparing the mirror disk – Rough grinding – Fine grinding and Smoothing – Polishing conditions and requirements – The polishing operation – Parabolizing – The plane diagonal mirror – Form and dimensions of the diagonal mirror – The diagonal mirror blank - Resurfacing the flat mirror – Cutting the mirror – Reflective mirror coatings – Chemical silvering.

Unit - IV: Optical Testing
Review of possible test methods – Nature of the Foucault test – Foucault test apparatus – Making the Foucault test – The Couder screen – Interference test for flat mirrors – Making the interference test.

Unit - V: Mechanical Structure
Choice of a standard design – Important details – The altazimuth mounting – Principles of design – The equatorial mounting – General discussion.

Books for study:

1. Eugene Hecht, Optics, 5th edition, Pearson Education Limited.
2. Jean Texereau, How to make a telescope, 2nd edition, Willmann-Bell, Inc.

Books for reference:

1. N. E. Howard, Standard handbook for telescope making, Thomas Y. Crowell company.
2. Albert G. Ingalls, Amateur telescope making volume 1, Willmann-Bell, Inc.

Course designer: Mr.V.Seenivasan