

# aims & objectives



**The Celestial Sphere:** This part of the course aims to provide a quantitative description of celestial motions. We shall first develop the spherical trigonometry required to understand and predict the motion of celestial bodies in the sky as viewed from the Earth. We shall then move into space and develop the Newtonian mechanics required to understand and predict the motion of gravitating bodies such as planets, comets, asteroids, rockets and binary stars.

**Telescopes:** This part of the course aims to provide an understanding of the factors which affect the performance of a telescope. We shall begin by studying the principles of telescope optics, before moving on to look at the various different types of astronomical telescope, how they are mounted, and where they are sited.

On successful completion of this part of the half-module you should be able to:

- Define the standard astronomical coordinate and timekeeping systems used to specify the position of a celestial object.
- Predict the positions and motions of the Sun, Moon, planets and stars in the sky as viewed from a given point on the Earth's surface at a given time of year.
- State Kepler's laws of planetary motion, Newton's laws of motion and Newton's law of gravitation and apply them to problems involving orbital motion.
- Assess the relative merits of refractors, reflectors and catadioptric telescopes, equatorial and alt-azimuth mountings, and different observatory sites around the world.