GCSE Astronomy Course Planner

Year 10 (36 weeks)

Topic List
Topic 1: Planet Earth • Know that the shape of the Earth is an oblate spheroid • Be able to use information about the mean diameter of the Earth • Latitude and Longitude Coordinate System • Earth's atmosphere on astronomical observations
Topic 6: Celestial observation • Major Objects (The Sun, Moon, Stars, Clusters, Nebulae, Galaxies, Planets) • Minor Objects (Meteors, Aurorae, Supernovae, Artificial Satellites and Aircraft) • Constellations and Asterisms and Pointer Stars, Meteor Showers (Radiants) • Celestial Sphere, Celestial Pole and Celestial Equator
Topic 2: The Lunar Disc • The Moon's Features and structures • Lunar periods • Libration and effects
Topic 9: Exploring the Moon • Internal structure of the moon • Far side of the moon • American Apollo and Soviet Luna missions
Topic 11: Exploring the Solar System • Planets and dwarf planets • Comets, meteors and meteoroids • Light Years, Parsecs, Astronomical Units and • Basics of modern telescopes (Refractor, Reflectors)
Topic 5: Solar System observation • Motion of the Planets & Retrograde Motion • Conjunctions, Transits and Alignment of the Planets • Ecliptic, First Point of Aries and Libra, Apparent Motion of the Sun
Topic 7: Early models of the Solar System • Lunar and Solar Cycle Heritage and Archaeology • Evidence for Geocentric and Heliocentric Models of the Solar System
Topic 8: Planetary motion and gravity • Kepler's Laws of Motion • Orbital Motion and elliptical terminology (Periapsis, Apsis) • Newton's Law of Universal Gravitation & Inverse Square Law
Topic 10: Solar astronomy • Camera Obscura, Pinhole Cameras, Sunspots and Solar Rotation • Solar Interior Layers and Thermo-Nuclear Core Fusion • Solar Atmosphere and Wind
Topic 3: The Earth-Moon-Sun system • Solar and Lunar Eclipses • Tidal Motion and Precession of Earth's Axis • Apparent/Angular size of Sun and Moon • Erastosthenes and Aristarchus Distance Estimations

GCSE Astronomy Course Planner

Year 11 (28 weeks)

Topic List
Topic 4: Time and the Earth-Moon-Sun cycles • Annual motion of the Sun in one year (Equinoxes and Solstices) • Sunrise, Sunset, length of Sidereal day & Synodic Solar Time • Lunar Phases, Synodic and Sidereal Lunar Months • Equation of Time, AST ↔ MST, LMT, Anellemas • Sundials, Shadows, Longitude and Time zones (Harrison Clocks)
Topic 12: Formation of planetary systems • Shifting Orbits, Chaotic Motion, Lagrange Point Resonances • Solar wind impact on Comets, Atmospheres, Heliosphere • Tidal interactions, Ring systems, Asteroid Belts, Internal heating • Atmospheric presence and formation of Gas Giants • Evidence for Exoplanets, Extra Terrestrial life, Drake equation, Goldilocks Zone
Topic 13: Exploring starlight • Magnitude Scale, Absolute and Apparent, Distance Modulus • Spectroscopy, Spectral Lines, HR Diagrams • Stellar Parallax, Parsecs & The Inverse Square Law • Binary Stars, Clusters, Cepheid Variables • Radio Astronomy & Multi-wavelength Astronomy
Topic 14: Stellar evolution • Nebulae, Clusters and Galaxies. Messier and NGC Catalogues • Main sequence & Giant star evolution along H-R Diagram • End of lifecycle for stars, Supernovae • White Dwarfs, Red Giants, Supernovae, Neutron Stars, Black holes
Topic 15: Our place in the Galaxy • Structure of the Milky Way, identifying spiral arms • Groups of galaxies: small scale (Local group), large scale (Super-clusters) • Classification of Galaxies and Active Galaxies (AGN)
Topic 16: Cosmology • Cosmological Redshift, Doppler Effect, Expanding Universe • Hubble's Law, Hubble's Constant, Size and Age of Universe • The Big Bang, Cosmic Microwave Background (CMB), Hubble Ultra Deep Field, Quasars • Dark Matter, Dark Energy & The Fate of the Universe