1 - Introduction

2 - The solar system and the extra-solar systems
Planets, satellites, asteroids, meteorites, comets - Kepler's Laws - The extra-solar planets - Life in the Universe

3 - The stars
Stellar atmospheres: Formation of spectral lines - Equations of Boltzman and Saha - Stellar spectra
Stellar parameters: Magnitude and Brightness - Spectral classification of stars - Basic parameters of the stars - The Hertzprung-Russell diagram.
Stellar evolution: The interstellar medium: structure and composition - The Jeans criterion for gravitational collapse and star formation - Main sequence phase - Evolution of the stars outside the main sequence - Variable Stars - Final evolutionary stages - Planetary nebulae, novae and supernovae - White dwarfs, neutron stars and blacks holes.

4 - The Sun, a typical main-sequence star
Physical characteristics - Internal Structure - Photosphere, chromosphere, corona - Differential rotation - Magnetic fields and dynamo mechanism - Solar activity (sunspots, faculae, prominences, flares, coronal mass ejection) - Solar Wind - Helioseismology.

5 - Our Galaxy
Morphology, dynamics and physical characteristics of the Galaxy - Globular and open clusters - Stellar Populations - The galactic nucleus - Dark Matter.

6 – Galaxies
Morphological classification of galaxies - Physical characteristics and processes of galaxy formation - Clusters and superclusters - Active galactic nuclei and quasars.

7 – Cosmology
Observational cosmology: Hubble's law and the expansion of the universe - The cosmic microwave background. - Inflation and primordial fluctuations - Matter and dark energy.