

Course unit title:	Descriptive Astronomy and Cosmology		
Course unit code:	APHY211		
Type of course unit:	Free Elective / Alternative to APHY112 for CmE		
Level of course unit:	Degree		
Year of study:	1 - 4		
Semester when the unit is delivered:	Fall and Spring		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Dr. Yiannis Parpottas		
Learning outcomes of the course unit:	<ul style="list-style-type: none"> • Evaluate physical parameters defined from observations and related to the structure, evolution and death of stars; classify and compare the stars • Comprehend the functionality of modern detection systems for collecting and analyzing information from astronomical sources • Describe the main characteristics of the sun and the phenomena associated with its activity • Know the characteristics of the members of the solar system to understand the origin and evolution of planetary systems • Know the positions and motions of celestial bodies (sun, moon, planets, stars) on a daily and annual basis and the position of the earth on a cosmic scale • Recognize the structural features of our galaxy and of other galaxies; compare and classify the galaxies • Comprehend the modern perception of the structure of the universe and the current cosmological perceptions from the observational data 		
Mode of delivery:	Face-to-face		
Prerequisites:	None	Co-requisites:	None
Recommended optional program components:			
Course contents:	<ul style="list-style-type: none"> • History and evolution of astronomy: Astronomy in ancient civilizations (Mesopotamia, Egypt, China), contribution of the ancient Greeks in the evolution of astronomy, founders of modern astronomy (Copernicus, Kepler, Galileo, Newton) • Astronomical observations and instruments: The earth as an observatory, types of telescopes, space missions, observation and theory, astronomy of the visible and invisible, processing and utilization of astronomical observations • Sun: Internal structure of the sun, atmosphere of the sun, sources of energy of the sun, solar activity, effects of the sun on the earth • Solar system: Phases and motions of the planets, description of the planets, other members of the solar system, earth - moon (creation, surface, interior, natural conditions), creation and evolution of the solar system • Comets and meteorites: shape - size - orbits - mass - composition of comets, life stages of comets, meteorites • Stars: Nomenclature - constellations, physical characteristics of stars, distances and motions of stars, creation and evolution of stars, stellar systems • Galaxies: Galaxies, galaxy systems, special type of galaxies, creation and evolution of galaxies, our galaxy • Structure and evolution of the universe: Cosmological assumptions and observations, the expansion of the universe and the background radiation, cosmological models, space and time in the general theory of relativity 		
Recommended and/or required reading:			
Textbooks:	<ul style="list-style-type: none"> • Introduction to Astrophysics (2 volumes). Manos Danezis, Stratos Theodosiou, Editor: Diavlos 1999 (Greek Book). 		
References:	<ul style="list-style-type: none"> • Astrophysics, Volume I (Stars) & Volume II (Galaxies, Solar System). Shu H. Frank. Editor: University Press Crete, 2003 (Greek Translation). 		

	<ul style="list-style-type: none"> • Introduction to Modern Astronomy. X. Varvogli & I. Seradakis. Editor: Gartagan, Thessaloniki, 1994 (Greek Book). • Introduction to Cosmology. Manos Danezis, Stratos Theodosiou, Editor: Diavlos 2003 (Greek Book).
Planned learning activities and teaching methods:	Use of power-point lectures which are available from the course website, presentation and discussion of documentaries of astronomical interest, night observation with a telescope (optional). Lectures introduce and explain the scientific concepts of the course. Students are encouraged to learn through questions, discussions, and projects on astronomical phenomena or discoveries.
Assessment methods and criteria:	<ul style="list-style-type: none"> • Final Exam: 40% • Mid-term Exam: 30% • Project and Presentation: 30%
Language of instruction:	Greek
Work placement(s):	No