CE714 - Astronomy II

GENERAL

SCHOOL	EXACT SCIENCES
DEPARTMENT	MATHEMATICS
LEVEL OF STUDIES	UNDERGRADUATE

COURSE CODE	CE714	**SEMESTER**	G

COURSE TITLE	ASTRONOMY II

INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS
Lectures	4	6

COURSE TYPE	General Knowledge
PREREQUISITE COURSES	Astronomy I
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://eclass.uowm.gr/

LEARNING OUTCOMES

Learning Outcomes
Upon successful completion of the course the students will be able to know: • the basic principles governing astronomical observations and the operating principles of telescopes (optical, infrared, ultraviolet, X-rays, radio), • the sources of astronomical information and observable quantities, • the effect of the Earth's atmosphere on observations (absorption and disturbance) as well as the ways to deal with them, • the methods of spectroscopic analysis of radiation and the relevant instruments (spectrographs, filters, etc.),

- the polarization of radiation,
- the detection of particles (neutrinos, cosmic rays, particles in interplanetary space) and gravitational radiation,
- the physical processes that shape the phenomena in our own and other galaxies as well as the study of the evolution of the large-scale structures of the universe and the universe as a whole,
- galaxy clusters and superclusters.

General Competencies

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Decision making.
- Production of free, creative and inductive thinking.

CONTENT OF THE COURSE

Part A: Astronomical observation, Effect of atmosphere, Telescopes (Optical, Radio, Infrared, X-ray), Radiation detection methods, Charge transport systems, CCD camera, Spectral analysis of radiation, Polarization of radiation, Cosmic radiation.
Part B: Star Clusters and Stellar Evolution, Dynamical Evolution of Star Clusters, Galaxy Clusters-Large Structures, Variable Stars, Binary Star Systems, Interstellar Matter, Matter Infall and Active Galaxies.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	e-Lectures. Use of e-class. Communication through face-to-face discussions and e-mails.

TEACHING ORGANIZATION	Activity	Semester Workload
	Lectures	52 hours
	Projects	42 hours
	Individual Study	56 hours
	Course Total (25 hours per ECTS)	150 hours

STUDENT	Projects 10%.

EVALUATION	Progress-Exam 20%. Written final examination 70%.

RECOMMENDED BIBLIOGRAPHY

1. Galactic and Extragalactic Astrophysics, N. Alexandros, K. Alyssandrakis, Greek Academic Electronic Books and Aids.
2. Observational Astrophysics, K. Alyssandrakis, Greek Academic Electronic Books and Aids.
3. Astrophysics II course notes, A. Mastichiadis, M. Kontizas. (Greek)
4. Observational Astronomy, S. Avgoloupis, I. Seiradakis, D. Tsampouras Publications & Co. OE. (Greek)