

Module Outline

1. GENERAL

SCHOOL	NATURAL SCIENCES AND TECHNOLOGY		
PROGRAMME	STUDIES IN NATURAL SCIENCES		
LEVEL OF STUDIES	Level 6 of the Hellenic and European Qualifications Framework		
MODULE CODE	FYE-42	YEAR	4 th
MODULE TITLE	PLANET EARTH		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		HOURS	CREDITS
Weekly workload: 17-18 hours x 32 weeks		560	20 ECTS
MODULE TYPE <i>Compulsory/Elective/ Mandatory Optional</i>	Optional		
MODULE DESCRIPTION <i>general background, special background, specialised, general knowledge, skills development</i>	Special background		
PREREQUISITE MODULES	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE MODULE OFFERED TO ERASMUS STUDENTS	No		
MODULE WEBSITE (URL)	The Module has its own space in the digital learning environment of HOU (https://study.eap.gr/login/index.php) with controlled access (using a code) for students and Teaching Staff.		

2. LEARNING OUTCOMES

Learning outcomes

The learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the Module are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

LEARNING OUTCOMES

Knowledge:

Upon successful completion of the Module, students are expected to know:

- The basic elements of the structure of the Earth's solid crust, the types of rocks, the mechanisms of their formation, the mechanism of creation and the classification of volcanoes. He will also know the causes of creation and the basic characteristics of earthquakes as well as a simplified methodology for estimating the size and location of their focus.
- The structure and composition of the oceans and their seabed, the phenomena of ocean-atmosphere-land interaction, the equations governing the kinematics of the oceans, the wave dynamics and the mechanisms of their formation as well as the tides.
- The general description and characteristics of the biosphere, ecosystems and the flow of energy and the cycles of matter in them and the basic characteristics, spatial and temporal, of biological communities.
- The structure and chemical composition of the Earth's atmosphere, the greenhouse effect, the mechanisms

of creation and destruction of stratospheric ozone, the dynamics of the atmosphere. Also, the basic characteristics and meteorological causes that cause atmospheric pollution as well as the simple Gaussian model for estimating the dispersion of gaseous pollutants as a function of meteorological conditions in an area.

- The basic principles of magnetohydrodynamics and Plasma Physics, the characteristics of the Sun and the solar wind, the Earth's magnetosphere as well as the basic equations of celestial mechanics.

Skills:

Upon successful completion of the Module, students are expected to get:

- Analysis and interpretation of geological and geophysical phenomena (rock formation, volcanic activity, seismicity).
- Use of basic concepts to describe and understand the kinematics of the oceans, waves and tides.
- Description and evaluation of ocean-atmosphere-land interactions and their consequences on the environment.
- Analysis of atmospheric structure and dynamics and correlation of meteorological factors with atmospheric pollution phenomena.
- Application of a simple Gaussian model for qualitative/quantitative assessment of the dispersion of gaseous pollutants under different meteorological conditions.
- Connection of concepts of Plasma Physics and magnetohydrodynamics with solar wind and terrestrial magnetosphere phenomena.
- Synthesis of knowledge from the lithosphere, hydrosphere, atmosphere, biosphere and space environment into a unified approach to the Geosystem.

Competences:

Upon successful completion of the Module, students are expected to have:

- Understanding and comprehensive consideration of the interdependencies between the individual spheres of the Earth and the space environment.
- Critical evaluation of scientific information/data and selection of appropriate concepts or simple models for the interpretation of natural phenomena.
- Qualitative and basic quantitative documentation of conclusions using fundamental principles and equations.
- Solving problems with a structured methodology (problem definition, assumptions, model application, interpretation of results).
- Interdisciplinary approach to environmental and geophysical issues, linking processes at different scales of space and time.
- Communication of scientific concepts and results clearly, using correct terminology

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the Module aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	
<i>Production of new research ideas</i>	

The general skills that the students will acquire are:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Working in an interdisciplinary environment
- Respect for the natural environment
- Criticism and self-criticism

3. SYLLABUS

Purpose of Module

The purpose of the Module is to introduce students to the fundamental processes and interactions of the Geosystem (lithosphere, hydrosphere, atmosphere, biosphere and space environment),

providing the necessary background for the understanding, interpretation and basic quantitative description of natural and environmental phenomena.

Subjects covered

- Lithosphere
- Hydrosphere
- Biosphere
- Atmosphere
- Space physics

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	- Distance teaching and learning with six (6) Group Counseling Meetings (GCMs) of 4-hour duration during the academic semester on weekends. - Personal communication and feedback (advisory role of Adjunct Faculty).														
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	<u>During GCMs and teaching the following are used:</u> - Remote meetings tools (webex, Teams), - Presentation software (PowerPoint, educational video - animations etc.), In addition, students use office automation tools, web browsers and e-reader for digital books. <u>Communication with the students is supported by:</u> - The digital platform of HOU (https://study.eap.gr/login/index.php) (course information, educational material posts, announcements, messages, examination results, user groups, discussion forums etc.). - e-mail														
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<table border="1"> <thead> <tr> <th>Activity</th><th>Year Workload</th></tr> </thead> <tbody> <tr> <td>6 GCMs (x 4 hours)</td><td>24</td></tr> <tr> <td>5 Written Assignments (x 20 hours)</td><td>100</td></tr> <tr> <td>Individual Study time (13-14 hours x 32 weeks)</td><td>425</td></tr> <tr> <td>Self-evaluation activities</td><td>8</td></tr> <tr> <td>Final examination</td><td>3</td></tr> <tr> <td>Total Workload (hours)</td><td>560</td></tr> </tbody> </table>	Activity	Year Workload	6 GCMs (x 4 hours)	24	5 Written Assignments (x 20 hours)	100	Individual Study time (13-14 hours x 32 weeks)	425	Self-evaluation activities	8	Final examination	3	Total Workload (hours)	560
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STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i>	Students' evaluation – Grade assessment of a Module: Preparation of written assignments during the academic year. Their average has a role in shaping the final grade of the Module by 30%, if it is possible to advance to the final or repeat exams. Final written exams whose grade participates in shaping the final grade of the Module by 70%. All the criteria are posted, both in each written assignment (in the study), and in the general regulation https://www.eap.gr/el/spoudes-sto-eap/ekpaideusi/kanonismoi/kanonismos-spoudwn In this particular Module, an intermediate optional exam is also conducted. Language of evaluation:														

<i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Greek
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5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Volume A: Lithosphere, National University of Greece, Patras 2003.

Volume B: Hydrosphere, National University of Greece, Patras 2003.

Volume C: Ecology, National University of Greece, Patras 2004.

Volume D: Atmosphere, National University of Greece, Patras 2003.

Volume E: Space Physics, National University of Greece, Patras 2003.

Additional supplementary digital material (and multimedia) is available in the study platform (study).

- Related academic journals:

Journal of Geophysical Research Earth Surface

Annual Review of Marine Science

Annual Review of Ecology, Evolution, and Systematics

Atmospheric Chemistry and Physics

Annual Review of Astronomy and Astrophysics