

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCIENCES		
ACADEMIC UNIT	PHYSICS		
LEVEL OF STUDIES	POSTGRADUATE		
COURSE CODE	M222	SEMESTER	2
COURSE TITLE	DYNAMICAL METEOROLOGY		
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>	WEEKLY TEACHING HOURS	CREDITS	
	4	9	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background, specialised general knowledge		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	http://www.physics.uoi.gr/seci/postgradcourses1.html#10		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>The course provides the student advanced knowledge for a deep understanding of the laws governing atmospheric movements. Especially, after the successful completion of the course, the student will</p> <ul style="list-style-type: none"> • have understood the difference of the thermodynamics of the atmosphere from the classical thermodynamics. • have understood the meaning of the vertical and adiabatic lapse rate and their differences, thus being able to understand the mechanisms of rain and thunderstorm. • know what forces cause the movement of an air mass and in which cases they are balanced so that the mass moves without acceleration. • can perceive the difference between the streamlines of the wind field and the trajectories of the air masses and to support it with the solution of the differential equations. • have realized that the pressure systems are three-dimensional formations and knows what determines their position and intensity in height. • have understood how weather forecast is done having mastered by what the

temporal changes of the flow parameters depend.

- have understood how and why depressions and anticyclones are developed / strengthened.
- Be able to make himself weather forecast

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 course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

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Others...

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Search for, analysis and synthesis of data and information, with the use of the necessary technology

Working independently

Team work

Production of free, creative and inductive thinking

Working in an interdisciplinary environment

Respect for the natural environment

(3) SYLLABUS

Thermodynamics of the atmosphere. Hydrostatic equilibrium in the atmosphere. The equation of motion. Kinematics. Variation of the wind and pressure fields in the vertical. Surfaces of discontinuity. Temporal changes in the flow parameters. Development of depressions and anticyclones. Wind structure in the friction layer. Diffusion of heat and water vapour.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Students are referred to websites of meteorological maps for information and they also use special maps for exercises.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational</i>	Activity	Semester workload
	Lectures	117
	Tutorials	35
	Study of bibliography	35
	Exercises	35

<i>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>	Exams	3
	Course total	150
<p align="center">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><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></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	Examinations at the end of the semester	

(5) ATTACHED BIBLIOGRAPHY

<ul style="list-style-type: none"> • ΕΙΣΑΓΩΓΗ ΣΤΗ ΔΥΝΑΜΙΚΗ ΜΕΤΕΩΡΟΛΟΓΙΑ Δ. Μεταξάς, Α. Μπαρτζώκας Εκδοτικός Όμιλος ΙΩΝ Σελίδες 270 ISBN:978-960-508-043-3, © 2012 Κωδικός Ευδόξου: 22768957 • AN INTRODUCTION TO DYNAMIC METEOROLOGY J.R. Holton International Geophysics Series, Volume 88 (Ed. Dmowska R., Holton J.R., Rossby H.T.) Elsevier, Academic Press, New York (1979) • DYNAMICAL METEOROLOGY – An Introductory Selection Edited by B.W. Atkinson Methuen, London and New York (1981)
