

COURSE OUTLINE NATURAL DISASTER MANAGEMENT

(1) General information

FACULTY/SCHOOL	TECHNOLOGY		
DEPARTMENT	ENVIRONMENTAL SCIENCES		
LEVEL OF STUDY	<i>Undergraduate</i>		
COURSE UNIT CODE	NEW COURSE	SEMESTER	
COURSE TITLE	NATURAL DISASTER MANAGEMENT		
INDEPENDENT TEACHING ACTIVITIES in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits		WEEKLY TEACHNG HOURS	CREDITS
THEORETICAL BACKGROUND		2	2
LABORATORY EXERCISES		2	2
TOTAL		4	4
COURSE TYPE Background knowledge, Scientific expertise, General Knowledge, Skills Development	OPTIONAL COURSE		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION & EXAMINATION/ASSESSMENT:	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning Outcomes The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:</p> <p>APPENDIX A</p> <ul style="list-style-type: none"> • Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework. • Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and <p>APPENDIX B</p> <ul style="list-style-type: none"> • Guidelines for writing Learning Outcomes
<p>NATURAL DISASTER MANAGEMENT provides the basic background of the concepts of natural disasters and environmental hazards to the students at national and global level. The subject of the course aims to introduce students to basic concepts regarding the type of disasters and hazards, such as hydrometeorological, biophysical, geophysical and technological hazards. Indicative examples are the drop in the level of surface water resulting in the disruption of ecosystems, volcanic threats, floods, glaciers, etc. Natural hazards and disasters are increasingly affecting humans and the devastating</p>

effects of natural disasters are becoming more and more apparent.

The aim of the course is:

1. Students to understand the basic concepts that are developed in the course.
2. Students should be able to apply the knowledge gained in the course, in other courses of the following semesters, related to Preservation of Biodiversity, Assessment and Management of Environmental Risks, etc..
4. Students should be able to apply the knowledge they will acquire in the course, to solve relevant environmental problems.

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies, Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research

Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
.....
(Other.....citizenship, spiritual freedom, social awareness, altruism etc.)
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- Search, Analysis & synthesis of data
- Decision-making
- Individual/Independent work
- Respect for diversity and multiculturalism
- Environmental awareness
- self-criticism
- Promoting free, creative and inductive thinking

(3) COURSE CONTENT

Outline (weekly lectures and lab)

1. Typology of natural disasters (Definitions, classification, categories) - Separation of risks & disasters - Modeling (hydrological - meteorological, models etc.).
2. GIS data & Remote Sensing for applications in natural disasters
3. Risk Management Methodology (Risk Identification, Estimation, Assessment, Governance)
4. Hydrometeorological Hazards: Storms and Hail. Sections 4-12 follow the steps: Prediction (before), Monitoring (during), Assessment (after).
5. Hydrometeorological Hazards: Floods (Rainfall-Runoff Models, Flash Floods)
6. Hydrometeorological Hazards: Droughts and Desertification
7. Biophysical Hazards: Frost and Heatwaves
8. Biophysical Hazards: Wildfires
9. Biophysical Hazards: Biological Hazards (epidemics, pandemics, climate and health)

- 10. Geophysical Dangers: Landslides, avalanches
- 11. Geophysical Dangers: Volcanoes and earthquakes
- 12. Technological Hazards: Urban fires, oil spills, Chernobyl, international disasters.
- 13. Management Framework (International - National) & Information on Natural Disasters

(4) TEACHING METHODS-ASSESSMENT

<p>MODES OF DELIVERY Face-to-face, in-class lecturing, distance teaching and distance learning etc.</p>	<ul style="list-style-type: none"> – Weekly Lectures – Laboratory Exercises 	
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY Use of ICT in teaching, Laboratory Education, Communication with students</p>	<ul style="list-style-type: none"> – Slides using Power point – Communication with students via e-mails & e-class 	
<p>COURSE DESIGN Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</p> <p>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</p>	<p>Activity/Method</p>	<p>Semester workload</p>
	Lectures	40
	Workshop	20
	Laboratory work	10
	Theory study	30
	Weekly individual evaluation reports for laboratory exercises	
<p>Course total (25 hours of workload per credit unit)</p>	<p>100</p>	
<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS Detailed description of the evaluation procedures:</p> <p>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</p> <p>Specifically, defined evaluation criteria are stated, as well as if and where they are accessible by the students.</p>	<p>EVALUATION</p> <ol style="list-style-type: none"> 1. Final exams (70%) 2. Written work – essay (30%) 	

(5) SUGGESTED BIBLIOGRAPHY:

-Suggested bibliography

1. Environmental disasters, natural recovery and human responses. Roger del Moral University of Washington and Lawrence R. Walker University of Nevada, Cambridge University press, NY, USA, ISBN-13 978-0-521-86034-5
2. Φυσικές και Τεχνολογικές Καταστροφές, Ε. Λέκκας
<http://www.elekkas.gr/images/stories/pdfdocs/books/tk.pdf>.
3. Βασικές Αρχές και Εφαρμογές του Επιχειρησιακού Σχεδιασμού για τη Διαχείριση Φυσικών Καταστροφών και Τεχνολογικών Κινδύνων, Ε. Λέκκας
http://www.elekkas.gr/images/stories/pdfdocs/books/Epixeirisiakos_Sxediasmos.pdf
4. Κίνδυνοι και Καταστροφές, Έννοιες και Εργαλεία Αξιολόγησης, Προστασίας, Διαχείρισης. Ελληνικά Ακαδημαϊκά Συγγράμματα και Βοηθήματα, ΚΑΛΛΙΠΟΣ. Καλλιόπη Σαπουντζάκη, Μιράντα Δανδουλάκη, 2015
5. Αγρομετεωρολογία, Ανάλυση και Προσομοίωση. Ελληνικά Ακαδημαϊκά Συγγράμματα και Βοηθήματα, ΚΑΛΛΙΠΟΣ. Νικόλαος Ρ. Δαλέζιος. ISBN: 978-960-603-134-2, σελ. 481, Νοεμ. 2015.
6. Science and Policy of Natural Hazards, Prof. Kerry Emanuel, Prof. Stephane Rondenay, Jane Connor. MIT Course Number 12.103 <http://ocw.mit.edu/courses/earth-atmospheric-and-planetary-sciences/12-103-science-and-policy-of-natural-hazards-spring-2010/>
7. Disasters and Ecosystems: Resilience in a Changing Climate. United Nations Environment Programme (UNEP), Global Universities Partnership on Environment for Sustainability, and Cologne University of Applied Sciences, Germany, Introduction to Statistical Decision Theory. Pratt, John W., Howard Raiffa, and Robert Schlaifer. MIT Press, 1995
8. Concepts and Methodologies of Environmental Hazards Affecting Agriculture and Agroecosystems. Chapter 1, pp: xx-xx, in "Techniques for Disaster Risk Management and Mitigation". Dalezios, N., G.P. Petropoulos & I. Faraslis. Publisher AGU-Wiley. ISBN-10: 111935918X [in press], 2020

-Complementary bibliography

Teacher's notes