COURSE OUTLINE

1. GENERAL

SCHOOL	School of Engineering
DEPARTMENT	Department of Civil Engineering/ Master Program 'Hydrometeorological Disasters Program
LEVEL OF STUDIES	7

COURSE CODE	ΡΥΚΠΠ		**SEMESTER**	2nd

COURSE TITLE	Residual flows and coastal flooding: Notions of risk of vulnerability and elasticity

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
Lectures	3	6
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	Greek/ English
COURSE OFFERED TO ERASMUS STUDENTS:	NO
COURSE URL:	https://eclass.duth.gr/courses/1021376/

2. LEARNING OUTCOMES

Learning Outcomes *Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.*

Once the course is completed, participants will be able to:

- Evaluate variables of hydraulic models, drought models and model of streams with debris leading to danger.
- Follow methodologies to assess vulnerability as quantitative values.
- Apply uncertainty theory to risk assessment.
- Assess the environmental impact on the marine environment.
- Identify the erosion rate and flood risks in coastal areas.
- Manage business models and services
- Use methodologies to assess uncertainty as quantitative values.
- Gain ability to construct hazard maps, using GIS and different models (Hydraulic and debris types).
- Evaluate the risks posed by residues.
- Optimally plan structural measures to deal with floods.

General Skills
Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	*Project design and management*
ICT Use	*Equity and Inclusion*
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and*

Teamwork	sensitivity to gender issues
Working in an international environment	Critical thinking
Working in an interdisciplinary environment	Promoting free, creative and inductive reasoning
Production of new research ideas	

- Search, analysis and synthesis of data and information
- Production of new research ideas
- Project design and management
- Respect for the natural environment
- Promoting free, creative and inductive reasoning

3. COURSE CONTENT

1. Processes in Catchment Basins: General, Surface Erosion of Soils, Transfer of Fertile Matter in Watercourses, Computational Simulation M.L.

2. Residue Streams: General, Description - Characteristics, Risk - Risk Assessment, Mitigation - Protection Measures.

3. Petrological Cycle, Landslides, Types of Landslides, Factors that contribute to the creation of landslides, Debris flows, Elements of River Plumbing, Precipitation, Measurement Modes, Databases.

4. Wave Mechanics, Formation Of Ripples, Wind Elements, Wind Ripples, Maritime Traffic - Level Variations

5. Introduction to the R programming language, Analysis of Bronchometric Data with R programming language, The hydroTSM package, Waves, Wave Measurements, Extreme Value Analysis and Wave Spectra.

6. Solidification & Coastal Morphodynamics: General, Coastal sediment physical characteristics, Coastal stereosupply, Morphodynamic coastal variation, Coastal erosion & sediment balance, Coastal parts - Balance profile, Stereotransfer transversely to the coastline & along the coastline, Computational simulation.

7. Copernicus system databases, SMHI hydrological database, erddap satellite database, EMODnet marine data system, Marinomica platform.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Distance learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in Teaching, and Communication with students • Digital slides • videos • MsTeams/ e-class, webmail

TEACHING ORGANIZATION		
The ways and methods of teaching are described in detail.	**Activity**	**Workload/semester**
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.	Lectures	39
	Final project	60
	Bibliographic research & analysis	78
	Final examination	3
The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.		
	TOTAL	**180**

STUDENT EVALUATION *Description of the evaluation process*	
	Written Assignment, 65%

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others	Final Examination 35%
Please indicate all relevant information about the course assessment and how students are informed	

5. SUGGESTED BIBLIOGRAPHY

1. Καραμπάς, Θ., Δήμας, Α. και Λουκογεωργάκη Ε. (2020). Ακτομηχανική και Λιμενικά Έργα. Εκδόσεις Δίσιγμα.

2. Καραμπάς, Θ., Κρεστενίτης, Γ. και Κουτίτας Χ. (2016). Ακτομηχανική – Έργα Προστασίας Ακτών. Αποθετήριο «Κάλλιπος».

3. Jakob, M. and Hungr, O. (2005). Debris-flow Hazards and Related Phenomena. Springer Berlin, Heidelberg.

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	Samaras A., Sylaios G.
Contact details:	achsamar@civil.duth.gr, gsylaios@env.duth.gr
Supervisors: (1)	YES
Evaluation methods: (2)	Written Assignment, 65%, Final Examination 35%
Implementation Instructions: (3)	Oral remote examination will take place on the day and time indicated in the Department's examination program. The oral test will be conducted by MS TEAMS. Students will enter a joint conference scheduled day and time. The examination link will be sent via teachers.duth.gr to the institutional accounts of the enrolled students who have declared their intention to participate in the examination, having received knowledge and accepted the terms of the remote examination, and will be announced on eClass. Students will have to connect to the videoconference via their institutional account, otherwise they will not be able to participate in the process. In addition, they will participate in the camera examination which will be open throughout. Prior to the start of the examination, the students will show their identity on the camera in order to be identified by the supervisors. The students will be examined in the Semester Work entrusted to them, according to the instructions for its preparation. In the week before the examination, by the specified date and time, students should have submitted through eClass all of the deliverables of the Semester Work as described in its opinion. The deliverables of each student should be submitted through a single file. Students should therefore, prior to submitting their work, arrange to consolidate all of their deliverables into a single file of *.zip format or other format allowed by the system. In the event of serious failure or destruction of the computer system, the test will be repeated when conditions permit