

COURSE OUTLINE

(1) GENERAL

SCHOOL	UNIVERSITY OF THESSALY		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	YΔ3802	SEMESTER	9 th
COURSE TITLE	Coastal Engineering – Coastal Protection Works		
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	6
<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, specialized general knowledge, skills development</i>	specialized general knowledge		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek unless there are ERASMUS students where teaching is in English. The exams are given in all 2 languages		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/CULT_U_121/		

(2) LEARNING OUTCOMES

Learning outcomes <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> <i>Consult Appendix A</i> • <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>
Knowledge The student after the completion of the course possess advanced knowledge involving a critical understanding of theories and principles • marine hydraulics and nonlinear wave theory, • coastal hydrodynamics, • the sediment transport mechanism, • the problem of coastal erosion. Skills The student after the completion of the course possess advanced skills in solving complex and unpredictable problems • the design of coastal projects from a technical and environmental point of view, • the methodology for designing coastal erosion protection projects. Abilities The student after the completion of the course will manage complex work plans and will be able to make decisions in unpredictable work environments or about technical problems. They will also be able to work individually and

collectively when designing such projects. In particular, students will be able to: • assess and judge technical, environmental, social and economic factors when designing coastal projects • synthesize and propose best or new solutions based on the above assessment.	
General Competences <i>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?</i>	
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i> <i>Adapting to new situations</i> <i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>thinking Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Project planning and management</i> <i>Respect for difference and multiculturalism</i> <i>Respect for the natural environment</i> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive</i> <i>.....</i> <i>Others...</i> <i>.....</i>
• Search, analyse and synthesize data and information, using the necessary technologies • Adapting to new situations • Decision-making • Autonomous work • Teamwork • Project design • Respect for the natural environment	

(3) SYLLABUS

Week No.	Course contents	Hours	
		Course attendance	Preparation
1	Introduction and presentation of the course	4	0
2	Nonlinear Wave Theories	4	3
3	Wave Transformations	4	3
4	Wave-induced currents	4	3
5	Sediment Transport – Bed Shear Stress	4	3
6	Sediment Transport – Bedload and sheet flow	4	3
7	Surf zone sediment transport	4	3
8	Morphodynamics	4	3

9	Introduction to coastal protection works	4	3
10	Works parallel to the shoreline	4	3
11	Works perpendicular to the shoreline	4	3
12	Beach nourishment	4	3
13	Mathematical study of shoreline evolution	4	3
14	Revision	4	0

(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>	Power-Point Lectures, Lecture Notes, Class Tutorials, E-class announcements, projects and tutorials	
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>	<i>Activity</i>	<i>Semester workload</i>
	Lectures - Tutorials	14*4=56 hours
	Studying	13*4=52 hours
	Projects	16 + 30 = 56 hours
	Final or intermediate Exam paper	2 hours
	Studying for exam paper	8 hours
	Educational Visit	-
	Course total	164
STUDENT PERFORMANCE EVALUATION	Assessment Language Greek or English Evaluation methods <u>Up to 30% Project 1:</u> Project in nonlinear wave theories in deep and shallow waters. Mandatory. Oral examination. <u>Up to 33% Project 2:</u> Technical report on sediment Transfer calculation on a real coast. Mandatory. Oral examination. <u>Up to 5% Tutorials:</u> During the course. Not mandatory. <u>From 20% to 100%:</u> Written examination. Final or Intermediate Exam paper. Full open access to notes and books.	
Description of the evaluation procedure <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> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>		

(5) ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

- Καραμπάς, Θ., Δήμας, Α., και Λουκογεωργάκη, Ε., Ακτομηχανική και Λιμενικά Έργα, Εκδόσεις ΔΙΣΙΓΜΑ, 2020
- Κουτίτας, Κ., «Εισαγωγή στην Παράκτια Τεχνική και τα Λιμενικά Έργα», ISBN 960-431-289-8, Θεσσαλονίκη: Εκδόσεις Ζήτη, 1998
- Dean R.G. & Dalrymple R.A., “Water Wave Mechanics for Engineers and Scientists”, World Scientific
- Mei, C.C., “The applied Dynamics of Ocean Surface Waves”, Advanced Series on Ocean Engineering - Volume 1, ISBN 9971-50-789-7, World Scientific, 1989
- Nielsen, P., 2009, “Coastal and Estuarine Processes”, World Scientific
- Coastal Engineering Manual (2007). U. S. Army Corps of Engineers
- Shore Protection Manual (1987). U. S. Army Corps of Engineers

- Related academic journals:

- Coastal Engineering,
- Coastal Engineering Journal,
- Journal of Fluid Mechanics,
- Physics of Fluids,
- Ocean Engineering,
- Journal of Waterway, Port, Coastal and Ocean Engineering
- Natural Hazards and Earth System Sciences,
- Journal of Hydraulic Research,
- Marine Geology, Continental Shelf Research,
- Ocean Dynamics,
- Journal of Coastal Research