

COURSE OUTLINE

1. GENERAL

SCHOOL	Of ENGINEERING		
DEPARTMENT	ENVIRONMENTAL ENGINEERING		
LEVEL OF STUDIES	7 th LEVEL		
COURSE CODE	TMC141	SEMESTER	7 st
COURSE TITLE	ENVIRONMENTAL FRIENDLY BUILDING MATERIALS – ENVIRONMENTAL DESIGN OF BUILDINGS		
TEACHING ACTIVITIES <i>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.</i>	TEACHING HOURS PER WEEK	ECTS CREDITS	
	4	5	
<i>Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.</i>			
COURSE TYPE <i>Background, General Knowledge, Scientific Area, Skill Development</i>	SKILL DEVELOPMENT		
PREREQUISITES:	Energy Design of Buildings, Energy Efficiency in Buildings – Energy Audits, Heat Transfer Phenomena		
TEACHING & EXAMINATION LANGUAGE:	GREEK		
COURSE OFFERED TO ERASMUS STUDENTS:	NO		
COURSE URL:	https://eclass.duth.gr/courses/TMC141/		

2. LEARNING OUTCOMES

Learning Outcomes <i>Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.</i>																		
The course aims at: <ul style="list-style-type: none"> • Comprehension of the environmental implications of constructions • Comprehension of the basic characteristics of environmental friendly structural components and constructions • Comprehension of the basic principles for structural components and constructions of low /zero CO₂ emissions • Familiarization with methods / tools of environmental assessment of materials / structures / settlements • Familiarization with methods / tools of carbon neutral assessment 																		
General Skills <i>Name the desirable general skills upon successful completion of the module</i>																		
<table border="0"> <tr> <td><i>Search, analysis and synthesis of data and information,</i></td> <td><i>Project design and management</i></td> </tr> <tr> <td><i>ICT Use</i></td> <td><i>Equity and Inclusion</i></td> </tr> <tr> <td><i>Adaptation to new situations</i></td> <td><i>Respect for the natural environment</i></td> </tr> <tr> <td><i>Decision making</i></td> <td><i>Sustainability</i></td> </tr> <tr> <td><i>Autonomous work</i></td> <td><i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td><i>Teamwork</i></td> <td><i>Critical thinking</i></td> </tr> <tr> <td><i>Working in an international environment</i></td> <td><i>Promoting free, creative and inductive reasoning</i></td> </tr> <tr> <td><i>Working in an interdisciplinary environment</i></td> <td></td> </tr> <tr> <td><i>Production of new research ideas</i></td> <td></td> </tr> </table>	<i>Search, analysis and synthesis of data and information,</i>	<i>Project design and management</i>	<i>ICT Use</i>	<i>Equity and Inclusion</i>	<i>Adaptation to new situations</i>	<i>Respect for the natural environment</i>	<i>Decision making</i>	<i>Sustainability</i>	<i>Autonomous work</i>	<i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i>	<i>Teamwork</i>	<i>Critical thinking</i>	<i>Working in an international environment</i>	<i>Promoting free, creative and inductive reasoning</i>	<i>Working in an interdisciplinary environment</i>		<i>Production of new research ideas</i>	
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<ul style="list-style-type: none"> • Search, analysis and synthesis of data and information, ICT Use • Decision making 																		

- Autonomous work
- Teamwork
- Production of new research ideas
- Design and management of projects
- Respect for the natural environment
- Promoting free, creative and inductive reasoning

3. COURSE CONTENT

The curriculum covers the following sections:

1. Environmental implications from construction activity – Structural waste
2. Assessment criteria for environmental friendly construction materials and techniques
3. Structural materials and air quality
4. Recycling – Reuse of structural components / materials
5. Eco-labeling
6. Life cycle analysis of structural components
7. Carbon footprint of structural components / structures
8. European/International legislation for environmental assessment of buildings
9. Environmental assessment methods / tools for construction elements and materials
10. Environmental assessment methods / tools for buildings and settlements
11. Assessment methods / tools of carbon neutral structures
12. Examples of application of methods/tools of environmental assessment
13. Presentation of students' semester assignments

4. LEARNING & TEACHING METHODS - EVALUATION

<p>TEACHING METHOD <i>Face to face, Distance learning, etc.</i></p>	Face to face, Distance learning (in emergency situations)	
<p>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i></p>	Use of ICT in Teaching, in Exercises /Laboratory Education, in Communication with students	
<p>TEACHING ORGANIZATION <i>The ways and methods of teaching are described in detail.</i> <i>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.</i> <i>The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i></p>	<p>Activity</p>	<p>Workload/semester</p>
	Lectures	30
	Student Assignments	30
	Study and analysis of literature	40
	Preparation of semester assignment	44
	Presentation of assignment	6
	Total	150
<p>STUDENT EVALUATION <i>Description of the evaluation process</i> <i>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,</i></p>	<p>Student evaluation is based on:</p> <ul style="list-style-type: none"> • Written examination (Questions of free text and multiple choice)(60% of marks) and • Obligatory semester assignment (40%) 	

Clinical examination of a patient, Artistic interpretation, Other/Others

Please indicate all relevant information about the course assessment and how students are informed

The evaluation criteria are posted on the course website (e-class)

5. SUGGESTED BIBLIOGRAPHY

1. Dimoudi A. 'Environmental Friendly Materials', Xanthi: D.U.TH.
2. Roaf S., Fuentes M., Thomas St., 2nd Edit., Ecodomein, Psichalos F Public, 2017
3. Technical Guide of TEE, 20701 -2 /2017, «Thermophysical properties of structural materials and assessment of the thermal insulation requirements of buildings

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	Argiro Dimoudi, Professor
Contact details:	adimoudi@env.duth.gr
Supervisors: (1)	NO
Evaluation methods: (2)	➤ written examination with distance learning methods, provided that the integrity and reliability of the examination are ensured.
Implementation Instructions: (3)	

(1) Please write YES or NO

(2) Note down the evaluation methods used by the teacher, e.g.

- *written assignment* or/and exercises
- written or oral examination with distance learning methods, provided that the integrity and reliability of the examination are ensured.

(3) In the **Implementation Instructions** section, the teacher notes down clear instructions to the students:

a) in case of **written assignment and / or exercises**: the deadline (e.g. the last week of the semester), the means of submission, the grading system, the grade percentage of the assignment in the final grade and **any other necessary information**.

b) in case of **oral examination with distance learning methods**: the instructions for conducting the examination (e.g. in groups of X people), the way of administration of the questions to be answered, the distance learning platforms to be used, the technical means for the implementation of the examination (microphone, camera, word processor, internet connection, communication platform), the hyperlinks for the examination, the duration of the exam, the grading system, the percentage of the oral exam in the final grade, the ways in which the inviolability and reliability of the exam are ensured and any other necessary information.

c) in case of **written examination with distance learning methods**: the way of administration of the questions to be answered, the way of submitting the answers, the duration of the exam, the grading system, the percentage of the written exam of the exam in the final grade, the ways in which the integrity and reliability of the exam are ensured and any other necessary information.

There should be an attached list with the Student Registration Numbers only of students eligible to participate in the examination.