

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	ENGINEERING SCHOOL		
<b>DEPARTMENT</b>	CIVIL ENGINEERING DEPARTMENT		
<b>LEVEL OF STUDIES</b>	UNDER GRADUATE		
<b>COURSE CODE</b>	2304541	<b>SEMESTER</b>	4 <sup>th</sup>
<b>COURSE TITLE</b>	ENVIRONMENTAL MANAGEMENT OF CIVIL ENGINEERING		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures	2	4	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	GENERAL BACKGROUND		
<b>PREREQUISITE COURSES:</b>			
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek (official)		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	NO		
<b>COURSE WEBSITE (URL)</b>	<a href="http://civil.teipir.gr/">http://civil.teipir.gr/</a>		

## (2) LEARNING OUTCOMES

### Learning outcomes

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.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

After the completion of the course, students will be able to:

1. Understand and illustrate concepts related to natural and anthropogenic environment
2. Use in a meaningful way the previously mentioned knowledge in civil constructions, according to national legislation which complies with the legislation of the European Union and the international one
3. Comprehend, discuss, explain, apply the environmental impact of a wide range of civil constructions
4. Classify different types of environmental indicators
5. Define and describe different types of renewable energy sources
6. Incorporate the usage of the renewable energy sources in civil constructions
7. Identify and demonstrate different types of environmental impact associated with different case studies and categories of construction projects
8. Obtain in-depth knowledge and critical understanding of the theory and principles of the environmental evaluation
9. Acquire knowledge about funding and management techniques related to environmental protection and evaluation
10. Recite, list and quote basic European and National Legislation connected to environmental evaluation
11. Recognize the significance of the protected areas (e.g. Natura, Ramsar etc)
12. To know and apply the rules and recommendations related to environmental protection.

### 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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**Research**, analysis and synthesis of data and information, using the necessary bibliographic sources

**Decision Making:** Synthesis of environmental evaluation

**Autonomous work:** Knowledge of regulations, protocols and ethical issues related to environmental protection and evaluation. Respect for the natural environment.

## (3) COURSE CONTENT

- i. water (liquid waste, marine environment, water quality, floods, etc)
- ii. air (quality, pollution from different sources, protection of the ozon layer etc)

- iii. soil (soil erosion form agricultural activities, form natural causes, from civil constructions, form industrial pollution etc)
- iv. solid waste (types of solid waste, calculations. management of solid waste, recycling etc)
- v. noise
- vi. Protection regime (NATURA, Biodiversity, Ramsar areas etc)
- vii. Renewable Energy Sources
- viii. Genetically Modified Organisms
- ix. Global warming and pertinent legislation (Kyoto Protocol, CCS, etc)
- x. Horizontal legislation (publicity of environmental information, Aarhus Conention etc)
- xi. Civil environmental constructions
- xii. Civil constructions for reducing water waste (water resources protection and rational management)
- xiii. Renewable Energy Sources, Evaluation (Advantages-Disadvantages)
- xiv. Environmental policies, Assessment of Environmental Impact
- xv. Environmental impact studies (Definitions, scope, objectives, content, impact categories, methodology of environmental assessment, environmental indicators)
- xvi. European and national environmental legislation
- xvii. Planning and Organizing the environmental information (categories of projects/civil constructions and pertinent activities)
- xviii. Valuable Information for students: presentation of the “green” occupations with popular need in Europe

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Lectures, face-to-face
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education,</i>	Lectures with the use of information and communications technology, essay submission

<i>communication with students</i>											
<p style="text-align: center;"><b>TEACHING METHODS</b></p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><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></p> <p><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></p>	<table border="1"> <thead> <tr> <th style="text-align: center;"><i>Activity</i></th> <th style="text-align: center;"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures (including invited Lecturers with expertise in environmental legal issues and application of environmental evaluation in civil constructions )</td> <td style="text-align: center;">52</td> </tr> <tr> <td>Written essays/exercises</td> <td style="text-align: center;">15</td> </tr> <tr> <td></td> <td style="text-align: center;">33</td> </tr> <tr> <td>Course total</td> <td style="text-align: center;">100</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester workload</i>	Lectures (including invited Lecturers with expertise in environmental legal issues and application of environmental evaluation in civil constructions )	52	Written essays/exercises	15		33	Course total	100
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<p><b>STUDENT PERFORMANCE EVALUATION</b></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>	<p>Written examination in Greek: <b>70%</b></p> <p>written work/essay/report during the semester (in Greek): <b>30%</b></p>										

#### (5) ATTACHED BIBLIOGRAPHY

<ol style="list-style-type: none"> <li>1. Anjaneyulu Y., Manickam V. (2007) "Environmental Impact Assessment Methodologies." Second Edition, BS Publications (in Greek).</li> <li>2. Bernstein L., Bosch P. et al. (2007) «Climate Change 2007: Synthesis Report: An Assessment of the Intergovernmental Panel on Climate Change» IPCC Plenary XXVII (Valencia, Spain, 12-17 November 2007), formally agreed statement of the IPCC, Working Group contributions to the Fourth Assessment Report. (in Greek).</li> <li>3. E.T.E., (2004), <i>Technology of Environmental Protection</i>, European Technological Editions-E.T.E. (in Greek).</li> <li>4. Gizari A. (2003), <i>New mechanisms of the environmental policy in the E.U.</i> Sakoulas Publications, Athens (in Greek)</li> <li>5. Kerry Em., (2008), <i>Climate Change</i>, Politropon Editions (in Greek).</li> <li>6. Lerche I., Glaesser W. (2006) «Environmental Risk Assessment. Quantitative Measures, Anthropogenic Influences, Human Impact», Springer, Berlin</li> <li>7. Michalopoulou H. (2004), <i>Laws for the Environment</i>, Ziti Publications, Athens (in Greek)</li> <li>8. Miller G. T., (1999), <i>Problems of Environmental Systems</i>, Ion Publications Athens (in Greek)</li> <li>9. Panagopoulos Th. (2004) "Environmental Legislation" 4<sup>th</sup> Edition, Stamoulis Publications, Athens (in Greek)</li> <li>10. Theofili Eleni : "Notes on environmental legislation" Explanatory notes on pertinent environmental legislation that include all the alterations on the established legal framework (in Greek)</li> </ol>
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