

9.11 CE0920 & CE1010 – Diploma Thesis I and II

(1) GENERAL

SCHOOL	ENGINEERING SCHOOL		
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CE0920 & CE1010	SEMESTER	9 and 10
COURSE TITLE	Diploma Thesis I and II		
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	
		30	
<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, specialised general knowledge, skills development</i>	Diploma Thesis		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek or/and English if the thesis (in total or partially) has been developed in collaboration with a foreign University		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in English (French or Italian, if required)		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><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></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <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>
<p>The purpose of developing the Diploma Thesis (DT) is to enhance the own initiative of students and to deepen their knowledge of topics which are related to the broader field of civil engineering, consistently applying the codes of writing and the methodological approach of a sound scientific work. It marks the completion of the student's studies while at the same time, its learning outcome can be an additional useful tool for a professional career, or for a master (or doctoral) degree at a greek or foreign university.</p> <p>In general, during the course of the Diploma Thesis (DT) the students acquire knowledge, competences and skills in order to:</p> <ul style="list-style-type: none"> • Apply and combine - synthesise a variety of scientific knowledge acquired during their studies, some of which is cutting-edge and forms the basis for original thinking.

- **Become familiar with the search, selection and critical study of sources** (literature and other sources).
- **Analyse a complex problem** and register the process of its analysis and the methodology and outcome of their work in a concise and understandable way, identifying the key knowledge and the tools required to solve it.
- **Apply an appropriate scientific methodology** for investigating and solving problems of research, innovation, design, implementation, development of strategic approaches, etc. across the whole range of their expertise (search - citing of sources, analysis of existing data, experimental data or recordings - measurements of laboratory or field data, use of simulations, statistical processing of data, comparison - synthesis of all elements of research, design or development of an application, justification of proposals, etc.).
- **Write the issue of their scientific study** in a scientific language, using appropriate terminology and following all commonly accepted codes of scientific writing (syntax, structure, contents, formatting, citing of bibliography/sources, etc.).
- **Present, document and defend their work** in front of an audience, answering any questions asked in relation to it.

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
.....
Others...*

At the end of this project, the student acquires the ability to investigate a topic of his/her speciality in depth, using data that he/she has produced or collected, coming to original conclusions and/or useful applications in practice.

In detail, students will acquire the following skills:

- Searching, analyzing and synthesizing data and information, using the necessary technologies.
- Decision making.
- Independently working.
- Generating new research ideas.
- Designing and managing projects.
- Critical thinking and reflective thinking
- Promotion of free, creative and deductive thinking.

(3) SYLLABUS

The Diploma Thesis is required to have elements of originality and to address realistic problems of research and application. It is developed on a topic related to the subjects and courses covered by the wide range of civil engineering studies.

It is conducted by consistently applying the codes of writing and the methodological approach of a sound scientific work (research - citing of sources, analysis of existing data, experimental data or records- laboratory measurements or field data, use of simulations, statistical processing of data, comparison - synthesis of all elements of the research, design or development of an application, proposals, etc.).

Indicatively, a Diploma Thesis can be, in terms of its topic:

- Research - theoretical, when it concerns the development of a new theoretical model or the extension of an existing one and its application to problem solving.
- Research - applied, where an experimental setup is designed and/or constructed, experimental measurements are performed and/or processed or field measurements are recorded, a computational methodology or an algorithmic scheme is developed.

- Empirical investigation of a problem by collecting, processing, analysing and documenting data.
- Study of an issue of technological interest which is investigated analytically or computationally in the light of the research approach.

The development of the DT is carried out through a sequence of actions or activities which, depending on the subject of the DT and the time available, can be grouped into the initial, main and final stages. In the initial stage, a literature search of the state of the art or of the current state of scientific knowledge on the subject is carried out and the problem, the research methodology or results and the contents of the DT are defined. In the second stage, the design/methodology for solving or investigating the identified problem is developed. In the third stage, the writing of the DT and its presentation are carried out.

The writing of the content of the thesis is carried out in compliance with academic integrity and avoiding plagiarism, in accordance with the Department's standards and guidelines for writing the thesis, which - among other things - defines all the syntactic and morphological elements of the written part of the thesis.

(4) TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	<p>Face-to-face. Meetings with the supervisor for guidance, progress monitoring and feedback on weak points.</p>							
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> • Free - open source software and / or commercial software • Audiovisual material and multimedia applications • Communication via email or through platforms such as MS-Teams, zoom, e-class, etc 							
<p style="text-align: center;">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></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" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 60%;">Activity</th> <th style="width: 40%;">Semester workload</th> </tr> </thead> <tbody> <tr> <td>Development of the study (search for sources - literature, research design - contents - methodology, research implementation, writing - documentation, presentation)</td> <td>750</td> </tr> <tr> <td>Course total</td> <td>750</td> </tr> </tbody> </table>		Activity	Semester workload	Development of the study (search for sources - literature, research design - contents - methodology, research implementation, writing - documentation, presentation)	750	Course total	750
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Development of the study (search for sources - literature, research design - contents - methodology, research implementation, writing - documentation, presentation)	750							
Course total	750							
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION <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>The DT is evaluated by a three-member evaluation committee (to which the DT has been notified), which monitors the public defense of the DT and asks clarifying and examining questions, in order to form an opinion on the correctness and completeness of the research approach or results.</p> <p>At a first level when evaluating the DT, the following are considered:</p> <ul style="list-style-type: none"> • The degree of assimilation of the general knowledge acquired by the student, which is assessed by her/his ability to transfer and adapt it to the purpose and goals set. • The student's ability to identify, utilize and evaluate literature and other sources, so as to apply them appropriately to achieve the intended purpose. • The student's ability to analyze and synthesize to some extent the data, so that the integrated DT can be: a) expanded or specialized by other researchers in a similar way and b) used as a guideline in similar cases. <p>In particular, at a second level, for the evaluation of the DT by the three-member committee, the following criteria are mainly taken</p>							

	<p>into account: The literature research, the acquisition and evaluation of specific data (by conducting laboratory experiments or gathering field data or results of theoretical calculations), logical processing (e.g. data processing, mathematical modeling, computer tests, applications to specific problems, evaluation of results), the structure of the DT and its written presentation (the coherence of the text, the correct use of terminology and language, the precise formulation of the concepts and the general codes of scientific writing, the correct way of including and making reference to the sources, the scientifically correct justification of the conclusions, etc.), the originality of the DT, the consistency and the initiatives taken by the student, the degree of difficulty of the topic and the oral presentation of the DT.</p> <p>The weighting of the above varies depending on the nature of the topic and it is established by the examination committee.</p> <p>The final grade for the DT is the average of the final grades of the three examiners - evaluators (scale 0 - 10). In case that the diploma thesis is considered by the examination committee to be incomplete, additional processing is required and the thesis has to be re-submitted to the Department Secretariat, including the necessary additions-corrections, according to the suggestions of the examination committee.</p>
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(5) ATTACHED BIBLIOGRAPHY

<ul style="list-style-type: none">• Eco, Umberto. How to write a thesis. MIT Press, 2015.• According to the research topic.
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