COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	ELECTRICAL AND COMPUTER ENGINEERING DEPT.		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**ECE_DT**	**SEMESTER**	**10**
COURSE TITLE	DIPLOMA THESIS		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Bibliography study, research and / or development, thesis writing		30
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).		**30**

COURSE TYPE *general background, special background, specialised, general knowledge, skills development*	Compulsory specialization and skills development course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek and English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	https://eclass.uop.gr/courses/195/

(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*

The Diploma Thesis is an independent scientific and systematic approach to the analysis of a topic and the composition of a solution, while relying on existing literature and / or research. The Diploma Thesis has a research, study, development or applied research character and is elaborated by each student, either individually or in collaboration with another student.

Under the guidance of the supervising faculty member, students are given the opportunity to gain significant experience from comprehensive study and in-depth investigation of a distinct subject of specialization and are called upon to develop critical and combinatorial thinking, organization and analysis skills, applying rigorous, systematic and scientific approach.

The purpose of the DT is the completion of the students' knowledge and the development of their skills in the elaboration of independent subjects of the Science of Electrical and Computer Engineering. It is the culmination of the long-term effort of each student and the last stage for the

creation of an Engineer and scientist and his integration in the labor market and society in general.

Upon successful completion of the Diploma Thesis, the student will be able to:

At the level of Knowledge:

- To clearly recognize the limits of a problem to be solved and to fully recognize its basic and secondary aspects, focusing on the most essential points for its solution.
- Describe and document the basic knowledge related to the subject of the research conducted
- To summarize the existing scientific knowledge on the subject

At the level of Skills:

- To use in a critical and synthetic spirit the available bibliography for a specific thematic area.
- To design a research plan and to develop an appropriate methodology for approaching and investigating a subject under study and to organize a plan for its implementation
- Design, simulate and / or build original hardware / software for the selected solution
- Write a complete scientific / technical essay
- To communicate clearly and effectively his / her conclusions, as well as the knowledge and reasoning on which they are based, successfully making a complete presentation before the three-member examination committee.

At the level of Abilities:

- To combine knowledge and utilize expertise to solve complex problems in applications, or new problems of a broader or interdisciplinary framework related to the science of ECE
- To select the appropriate techniques / approaches and to adapt them to the problem that is called to solve using original thinking
- Evaluate the approach / solution he proposes, placing it in a context of comparison with those in the Greek and international literature and commenting on the relevant advantages and disadvantages, documenting his / her opinions and choices.
- Analyze results and draw conclusions

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	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Project planning and management
- Production of free, creative and inductive thinking

(3) SYLLABUS

The elaboration of the Diploma Thesis completely covers the 10th semester of studies of the Curriculum.

The elaboration of a diploma thesis aims to address issues in order to solve, at a theoretical and applied (implementation) level, one or more problems that are part of the Department's scientific field and to implement a technology or idea. In this way, the student is provided with the opportunity to synthesize and use the knowledge acquired during his studies.

Thesis can be:

I. **Research / Theoretical:** focus on developing a new theoretical model or extending an existing one and applying it to problem solving,

II. **Research / Development:** focus on developing a "new" system, based on existing theory and usually consists the dominant part of the work, so that its application can be demonstrated, and

III. **Application:** focus on developing a large application useful in an area of interest using one or more software packages, tools, or appropriate hardware

The Diploma Thesis must include a set of activities, which extend to all phases of the elaboration and which can guarantee a successful outcome in every respect. The results of these activities are summarized in the text of the Thesis which may include:

1. **Description and analysis of the thesis topic**, in a way that the reader understands the object of the thesis, the working hypotheses and the dimensions of the solution space.
2. **Analysis of the current situation in the relevant scientific subjects,** presenting the basic concepts and requirements of the problem, the research or other results on which the work is based, and the objectives of the thesis in relation to the international best practice (state-of-the-art).
3. **Description of the assumptions and the implementation methodology** of the work.
4. **Description of the solution.** This description may include the theoretical solution (theorems, analysis models, algorithms, etc.) and / or implementation of a system in relation to the use cases specified during the analysis.
5. **Thesis final conclusions** that will include data for the evaluation of the solution (theoretical evaluation, list of measurements or evaluations).
6. **Bibliography Analysis** that includes all the books, papers, or other supplementary bibliography, sources, etc. used in the text or footnotes
7. **Appendices** containing all the tools used, along with instructions for using and managing the software / hardware, and the possible future extension of the solutions.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face communication of the student with the supervising faculty member. Implementation in research laboratories. Remote study and implementation. Telemeetings.

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students

Use of specialized software for simulation or design or programming or statistical processing or digital processing, depending on the requirements of the subject.

Use of e-class platform for posting Thesis subjects.

Use of teleconference platforms to communicate with the supervising faculty member.

TEACHING METHODS

The manner and methods of teaching are described in detail.

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.

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

Activity	***Semester workload***
Bibliography Study and Analysis	100
Thesis Elaboration: analysis, design, programming, simulation, construction, evaluation, etc.	500
Diploma Thesis writing, preparing presentation	150
Course Total	***750 ώρες (30 ECTS)***

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

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

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

- Submission of a detailed technical report of the elaborated research / implementation and its results.
- Oral public support, with a presentation of the Diploma Thesis on a specific date and room, with an audience of students and faculty members
- The evaluation of the diploma thesis is done by a three-member examination committee of faculty members of the department who have relevant reasearch background with the thesis. The Committee may be supplemented by faculty members or research associates of another Department.
- After the completion of the examination process, the Committee meets and determines the grades of the students who presented their diploma thesis. Each member of the examination committee decides separately on the degree to be given to each student. The student's thesis grade is the average of the grades proposed by the members of the Examination Committee.
- For the grading each member of the committee takes into account the following:
    - The originality of the subject and its difficulty degree.
    - The understanding of the subject
    - The investigation methodology
    - The implementation
    - The presentation
    - The technical text of the thesis
    - The achievement degree of the goal of thesis

(5) ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*

Proposed by the supervising faculty member, depending on the subject of the thesis.