COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING
ACADEMIC UNIT	Department of Electrical and Electronics Engineering
LEVEL OF STUDIES	Graduate (MSc)
COURSE CODE	C.01 **SEMESTER** 03
COURSE TITLE	MSc 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
Supervised Research Work	N/A	30
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialized general knowledge
PREREQUISITE COURSES:	Successful completion of mandatory course modules and electives chosen.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek and English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	

(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*

Upon successful completion of the MSc Thesis, the student is expected to be able to:

- Perform a literature review of the field of research to get acquainted with the state of the art,
- Discern a gap in knowledge and/or technology that is worth addressing at the MSc level,
- Analyze the problem(s) or issue(s) related to this gap,
- Compose alternative solutions and comparatively evaluate them according to a set of criteria; select the optimal solution,
- Simulate and/or design and/or construct a prototype to demonstrate the feasibility of the solution, as a proof of concept,
- Comparatively evaluate this solution to alternative existing ones and state its strengths and weaknesses,
- Carry out an up-scaling study, were the solution required to operate in real-field conditions and scale,

- Write and defend in public an extended research report, in the form of MSc Thesis, on the problem, the proposed solution and its merits.

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
- Adapting to new situations
- Decision-making
- Working independently
- Production of new research ideas
- Project planning and management
- Production of free, creative and inductive thinking

(3) SYLLABUS

- MSc Thesis is the final outcome a research study on a specific topic within the broad field of Electrical and Electronics Engineering. The specific topic is defined upon enrollment of the MSc student and research on it is carried out throughout the duration of the program, culminating to the writing and oral defense of the MSc Thesis.

- The major objective of the MSc Thesis is to lead the student to delve into the selected topic of research within the broad field of Electrical and Electronics Engineering, to develop novel approaches, methods, solutions or designs and thus contribute to the advancement of science and technology in the field. In doing so, the student is gradually brought to the state of the art in the science and technology of the field.
  An equally important objective is the introduction and initiation of students to research methodology and procedures, the cultivation of their scientific and research interests, the familiarization of students to the rules and ethics of research and the development of their research skills.

- A typical MSc thesis comprises
  - an initial literature review,
  - the definition of research questions that should bear elements of novelty,
  - theoretic study of the problem at hand and results,
  as well as – where applicable –
  - practical implementation or construction of a prototype and measurements or data analysis to verify the results of the theoretic study.
- The students are guided to adopt and implement a carefully chosen methodology in order to systematically address and answer their research problems or questions.
- Results are used to compose answers to the research questions, followed by discussion and critical appraisal of the whole research study and conclusions.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Laboratory work and measurements, Distance Learning (Synchronous, MS Teams)
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• MS Teams for research supervision and progress monitoring (weekly) • E-class for course content support and teacher-student communication • Pertinent mathematical / modelling / simulation software and tools (e.g., Matlab, Mathematica, SPSS, etc.) depending on the specific research topic undertaken.

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
laboratory work, design and development	390
project	100
essay writing (MSc Thesis)	390
preparation of oral presentation of MSc Thesis	20
Course total	***900***

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.*	MSc thesis is turned in and orally defended by the student to the respective examination committee. The procedure is held in public. The examination committee may (i) accept the thesis as it is, (ii) return the thesis to the student along with comments for improvement and set a new deadline for defense, or (iii) reject the thesis. An accepted MSc thesis is graded by the examination committee on the basis of the set of defined evaluation criteria and grade breakdown, as detailed in the MSc Program Study Regulation. The final grade is the average of the grades given individually by each committee member. After the committee files the MSc thesis grading form with the Secretariat, the student has to upload the thesis in full text in the UNIWA repository POLYNOE, under the MSc program partition, for the grade to become final. The MSc thesis evaluation form along with the detailed criteria and grade breakdown per criterion can be found in the "BIBLIOGRAPHY" tab of the present module., within the course module webpage.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
  • As designated by the supervisor, according to the specific research topic undertaken.
- Related Scientific Journals:
  • As designated by the supervisor, according to the specific research topic undertaken.

- TOOLS
  • As assigned by the supervisor, according to the specific research topic undertaken.

- Matlab: https://www.mathworks.com/products/matlab.html
- Mathematica: https://www.wolfram.com/
- Wolfram Alpha: https://www.wolframalpha.com/
- Python: https://www.python.org/
- scipy: https://scipy.org/
- Julia: https://julialang.org/
- R: https://www.r-project.org/

- WEBSITES
- As assigned by the supervisor, according to the specific research topic undertaken.