COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING
ACADEMIC UNIT	Department of Electrical and Electronics Engineering
LEVEL OF STUDIES	Graduate (MSc)

COURSE CODE	A.03	SEMESTER	01

COURSE TITLE	Supervised Research I

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	18
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, Skills development
PREREQUISITE COURSES:	(-)
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 this course module, the student is expected to be able to:
- State, explain and categorize major research methodologies; select the appropriate one for the problem at hand,
- Perform a literature review of the selected research topic to get acquainted with the state of the art,
- Compare, contrast and critique published solutions/approaches on the selected research topic,
- 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,
- Write and orally defend an extended technical report on the problem to be addressed, the literature review, the planned experimental procedure and the results sought.

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,   Project planning and management

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Production of new research ideas
- Project planning and management
- Production of free, creative and inductive thinking

(3) SYLLABUS

Supervised Research I is the first part of research on the topic selected by the student upon enrollment.
1. Typically, this first part involves a literature review of the field, so as to get acquainted with the state of the art, and to compare, contrast and critique published solutions/approaches in an attempt to discern a gap in knowledge and/or technology that is worth addressing at the MSc level.
2. Further on, the student analyzes the problem(s) or issue(s) related to this gap, sets relevant hypotheses and plans and organizes an experimental plan to verify or reject them.
3. By the end of the semester, the student prepares a detailed Technical Report including all progress made during the semester, as well as the schedule of next semester research steps.
4. Technical Report I is written according to the respective template, is submitted by the student and is orally presented and defended in front of the supervising committee who grades it.

(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 (weekly) • E-class for course content support and teacher-student communication • Pertinent mathematical / modelling / simulation software and tools (e.g., Matlab, Mathematica, Python, 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*	<table><tr><td>*Activity*</td><td>*Semester workload*</td></tr><tr><td>study and analysis of bibliography</td><td>260</td></tr><tr><td>laboratory work</td><td>130</td></tr><tr><td>essay writing (technical report I)</td><td>130</td></tr><tr><td>preparation of oral presentation of research results</td><td>20</td></tr><tr><td>**Course total**</td><td>***540***</td></tr></table>
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure*	The results of supervised research achieved in the 1st semester of study are evaluated on the basis of Technical Report I. This is written by the student, turned in in paper

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<td>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.</td>
<td>and in electronic form by the end of the semester, orally presented to the evaluation committee within the examination period, graded by the supervising committee and filled by the secretariat.

The supervising committee may

(i) Accept Technical Report I as it is.

(ii) Return Technical Report I to the student along with written comments for improvement. In that case, the student advances to the 2nd semester and continues his/her research, with the obligation to submit and present the improved Technical Report I along with Technical Report II by the end of the 2nd semester of study.

(iii) Reject Technical Report I. In that case, the student fails in A.03 and has to repeat it.

An accepted Technical Report I 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. The committee submits the signed Technical Report I evaluation form to the Secretariat.

The Technical Report I evaluation form along with the detailed criteria and grade breakdown per criterion can be found in the "BIBLIOGRAPHY" tab, within the course module webpage.</td>
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(5) ATTACHED BIBLIOGRAPHY

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- 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 designated 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 designated by the supervisor, according to the specific research topic undertaken.

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