# COURSE OUTLINE

## (1) GENERAL

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|---|---|---|---|
| **SCHOOL** | OF SCIENCE | | |
| **ACADEMIC UNIT** | PHYSICS DEPARTMENT | | |
| **LEVEL OF STUDIES** | GRADUATE | | |
| **COURSE CODE** | **M430** | **SEMESTER** | **3** |
| **COURSE TITLE** | MASTER 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** |
|---|---|---|
| | 40 | 30 |
| | | |
| | | |
| *Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).* | | |

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| **COURSE TYPE** *general background, special background, specialised general knowledge, skills development* | Special background-skills development-specialised general knowledge |
| **PREREQUISITE COURSES:** | M411, M412, M413, M414, M415, M416, M421, M422, M423, M424, M425, M426 |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | GREEK |
| **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*

**In this module, the student undertakes a research project under supervision (usually an electronic system is developed) following by a submission and successful examination of a corresponding thesis. Analytically, by the completion of the module the student:**

- **Understands and formulates the requirements of a complex problem and develops the corresponding electronic system (mainly real time) to cure it,**
- **is able to form the specifications and the norms of the mentioned system,**
- **is able to search and find the details of related systems using the related references,**
- **is able to select the suitable electronic technologies, during the system development, using all knowledge and experience gained from the other courses in the program,**
- **Is able to design the required circuits, implementing them in programmable integrated circuits (FPGAs, microcontrollers etc), using**

**the required discrete components (SMT or conventional).**

- **Is able to design PCB boards, fabricates the prototypes, electronically test them, test their functionality and their performance.**
- **Write a user manual for the electronic system developed under the research project including a chapter for its maintenance.**
- **Eventually writes a publication in a related scientific magazine with referees or/and presents the project and its results in a scientific conference, while keeps a detailed logbook for all actions.**
- **Writes a thesis for her/his work**
- **Writes slides for the presentation of the thesis and presents it publicly.**

**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…* |
| | *…….* |

Working independently, Decision-making, production of free, creative and inductive thinking, Search for, analysis and synthesis of data and information with the use of the necessary technology.

## (3) SYLLABUS

Study of related bibliography and scientific articles. Development of an electronic system-subject of the dissertation in a related scientific laboratory of the Physics department.
Writing and presentation of the dissertation.

## (4) TEACHING and LEARNING METHODS - EVALUATION

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|---|---|
| **DELIVERY**<br>*Face-to-face, Distance learning, etc.* | Mainly, personal independent work in close collaboration (management-progress check) with the supervisor |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY**<br>*Use of ICT in teaching, laboratory education, communication with students* | **Use of web for bibliography search and electronic component search.** |
| **TEACHING METHODS**<br>*The manner and methods of teaching are described in detail.*<br>*Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational* | |

| ***Activity*** | ***Semester workload*** |
|---|---|
| Guided study and analysis | 80 |
| Laboratory work (specifications, | 450 |

| | | |
|---|---|---|
| *visits, project, essay writing, artistic creativity, etc.*<br><br>*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* | electronic design, PCB construction, PCB component assembly, eventual mechanical parts construction etc.) | |
| | System tests | 70 |
| | Unguided study and analysis | 100 |
| | Writing of the dissertation | 50 |
| | | |
| | Course total | ***750*** |

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| **STUDENT PERFORMANCE EVALUATION**<br>*Description of the evaluation procedure*<br><br>*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*<br><br>*Specifically-defined evaluation criteria are given, and if and where they are accessible to students.* | Master thesis including its presentation (100%)<br>• Topic development (40%)<br>• Thesis structure and quality (manuscript) (20%)<br>• Public defense (20%)<br>• Candidate's scientific education (20%) |

## (5) ATTACHED BIBLIOGRAPHY

*- Suggested bibliography:*
*- Related academic journals:*
Related with the dissertation subject, suggested by the supervisor