

ETE821 – Welding Technology

COURSE OUTLINE

(1) GENERAL

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|--|---|-----------------|----|
| SCHOOL | SCHOOL OF ENGINEERING | | |
| ACADEMIC UNIT | DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING | | |
| LEVEL OF STUDIES | UNDERGRADUATE | | |
| COURSE CODE | ETE821 | SEMESTER | 10 |
| COURSE TITLE | Welding Technology | | |
| 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 | |
| Lectures | 3 | 3 | |
| <i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).</i> | | | |
| COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i> | Special background | | |
| PREREQUISITE COURSES: | NO | | |
| LANGUAGE OF INSTRUCTION and EXAMINATIONS: | GREEK | | |
| IS THE COURSE OFFERED TO ERASMUS STUDENTS | - | | |
| COURSE WEBSITE (URL) | http://www.materials.uoi.gr/en/0,02,01.html | | |

(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 course is a specialized course of the metallic materials. The scope is to provide the students with the necessary knowledge related to arc welding processes. The main arc welding processes with their parameters and characteristics are covered. Welding defects, imperfections and residual stresses are presented in details. The metallurgy of welding is also examined thoroughly. Non destructive testing is also approached.

Upon the completion the students are able to: a) understanding the fundamental principles of arc welding processes, b) ascertain the key parameters of each process, c) predict the material behaviour upon welding, d) design appropriate post welding treatments.

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...

- 1) Working independently
- 2) Team Work
- 3) Production of new research ideas
- 4) Working in an interdisciplinary environment
- 5) Production of free, creative and inductive thinking

(3) SYLLABUS

- Introduction
- Arc welding basic processes
- Welding thermal profile
- Residual stresses.
- Welding defects
- Welding metallurgy: The fusion zone
- Welding metallurgy: The heat affected zone.
- Welding metallurgy: The base metal.
- Non destructive testing

(4) TEACHING and LEARNING METHODS - EVALUATION

| | | |
|---|-------------------------------|--------------------------|
| DELIVERY <i>Face-to-face, Distance learning, etc.</i> | In class, lectures | |
| USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i> | - | |
| TEACHING METHODS <i>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</i> | Activity | Semester workload |
| | Lectures | 39 |
| | Essay | 18 |
| | Self-study | 18 |
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| | Course total | 75h |
| STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-</i> | LANGUAGE OF EVALUATION: Greek | |

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.

METHOD OF EVALUATION:

- (i) Final written examination (50% contribution)
- (ii) Essay (50% contribution)

(5) ATTACHED BIBLIOGRAPHY

Lecturer's notes