



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Α.ΔΙ.Π.
ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ & ΠΙΣΤΟΠΟΙΗΣΗΣ
ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ
ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC
H.Q.A.A.
HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ ΚΑΙ ΘΡΑΚΗΣ
ΜΟΝΑΔΑ ΔΙΑΣΦΑΛΙΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΕΙ ΑΜΘ

Quality Assurance in Higher Education Course Data Collection Form

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ
ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ & ΘΡΑΚΗΣ
ΑΓΙΟΣ ΛΟΥΚΑΣ,
65404 ΚΑΒΑΛΑ

EASTERN MACEDONIA AND THRACE
INSTITUTE OF TECHNOLOGY
AGIOS LOUKAS
65404 KAVALA

COURSE OUTLINE

(1) GENERAL

| | | | |
|---|---|-----------------|-----------------|
| Name and surname of lecturer | JOHN (IOANNIS) DERMENTZOGLOU | | |
| SCHOOL | Technological Applications | | |
| ACADEMIC UNIT | Department of Electrical Engineering | | |
| LEVEL OF STUDIES | Undergraduate | | |
| COURSE CODE | Z1 | SEMESTER | 7 th |
| COURSE TITLE | HIGH VOLTAGES 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 | |
| LecturesandExercises | 3 | 5 | |
| Laboratory | | | |
| | | | |
| <i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i> | | | |
| COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i> | <i>Special background,skills development</i> | | |
| PREREQUISITE COURSES: | Electric circuits, Electronics, Electric Machines Theory , Power Electronics, Mathematics | | |
| LANGUAGE OF INSTRUCTION and EXAMINATIONS: | Greek | | |
| IS THE COURSE OFFERED TO ERASMUS STUDENTS | No | | |
| COURSE WEBSITE (URL) | http://eclass.teikav.edu.gr/claroline/auth/opencourses.php?fc=11 | | |

(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 aims to provide the students with the relative theoretical background in order to understand the field of application of the High Voltages Technology. The students study the various mechanisms of produced high voltages (due to atmospheric phenomena, personnel operations in power systems e.t.c.), their impact in power systems, as well as the protection methods of the power systems, and the insulating materials. When completing the course, student will be capable of:

- Identifying the devices for evaluating the strength of insulating materials (Impulse generators e.t.c.)
- Understanding the characteristics and properties of insulating materials
- understanding the mechanisms production of surge voltages i.e. atmospheric (due to lightning) or internal (due to errors in electric grids)
- contributing to the design of the insulation of the transmission lines or systems of the substations

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

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Others...

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- Searching analyzing and combining data and relevant information by using relevant technology
- Assignment of Individual Project
- Assignment of Team Project
- Design and Projects Management
- Introduction of novel research ideas

(3) SYLLABUS

- High Voltages Generation

- Testing Transformers
- Impulse Generators
- Electrostatic Voltmeter
- Voltage dividers
- Dielectric stresses
- Atmospheric surges
- Dynamic surges
- Operation surges
- Insulating materials
- Disruption of the electric field
- Study of the behavior of the air and the SF₆
- Design of the insulation of a transmission line

(4) TEACHING and LEARNING METHODS - EVALUATION

| | | |
|---|---|--------------------------|
| DELIVERY <i>Face-to-face, Distance learning, etc.</i> | Face to face (in the classroom) | |
| USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i> | Use slides, website of the course with supporting and auxiliary material, | |
| 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 | 26 |
| | Theory Practise | 13 |
| | | |
| | | |
| | | |
| | Independent study | 86 |
| | | |
| | Course total | 125 |
| STUDENT PERFORMANCE EVALUATION <i>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.</i> | Theory Examination: Final Examination (100%) | |

(5) ATTACHED BIBLIOGRAPHY

1. Stathopoulos, "High Voltages I", Symeon Publications, 1999
2. Nils Hylten-Cavallius, "High Voltage Laboratory Planning", Emil Haefely & co., 1986.

3. M.S. Naidu, V. Kamarayu, "High Voltage Engineering", McGraw-Hill, 1982.
4. E. Kuffel, W.S. Zaengl, "High Voltage Engineering", 2nd Edition, Pergamon Press, 2000.