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

HELLENIC REPUBLIC
H .Q .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	EN2	**SEMESTER**	**5th**
COURSE TITLE	POWER ELECTRONICS		

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**
LecturesandExercises	3	5
Laboratory	2	1
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*	*Special background,skills development*
PREREQUISITE COURSES:	Electric circuits, Electronics, Mathematics
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek – English in the case of foreign students (ERASMUS)
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
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 and the practical philosophy of designing and analyzing the operation/behavior of power electronics converters.

When completing the course, student will be capable of:

- Identifying the type of a power converter and explain the function at every operation point.
- Identifying the semiconductors of a power converter, assessing the relevant data provided by the manufacturer in order to be familiarized with the implementation of them in various applications, particularly where a need arises for the substitution of faulted semiconductors with equivalents.
- Applying the relevant theoretical background and methodology in order to explain the operation of more complex power converters in various industrial applications
- Applying and using relevant software environments for checking the normal operation of a power converter in relation to the demanded output voltages and currents before practical implementation.
- Using and regulating laboratory instruments and devices forming a power converter and performing relevant measurements
- Locating faults and malfunctions in regarding the semiconductors of a power converter.
- Contributing in general in design of novel power converters.

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…*
	…….

- 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

- Introduction to power electronics semiconductors
- Rectifiers
- Inverters
- Choppers
- Cycloconverters
- AC regulators
- F.AC.T.S
- Applications in various systems
- Mathematical modeling-Simulation of power converters
- Implementation of Automatic Control in Power Electronics Systems
- Simulation Software Packages
- Data acquisition systems and signal processing for extracting useful mathematical models or in time location of various faults of a power converter.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face (in the classroom)
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use slides, websiteof the coursewithsupportingandauxiliarymaterial,
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*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of*	Theory Examination: Final Examination (100%) Laboratory Examination Individual Projects or Intermediate exams 20% Final examination 80%

Activity	***Semester workload***
Lectures	26
Theory Practise	13
Laboratory practice	26
	30
Independent study	85
Course total	150

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.*	

(5) ATTACHED BIBLIOGRAPHY

1. M. D. Singh, K. B. Khanchandani, "Power Electronics", Tata-McGraw Hill, pp. 1096, 2008.

2. Manias S., "Power Electronics", Symeon Publications, 2008.

3. Muhamad H. Rashid, "Power Electronics Handbook", Academic Press (Elsevier), pp. 1172, 2007.

4. M.P. Kazmierkowski, R. Krishnan, F. Blaabjerc, "Control in Power Electronics, Selected Problems", Academic Press (Elsevier), pp. 516, 2002.

5. R.Mathur_ Mohan and R.K.Varma "Thyristor-based FACTS-controllers for electrical transmission systems", IEEE Press, New York, 1999.

6. C. W. Lander, "Power Electronics", McGraw-Hill, 1988.

7. B. Bird and K.G. King, "An Introduction to Power Electronics", John Wiley, 1983.