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	ΣΤΝ1	**SEMESTER**	**6th**
COURSE TITLE	ELECTRIC DRIVE SYSTEMS		

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, Power Electronics, Electric Machines Theory, 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 (description of electric drives systems, analysis, mathematical modeling using international adopted models). The course also aims to the familiarization of the students with special tools and software in order to render them capable of contributing to the design of a such system or dealing with problems arising during its operation.

When completing the course, student will be capable of:

- Identifying the type of an electric derive system and explain the operation
- Selecting an electric drive system by applying rules like the successful coupling of the characteristics curves of the motor and its mechanical load, and ensuring its efficient operation (work production and possible improvement of energy consumption).
- Applying the relevant theoretical background in order to explain the operation of more complex drives in various industrial applications.
- Applying and using relevant software environments for checking the normal operation of a drive system or suggesting improvements verified in a simulation environment before practical implementation.
- Identifying the relevant components and subsystems of a drive system, as well as the relevant technical data & characteristics provided by the manufacturer, in order to use them in a very accurate way.
- Using and regulating laboratory instruments and devices forming a drive system and performing relevant measurements.
- Locating faults and malfunctions in the electrical or the mechanical subsystems of a drive system.
- Contributing in general in the optimum design of a drive system suitable to meet the relevant demands.

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

- D.C. Motors (description-structure, relevant equations, characteristic curves)
- Various types of mechanical loads (description- structure, relevant equations, characteristic curves)
- Control of D.C. Motors
- 3-phase Synchronous and 3-phase Induction Motors (description-structure, relevant equations, characteristic curves)
- Control of 3-phase Synchronous and 3-phase Induction Motors (Vector Control)
- Control applications by using microcontrollers and P.L.C.
- Methods of motor size selection
- Mathematical modeling-simulation of electric drives systems
- Simulation software packages
- Applications in Ship's propulsion system, electric or hybrid automobiles, industrial or power production systems e.t.c.
- Data acquisition systems and signal processing for extracting useful mathematical models or in time location of various faults in the electrical or the mechanical subsystems of an electric drive.

(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,*	

Activity	***Semester workload***
Lectures	26
Theory Practise	13
Laboratory practice	26
	30

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*		
	Independent study	85
	Course total	150
STUDENT PERFORMANCE EVALUATION *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.*	Theory Examination: Final Examination (100%) Laboratory Examination Individual Projects or Intermediate exams 20% Final examination 80%	

(5) ATTACHED BIBLIOGRAPHY

1. Mademlis Christos, "Servo Driving Systems , Induction Motors and Synchronous Permanent Magnets Motors", TZIOLA Publications 2010.
2. R. Krishnan, "Electric Drive Systems, Modeling, Analysis & Control", Kleidarithmos Publications, 2010.
3. Malatestas P., Manias S., "Electric Propulsion", 2nd Edition, TZIOLA Publications 2008.
4. I.Gottlieb, "Motors Controlling Techniques", 2nd Edition, TZIOLA Publications 1998.
5. Paul C. Krause, "Analysis of Electric Machinery", McGraw-Hill International Editions, New York, 1987.
6. I. Boldea, S.A. Nasar, "Electric Machine Dynamics", Macmillan Publishing Company, New York, 1986.