



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Α.ΔΙ.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

SCHOOL	School of Technological Applications		
ACADEMIC UNIT	Department of Electrical Engineering		
DEGREE LEVEL	Undergraduate		
COURSE CODE	AN3	SEMESTER	1st
COURSE TITLE	ELECTRICAL DESIGN WITH PC		
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 and Exercises	-	-	
Laboratory	4E	2,0	
<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, specialised general knowledge, skills development</i>	SFC - Special Foundation Course Mandatory		
Required passed courses:	-		
TEACHING AND EXAMS LANGUAGE:	Greek - English		
THE COURSE IS OFFERED TO ERASMUS STUDENTS:	YES		
COURSE WEBPAGE (URL)	http://eclass.teikav.edu.gr/ED136/		

2. LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> 																		
<p>Target and objective of the course is to familiarize students with the basic principles of technical drawing in general and in particular of the electrical-electronic drawing, as well as with the relevant standards - rules - symbols and electronic libraries.</p> <p>Upon successful completion of the course, students will:</p> <ul style="list-style-type: none"> • Gain knowledge, skills and abilities in the subject of the technical design and especially of the electrical - electronic and industrial automation design. • Be able to create simple and complex sketches design, as well as to use CAD design tools with the possibility of simulation of electrical and electronic circuits. • Be able to use the design as an international way of communication between the technical - engineers, studiers, manufacturers and researchers, on the basis of International and National Regulations and symbols. 																		
<p>General Competences</p> <p><i>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?</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Working independently</i></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Team work</i></td> <td style="border: none;"><i>Criticism and self-criticism</i></td> </tr> <tr> <td style="border: none;"><i>Working in an international environment</i></td> <td style="border: none;"><i>Production of free, creative and inductive thinking</i></td> </tr> <tr> <td style="border: none;"><i>Working in an interdisciplinary environment</i></td> <td style="border: none;">.....</td> </tr> <tr> <td style="border: none;"><i>Production of new research ideas</i></td> <td style="border: none;"><i>Others...</i></td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">.....</td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>	<i>Team work</i>	<i>Criticism and self-criticism</i>	<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>	<i>Working in an interdisciplinary environment</i>	<i>Production of new research ideas</i>	<i>Others...</i>	
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>																	
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>																	
<i>Decision-making</i>	<i>Respect for the natural environment</i>																	
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>																	
<i>Team work</i>	<i>Criticism and self-criticism</i>																	
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>																	
<i>Working in an interdisciplinary environment</i>																	
<i>Production of new research ideas</i>	<i>Others...</i>																	
																	
<ul style="list-style-type: none"> • Design and project management.technology 																		

- Search, analysis and synthesis of data and information by the use of the required technologies.
- Generation of new research ideas.
- Independent Work.
- Teamwork.
- Work in an international environment.
- Decision making.
- Apply criticism and self-criticism.

3. COURSE CONTENT

The course is a laboratory and is carried out via weekly exercises, which are divided in the following sections:

- Introduction to Technical design:

International and national standards, design types, drawing sheets, pencil hardness, letters, lines, memorandum, drawing scales (actual size - zoom out - zoom in), design equipment, symbols ELOT.

- Types of Technical Design:

- a) Architectural: views and plan views of buildings
- b) Mechanical design: Regulations, Line drawing. Geometric constructions, drawing performances, mechanical design views.
- c) Electrical design: Basic rules, national modifications, symbols and quality systems.

- Types of Electrical Drawing: single line, multiline, developed or functional design. Design of electrical and electronic diagrams.

- Interior Electrical and Industrial Installations Designs:

General information of electrical installations. Typical configurations of internal electrical circuits installations. Design of interior electrical installations. Low voltage circuits.

Protective and of neutral systems. Manual and semi-automatic control systems.

DC consumers. Motor protection systems.

Asynchronous induction motors. Modern engines. Transformers.

Manual and semi-automatic control systems. One line tables graphs.

Design of electricity transmission and distribution system.

House plan view design with EHE [lighting - fire detection systems - fire safety - access control].

Plan view of a mechanical workshop design with lighting installation, motion and control systems.

- Drawing tools with the use of PC [CAD - CAE] - Application of designing programs:

Introduction to the designing tools of mechanical, electrical, electronic equipment with the use of H/PC

and simulation tools of these devices with the use of PC.

Basic drawing commands and components processing of two dimensions from the electronic libraries of the designing tools. Tools for specification of dimensions. Creation and import groups' components.

Transfer and print projects commands.

Applications of drafting of technical drawings and of integrated studies.

4. TEACHING AND LEARNING METHODS - ASSESSMENT

TEACHING METHOD <i>Face-to-face, Distance learning, etc.</i>	A) In the Drawing Room. B) In the Computer room.
UTILISATIONS OF INFORMATION AND	Presentation of the theory by means of slides. Website of the course with supporting and assistant material. Creation of

<p align="center">COMMUNICATION TECNOLOGIES</p> <p align="center"><i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>asynchronous platform. User manuals of EDA tools. i)] Notes for designing Tools of Electrical design and EHE & ii)] Notes for designing Tools of Electronic automation devices. Use of Designing Tools. Contact by e-mail</p>	
<p><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.</i></p> <p><i>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></p>	<p>Activity</p>	<p>Semester workload</p>
	<p>Laboratory Exercises</p>	<p>25</p>
	<p>Hours of study/Exams</p>	<p>15</p>
	<p>Preparation of a study [Project]</p>	<p>10</p>
	<p> </p>	<p> </p>
	<p> </p>	<p> </p>
	<p> </p>	<p> </p>
<p>Course Summary (Total contact hours and training)</p>	<p>50</p>	
<p align="center">STUDENT ASSESSMENT</p> <p><i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Laboratory Course</p> <p>I. Individual project works of Laboratory Exercises (40%). II. Progress Test (30%) of multiple choice questions, symbols identification, development, matching and designing, after the sixth week of courses. III. Preparation of a study [Project] (30%) or Final Exam in drawing tool in PC (30%), on a subject which was developed during the semester, by using the CAD.</p>	

5. RECCOMENDED READING

- Suggested bibliography:
- Related academic journals:

1. Andreas Goutis – “The Electrical plan and Industrial Applications – Automations”. ION Publications [2005]
2. Spiros Mouroutsos - I. Malliaris – “Technical Design”. Tsotra Publications [2014]
3. Andreas Goutis – “The Electrical Design - PART - I Lighting, Low currents, Rectifying devices, D.C - A.C. Engines - Transformers. ION Publications [2004]
4. Andreas Goutis – “The Electrical Design - PART - II Industrial Applications. ION Publications [2008]
5. C. Vasilantonopoulos – “Electrical - Electronic Design” - University of Patras. [2006]
6. Miltiades Kapou – “Electrical Connections - Basic Circuits Plans” - Technical Publications Third Edition. [2007]
7. A.D. Wilcox – “Engineering design for electrical engineers” Prentice Hall. [1986]
8. Simmons C., Macguire D., Phelps N. “Manual of Engineering Drawing: Technical Product specifications and documentation to International standards” Elsevier Science & Technology. [1994]
9. Hart, K.R. – “Engineering Drawing: With Problems and Solutions” Holder Arnold. [1999]
10. Bill, Atkinson – “Electrical Installation Designs” 3rd Edition John Wiley and Sons Ltd. [2006]

11. Cecil Jensen, Jay D. Helsel, Dennis R. Short – “Engineering Drawing & Design”. 7th Edition, McGraw Hill, N.Y. [2008]
12. A. D. Moore – “Fundamentals of Electrical Design”. Literary Licensing, LLC. [2013]
13. EDN, Electrical Design News “Electrical engineering magazine”. Rogers Publishing Company. [from 1999]