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	PAPADOPOULOU PANAGIOTA		
SCHOOL	SCHOOL OF TECHNOLOGICAL ENGINEERING		
ACADEMIC UNIT	ELECTRICAL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CN2**	**SEMESTER**	**3ο**
COURSE TITLE	ELECTRONICS II		

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**
LECTURES	3	4,5
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*	*General Background, Skills development*
PREREQUISITE COURSES:	ELECTRONICS I
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES, on demand
COURSE WEBSITE (URL)	http://eclass.teikav.edu.gr/ED196/

(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 aim and scope of the course is to make students able to learn the basic concepts of electronic power amplifier circuits and operational amplifiers as well as to analyze, design and implement, electronic power amplifier circuits and systems based on the use of operational amplifiers.
In particular aim of the course is to provide basic knowledge for power amplifier circuits such as amplifiers class A, class B, class AB and class C, but also for the Darlington circuits, differential amplifiers, and operational amplifiers and their applications In order to deepen in each section numerous of exercises and problems solved during the lectures. At the same time for better understanding of electronic circuits presented students have the opportunity to analyze the various circuits with the help of simulation programs (Electronics Workbench, etc.). The modules of the course are:
Power amplifier circuits class A, class B, class AB and class C, Darlington circuits, differential amplifiers circuits, modes of operation, operational amplifiers analysis and design, electronic circuit based on operational amplifiers such as adders, circuits performing integration and differentiation and other circuits. Non- ideal operational amplifiers, bias currents and deflection, frequency compensation.

Response in frequency.
Upon successful completion of this course the students will be able to:

- To recognize basic electronic power amplifiers circuits of class A, B, AB, C and to understand their operation.
- To solve theoretically an electronic circuit applying laws rules and methodologies that have been taught.
- To calculate characteristic magnitudes of electronic components and to polarize them appropriately considering the design requirements.
- To propose the optimal design of an amplifier circuit based on the specifications given by the problem.
- To identify the basic circuits of differential amplifiers.
- To identify the basic circuits of operational amplifiers and to solve and design circuits using operational amplifiers.
- To propose the best solution for the best design of a circuit based on operational amplifiers.
- To perform a simulation in order to control the operation of complex electronic circuit based on operational amplifiers.
- To design, analyze and otherwise handle complex electronic circuits.

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…*
	…….

- *Search for, analysis and synthesis of data and information, with the use of the necessary technology.*
- *Working independently*
- *Production of new research ideas*
- *Criticism and self-criticism*

(3) SYLLABUS

1. Power electronic amplifiers
   1.1. Power amplifiers class A, B, AB, C,
   1.2. Power amplifiers class A, Transformer coupled Class A power amplifier
   1.3. Power amplifiers class B, Push – Pull C-E circuits
   1.4. Power amplifiers class C
   1.5. Maximum Power efficiency
   1.6. Darlington circuit
2. Integrated Circuits – Differential Amplifiers
   2.1. Introduction to Integrated Circuits
   2.2. Differential Amplifiers, modes of operation and their gain
3. Operational Amplifiers
   3.1. Feedback – Distortion.
   3.2. Operational Amplifiers Circuits – The O.P. 741.
   3.3. Ideal Operational Amplifiers - Circuits Analysis - Circuits Design - Circuit Applications - adder s - Integration Circuits - differentiation Circuits – Instrumentetional Amplifiers Circuits - Basic Active Filters Circuits.
   3.4. Non ideal operation amplifiers

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Lectures using Power Point presentations. Website of the course in e-class with supporting and auxiliary material which is updated at regular intervals. Software simulation Application. E-mail contact.
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*	***Activity*** / ***Semester workload*** Lectures: 39 Self study: 96 Course total (30 hours / ECTS): ***135***
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**: Final writing examination where students solve different problems concerning electronic circuits.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Related academic journals:

- Malvino, A. P., Bates D. J. 2012, ISBN: 9789604184101.
- Χαριτάντης Γιάννης «Ηλεκτρονικά 2», εκδ. Δεμερτής Παντελής, 2007 ISBN: 978-960-91034-7-3
- Millman,J., Grabel,A., 2013, ISBN: 9789604184248.
- Kaufman-Seidman, 1992, ISBN: 960721921X.