

COURSE OUTLINE

1. GENERAL

SCHOOL			
DEPARTMENT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	SSE706-2023	SEMESTER	7th Semester
COURSE TITLE	Electronic Circuits		
TEACHING ACTIVITIES If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.		TEACHING HOURS PER WEEK	ECTS CREDITS
		4	5.0
COURSE TYPE Background, General Knowledge, Scientific Area, Skill Development	Scientific Area		
PREREQUISITES			
TEACHING & EXAMINATION LANGUAGE:	Greek		
COURSE OFFERED TO ERASMUS STUDENTS:	YES		
COURSE URL:	https://eclass.emt.duth.gr/		

2. LEARNING OUTCOMES

Learning Outcomes Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.
This course aims in providing specialized knowledge of Electronics and advanced issues thereof. A good knowledge of basic electronics is required. The main modules are: - Differential amplifier pair - Current sources - Basic operational amplifier circuits - Advanced operational amplifier circuits - Oscillators - Multivibrators Upon successful completion of the course the student will be able to: - To recognize and distinguish in practice advanced electronic elements and circuits, as well as to be able to understand their operation. - Be able to design an electronic circuit in practice. - To detect errors in simple electronic components and electronic circuits and to be able to provide solutions for their repair.

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,
ICT Use, Adaptation to new situations,
Decision making,
Autonomous work,
Teamwork,
Working in an international environment,
Working in an interdisciplinary environment, Production of new research ideas

Project design and management
Equity and Inclusion
Respect for the natural environment
Sustainability
Demonstration of social, professional and moral responsibility and sensitivity to gender issues
Critical thinking
Promoting free, creative and inductive reasoning

Search, analysis and synthesis of data and information, ICT Use
Autonomous work
Teamwork
Project design and management
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3. COURSE CONTENT

Amplifying topologies with bipolar transistors (BJTs)
Basic circuit design technologies with BJTs (TTL, ECL)
Basic operational amplifier circuits
Advanced operational amplifier circuits
Bias and stability of amplifiers
Reference current circuits and current sources
Differential amplifier
Oscillators
Multivibrators

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD Face to face, Distance learning, etc.	Face to face								
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) Use of ICT in Teaching, in Laboratory Education, in Communication with students	Use of ICT in Communication with students								
TEACHING ORGANIZATION The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc. The supervised and unsupervised workload per activity is indicated here, so that total workload per semester	<table border="1"> <thead> <tr> <th>Activity</th><th>Workload/semester</th></tr> </thead> <tbody> <tr> <td>Lectures</td><td>52</td></tr> <tr> <td>Bibliographic research & analysis</td><td>73</td></tr> <tr> <td>Total</td><td>125</td></tr> </tbody> </table>	Activity	Workload/semester	Lectures	52	Bibliographic research & analysis	73	Total	125
Activity	Workload/semester								
Lectures	52								
Bibliographic research & analysis	73								
Total	125								

complies to ECTS standards							
STUDENT EVALUATION Description of the evaluation process Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others Please indicate all relevant information about the course assessment and how students are informed	Student evaluation languages Greek English Method (Formative or Concluding) Summative Student evaluation methods <table> <tr> <td>Intermediate Written exam</td><td>40</td></tr> <tr> <td>Written Exam with Problem Solving</td><td>40</td></tr> <tr> <td>Written Exam with Short Answer Questions</td><td>20</td></tr> </table>	Intermediate Written exam	40	Written Exam with Problem Solving	40	Written Exam with Short Answer Questions	20
Intermediate Written exam	40						
Written Exam with Problem Solving	40						
Written Exam with Short Answer Questions	20						

5. Suggested Bibliography

Microelectronic Circuits, Sedra Smith 8th ed.
The art of Electronics, Horowitz Hill 2nd edition

Eudoxus

ΜΙΚΡΟΗΛΕΚΤΡΟΝΙΚΑ ΚΥΚΛΩΜΑΤΑ, 8η Έκδοση
Κωδικός Βιβλίου στον Εύδοξο: 68396095
Έκδοση: 7η/2017
Συγγραφείς: Sedra Adel, Smith Kenneth
ISBN: 9789604911066
Τύπος: Σύγγραμμα
Διαθέτης (Εκδότης): Α. ΠΑΠΑΣΩΤΗΡΙΟΥ & ΣΙΑ Ι.Κ.Ε.

Μικροηλεκτρονική, 5η Έκδοση-Βελτιωμένη
Κωδικός Βιβλίου στον Εύδοξο: 68380792
Έκδοση: 5η Βελτιωμένη/2017
Συγγραφείς: Jaeger Richard - Blalock Travis, Αλκιβιάδης Χατζόπουλος (επιμέλεια)
ISBN: 9789604187164
Τύπος: Σύγγραμμα
Διαθέτης (Εκδότης): ΕΚΔΟΣΕΙΣ Α. ΤΖΙΟΛΑ & ΥΙΟΙ Α.Ε.