COURSE OUTLINE

1. GENERAL

SCHOOL			
DEPARTMENT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	Y502-2023	**SEMESTER**	5th Semester
COURSE TITLE	Electronics Laboratory		

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**
		4.0

COURSETYPE Background, General Knowledge, Scientific Area, Skill Development	Skill Development
PREREQUISITES	GENERAL PHYSICS II ELECTRONICS ELECTRICAL CIRCUITS
TEACHING & EXAMINATION LANGUAGE:	Greek
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://exams.emt.ihu.gr/courses/PHYSICS218/

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.
The aim and objective of the course are: the consolidation in practice of the knowledge about General Electronics, which has already been taught in the previous semester and the cultivation of the skills required for the implementation and experimental study of electronic circuits. The main laboratory modules are: • Diode circuits. • Circuits with BJT and FET Transistors. • Circuits with operational amplifiers and Circuits for implementing basic digital elements. Upon successful completion of the course, the student will be able to:

● To recognize and distinguish in practice basic electronic elements and circuits, as well as to be able to understand their function. ● To calculate characteristic sizes of electronic components, to polarize appropriately taking into account design frauds and also to find the characteristics of an electronic component. ● To be able to practically build an electronic circuit. ● Be able to use instruments and laboratory devices to take measurements from electronic circuits. ● To confirm the correct operation of an electronic circuit by combining experimental data with theoretical circuit analysis and the critical use of simulation programs. ● To learn and read data sheets of electronic components. ● Identify errors in simple electronic components and electronic circuits and 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, Project design and management ICT Use,Adaptation to new situations, Equity and Inclusion Decision making, Respect for the natural environment Autonomous work, Sustainability Teamwork, Demonstration of social, professional and moral responsibility Working in an international environment, and sensitivity to gender issues Working in an interdisciplinary environment, Production of new Critical thinking research ideas Promoting free, creative and inductive reasoning
Search, analysis and synthesis of data and information, ICT Use Decision making Autonomous work Teamwork Project design and management Critical thinking Promoting free, creative and inductive reasoning

3. COURSE CONTENT

● Methodology and application of electronic circuit measurements. ● Diodes and electronic diode circuits. ● Bipolar Contact Transistors – BJTs (switch circuits and amplifier circuits). ● Field Effect Transistor – FET (characteristics and circuits). ● Operational amplifiers (characteristic and basic amplifier circuits). ● Elements of digital circuits (Boolean algebra, switching circuits, implementation of logic gates).

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 Teaching Use of ICT in Laboratory Education 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 complies to ECTS standards

Activity	Workload/semester
Laboratory Exercise	39
Writing project	50
Bibliographic research & analysis	11
Total	**100**

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)
Formative

Student evaluation methods	**Rate**
Written Assignment	50
Oral Exams	50

5. Suggested Bibliography

Εργαστηριακές Ασκήσεις Ηλεκτρονικής, (Θεοδωρίδης, Σίσκος, Κοσματόπουλος, Λαόπουλος, Νικολαϊδης, Παπαθανασιου)

Eudoxus

Βιβλίο [320086]: ΕΡΓΑΣΤΗΡΙΑΚΟΣ ΟΔΗΓΟΣ ΚΑΙ ΑΣΚΗΣΕΙΣ ΗΛΕΚΤΡΟΝΙΚΗΣ, ΝΙΣΤΑΖΑΚΗΣ ΕΚΤΟΡΑΣ
Βιβλίο [2785]: ΕΡΓΑΣΤΗΡΙΑΚΕΣ ΑΣΚΗΣΕΙΣ ΗΛΕΚΤΡΟΝΙΚΗΣ, Γ. ΘΕΟΔΩΡΙΔΗΣ, Κ. ΚΟΣΜΑΤΟΠΟΥΛΟΣ, Θ. ΛΑΟΠΟΥΛΟΣ, Σ. ΝΙΚΟΛΑΪΔΗΣ, Κ. ΠΑΠΑΘΑΝΑΣΙΟΥ, Σ. ΣΙΣΚΟΣ
Βιβλίο [77117465]: Εργαστηριακές Ασκήσεις Βασικών Ηλεκτρονικών,Οδηγός από Μικροηλεκτρονικά Κυκλώματα,7η έκδοση των Sedra/Smith, Gaudet Vincent C., Smith Kenneth C.
Βιβλίο [77117449]: Εισαγωγικό Εργαστήριο Κυκλωμάτων και Ηλεκτρονικής, Τσιβίδης Γιάννης