

Course unit title:	Electrical Engineering Workshop		
Course unit code:	AEEE298		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	2		
Semester when the unit is delivered:	4 (Spring)		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Dr Nicholas Christofides / Dr Photos Vryonides		
Learning outcomes of the course unit:	<ol style="list-style-type: none"> 1. Understand and appreciate the risk of electric shock and protection methods in electrical installations 2. Develop skills and good workmanship in relation to the erection of electrical installations and accessories 3. Examine and analyse the elements and operation of transformers and power supplies 4. Familiarize and experiment with printed circuit boards and identify common electronic PCB applications 5. Design and fabricate PCBs in the laboratory for a specific application 		
Mode of delivery:	Face-to-face		
Prerequisites:	AEEE 238	Co-requisites:	AEEE239
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> • Introduction to electrical workshop facilities and necessity for risk assessment, categories of electric shock, understanding electric shock risk (direct and indirect) and ES protection methods, concepts in electrical safety and regulations, earthing concept and systems • Practical skills in soldering techniques, mounting and soldering of components; and visual inspection of work, manufacturing techniques and technologies, packaging (through-hole and surface mount), component identification for interpretation of Printed Circuit Board (PCB) layout diagrams, interpretation of circuit schematic diagrams, component tolerances, component stability and preferred values • Use of Printed Circuit Board (PCB) design software, Design and fabrication of PCBs for fundamental electronic and digital devices, PCB testing, electronic component fault diagnosis • Applications of transformers, operation principle, analysis under load/no-load, ideal transformer, transformer losses, efficiency, open / short circuit tests, isolating transformers, autotransformers, single/three phase transformers, rectifiers, capacitor filtering, regulation and protection circuits, power supplies • Workmanship in electrical installations, familiarization with electrical installation accessories such as protective devices, circuit breakers, switches, isolators, time switches, distribution boards, electrical panels, wiring, identification and installation methods of cables, uninterruptible power supplies, battery technologies, battery testing 		
Recommended and/or required reading:			

Textbooks:	<p>Build Your Own Electronics Workshop : Everything You Need to Design a Work Space, Use Test Equipment, Build and Troubleshoot Circuits”, Thomas Petruzellis, McGraw-Hill/Tab Electronics (2004).</p> <p>IEE on-site guide to BS 7671:2001: Requirements for electrical Installations 16TH EDITION, IET Publication, 16TH, 2004</p> <p>Electrical Technology, 10/E, Edward Hughes, Prentice Hall, 2008</p>
References:	Electronic devices, 8th edition, Thomas L. Floyd, Person, 2008
Planned learning activities and teaching methods:	<p>Students are taught the course through lectures (3 hours per week) in classrooms or lectures theatres, by means of traditional tools or using computer demonstration. In addition, through lab work (2 hours per week) taking place in the designated labs. Auditory exercises, where examples regarding matter represented at the lectures, are solved and further, questions related to particular open-ended topic issues are compiled by the students and answered, during the lecture or assigned as homework. One lab project with the deliverable being a PCB fabrication and its test report will be assigned as part of the workshop course.</p> <p>Topic notes are compiled by students, during the lecture which serve to cover the main issues under consideration. Students are also advised to use the course textbook or reference books for further reading and practice in solving related exercises. Tutorial problems are also submitted as homework and these are solved during lectures or privately during lecturer’s office hours.</p> <p>Students are prepared for final exam, by revision on the matter taught, problem solving, concept testing and are also trained to be able to deal with time constraints and revision timetable. The final assessment of the students is formative and is assured to comply with the subject’s expected learning outcomes and the quality of the course.</p>
Assessment methods and criteria:	<ul style="list-style-type: none"> • Tests and Assignments 30% • PCB design and fabrication project : 30% <ul style="list-style-type: none"> • Final Exam 40%
Language of instruction:	English
Work placement(s):	No