

Course unit title:	Electronics I		
Course unit code:	AEEE238		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	2		
Semester when the unit is delivered:	2 (Spring)		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Dr. Photos Vryonides		
Learning outcomes of the course unit:	<ol style="list-style-type: none"> 1. Describe the mechanism and the characteristics of the basic semiconductor devices. 2. Explain the diode characteristics and applications. 3. Examine the operation and biasing configurations of the Bipolar Junction Transistor. 4. Explain the optimum component values for the design of the BJT amplifier under DC and AC conditions. 5. Describe the operation and biasing configurations of the Field Effect Transistor. 6. Use software packages and boards to design, simulate, implement and test various circuits with semiconductor devices. 		
Mode of delivery:	Face-to-face		
Prerequisites:	AEEE 170	Co-requisites:	AEEE222
Recommended optional program components:	None		
Course contents:	<p>Basic Semiconductor :Introduction to semiconductors materials ,N-type and P-type semiconductors, diode model and voltage current characteristics ,diode biasing.</p> <p>Diode Applications :Half-wave and full-wave rectification, power supply filter and regulators, clippers and clampers ,voltage multipliers, diode datasheets.</p> <p>Special Purposes Diodes :Zener diodes ,varactor diodes ,optical diodes, other types of diodes.</p> <p>Bipolar Junction Transistors :Transistor structure and operation ,transistor characteristics and parameters ,transistor as an amplifier ,transistor as a switch ,transistor packages and terminal identification.</p> <p>Transistor Bias Circuit :Q-point, voltage divider bias ,other bias methods.</p> <p>Field Effect Transistors: Transistor structure and operation, transistor characteristics and parameters ,biasing circuits.</p> <p>BJT amplifiers :Amplifier operation ,ac equivalent circuit ,common-emitter Amplifier ,common-base Amplifier ,common-collector amplifier ,multistage amplifiers.</p>		

Recommended and/or required reading:	
Textbooks:	Thomas L. Floyd, " Electronic Devices ", ISBN 0-13-028484-X, Prentice Hall, 2013
References:	Robert Boylestad, " Electronic Devices and Circuit Theory ", ISBN 0-13-394552-9, McGraw Hill, 2000
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.</p> <p>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.</p> <p>Topic notes are compiled by students, during the lecture which serve to cover the main issues under consideration and can also be downloaded from the lecturer's webpage. Students are also advised to use the subject's 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. Further literature search is encouraged by assigning students to identify a specific problem related to some issue, gather relevant scientific information about how others have addressed the problem and report this information in written or orally.</p> <p>Laboratory experiments are carried out in small groups and lab reports are required two weeks after the laboratory class resulting in a cumulative mark.</p> <p>Students are assessed continuously and their knowledge is checked through tests with their assessment weight, date and time being set at the beginning of the semester via the course outline.</p> <p>Students are prepared for final exam, by revision on the matter taught, problem solving and concept testing and are also trained to be able to deal with time constraints and revision timetable.</p> <p>The final assessment of the students is formative and summative 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"> • Assignments 05% • Tests: 20% • Laboratory Work: 15% • Final Exam 60%
Language of instruction:	English
Work placement(s):	No