Course unit title:	**Sustainable Energy II**				
Course unit code:	AEEE466				
Type of course unit:	Elective				
Level of course unit:	Bachelor (1st Cycle)				
Year of study:	4				
Semester when the unit is delivered:	7 (Fall), 8 (Spring)				
Number of ECTS credits allocated :	6	Lectures:	3hours/week	Labs:	0
Name of lecturer(s):	Dr Alexis Polycarpou				
Aim of the Course	The aim of the course is to bring in students to the deep concepts and principles of energy efficiency, used for the design, application, evaluation and development of household buildings. energy saving technologies are also described. Particular emphasis is given to the development of an understanding of the various parameters involved in the calculation of energy efficiency and their implementation in the energy efficiency calculation software.				
Learning outcomes of the course unit:	• Gain in-depth knowledge and understanding of the main principles underlying the field of material Energy performance and also having a critical awareness of the wider context of energy efficient systems. • Explain and apply the concepts of energy conservation technologies at distribution level. • Describe the legal structure surrounding building energy efficiency in Cyprus according to the latest directions of the ministry of commerce industry and tourism, energy service. • Calculate all required parameters for energy efficiency simulations using ISBEM software and calculate the impact of proposed energy saving techniques on the total consumption of a case project.				
Mode of delivery:	Face-to-face				
Prerequisites:	None	Co-requisites:	None		
Course contents:	1. Energy saving technologies - Simple steps towards energy saving. - Monitoring systems. - Voltage optimization.				

	- Power factor correction. - Electricity Authority tariff selection. 2. Definition of thermal energy efficiency parameters and Minimum demands - Material U-values. - Thermal resistivity, heat capacity. - Effect of parameters on Active power consumption. 3. Energy data collection - Structure and gaps. - Electrical installation parameters. - Mechanical Installation parameters. 4. Energy efficiency legislation for buildings - Introduction to current legislation. - Qualification of Expert Technical Advisors - Energy efficiency certificate. - Required documentation. 5. ISBEM software - Software familiarization. - Calculation and insertion of required data in software - Energy consumption calculation - Improvement suggestions based on documented energy benefits.
Recommended and/or required reading:	
Textbooks:	Cyprus Ministry of commerce industry and tourism, energy service, thermal insulation guide for buildings, ISBN:978-9963-38-760-1, 2010. Peter Gevorkian, Sustainable energy systems engineering: the complete green building design resource, McGraw-Hill, ISBN: 978-0071473590, 2007.
References:	- CYS EN ISO 13790 Energy performance of buildings-Calculation of energy use for space heating and cooling. - CYS EN ISO 10077-1:2006 Thermal performance of windows, doors and shutters-calculation of thermal transmittance.
Planned learning activities and teaching methods:	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. 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. 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 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. 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. 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.