

Course unit title:	Passive Climatic Design II		
Course unit code:	APX333		
Type of course unit:	Compulsory		
Level of course unit:	Diploma Degree of Architect - Engineer		
Year of study:	3		
Semester when the unit is delivered:	6		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Nicos G. Georgiou		
Learning outcomes of the course unit:	<p>This course attempts both a theoretical and practical approach to concepts related to the effects on architectural design such as saving energy consumption and the use of alternative / renewable energy and in order to reduce environmental pollution and uncontrolled misuse of natural resources</p> <ol style="list-style-type: none"> 1. To understand the principles of sustainability and interactions with the microclimate and the general climate of the area 2. To understand the principles of sustainability in relation to saving energy consumption, waste management, and life cycle analysis 3. To understand the design strategies adopted, in order to approach issues such as sustainability and energy consumption management. 4. To understand the trends of environmental architecture and the contradictions they produce 		
Mode of delivery:	Face-to-face		
Prerequisites:	APX331	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<p>The space, natural or artificial, in which a person moves creates a constant physical and psychological impact that significantly affects the feeling of comfort and the ability to perform adequately to the specific activities. The above makes environmental design an integral part of architectural education in both theoretical and design approach. Based on the above, the environmental approach to design has the following fields: According to the principles of environmental design, the selected bioclimatic design strategies are a result of data analysis on the field of intervention. These strategies are an integral part of the architectural design, affecting the building structure and passively ensure the optimization of living conditions (thermal and visual comfort) inside the building space. The utilization of direct solar gains during the winter season contribute to passive heating and thus improve the thermal comfort conditions and energy savings aim, obtained directly from the creation of extensive southern properly protected windows. In addition to that during winter time the creation of thermal buffer zones can contribute in the energy saving strategy while heating a living space. During the summer period the main bioclimatic design strategies focused on sun protection minimizing solar gains and ensuring natural ventilation. The shading of the glass surfaces is achieved using appropriate shading system depending on orientation. The cross ventilation is crucial, and is achieved by the proper arrangement of the building windows in relation with the prevailing winds in the area. The construction design refers to both the selection of appropriate materials and the construction methods. It seeks to understand the environmental potential of materials and construction methods and</p>		

	<p>their recycling and maintenance costs and use. The design of construction details aimed at ensuring adequate heat insulation minimising thermal bridges.</p> <p>The energy design refers to the selection of the appropriate quality HVAC system depending on usage and operating hours of the building and the exploration of the systems use energy from renewable sources, mainly the morphological integration of photovoltaics in building envelope and energy management systems .</p> <p>The investigation of the above within the bioclimatic, energy and construction design strategies ensures comprehensive environmental approach of the building space.</p>
Recommended and/or required reading:	<ul style="list-style-type: none"> • Energy Planning, Introduction to Architects, Malliaris Education for the European Commission • Guide of Thermal Insulation of Buildings, second edition, 2010, September, Energy Service, Ministry of Commerce, Industry and Tourism • Energy Design Guide, 2011, Thessaloniki, Building Publishing Ltd. • Guide of Thermal Insulation & Waterproofing, 2011, Thessaloniki, Building Publishing Ltd. • Andreadaki - Chronaki E., Passive Bioclimatic Architecture – Solar Energy Systems, 1985, Thessaloniki, University Studio Press
Textbooks:	
References:	
Planned learning activities and teaching methods:	<p>The taught part of the course is delivered to the students by means of lectures and computer-aided presentations. Lecture notes and presentations are available through the web for students to use in combination with the relevant textbooks.</p> <p>Lectures are supplemented with project work carried out on an individual basis. Students are requested to design and produce construction details for a demanding light structure such as bridge etc. During the semester, course instructors are making comments and corrections on the students' proposals, at every stage of the process.</p>
Assessment methods and criteria:	<ul style="list-style-type: none"> • Class participation 10% • Semester project 55% • Final Exams 35%
Language of instruction:	Greek English offered for Erasmus Students
Work placement(s):	