

Course unit title:	Architectural Technology VII		
Course unit code:	APXE 32		
Type of course unit:	Elective		
Level of course unit:	Diploma Degree of Architect - Engineer		
Year of study:	4		
Semester when the unit is delivered:	From 7 semester		
Number of ECTS credits allocated :	3		
Name of lecturer(s):	Prof. Panayiotis Touliatos, Marios Pelekanos		
Learning outcomes of the course unit:	<ol style="list-style-type: none"> 1. To impress the importance of appropriate choice, both in terms of construction methods and the available building materials which will strengthen and better reflect the architectural concept and idea, the course seeks a deepening in the manufacturing methods used in the construction process focusing on light structures. 2. This is considered as a further deepening in the area of architectural technology. More specifically the course will address ways in which structures become not only able to withstand external loads, to meet the essential requirements imposed by the immediate natural environment, to bear loads and to withstand stress, but also to acquire high quality architecture through the appropriate design decisions. 3. Recognize the technology and design method of timber structures. Study the different joints on timber structures. Identify methods and means for jointing. Develop wooden structure design. Recognize the basic types of design of a wooden structure, depending on the structural scale. Review project examples and methodology of wooden structures design. 4. Recognize the technology and design method of steel structures. Develop steel construction design. Explain the vulnerability of steel members in high temperatures. Review historical and contemporary design examples and principles. 5. Compare the natural material of wood and the industrially produced steel. Examine the characteristic structure of both steel and wood and interpret their properties. 		
Mode of delivery:	Face-to-face		
Prerequisites:	APX233	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> • History of Light Structures: The development of timber and steel structures in the ancient and modern times. • Timber and steel as building materials: Properties of wood and steel as basic building materials. Comparison between the natural material of wood and the industrially produced steel. The characteristic structure of wood and the interpretation of its properties. Types of construction wood: Natural and industrially produced wood (laminated, glue-lam, cross-lam, particle boards etc.). Analysis of behavior of wooden bearing members under load. Weaknesses of Wood and the role of design in avoiding them. Pathology of the wooden structure: Biological agent and fire. Fire resistance of wood, based on 		

	<p>proper design and calculation. Wood protection specifications.</p> <ul style="list-style-type: none"> • Technology and Design of Timber Structures: Study of joints on timber structures. Methods and means for jointing (nails, screws, bolts etc.). Wood lamination. Wooden Structure Design. Basic types of design of a wooden structure, depending on the structural scale. Project examples and methodology of wooden structures design. • Technology and Design of Steel Structures: Steel Construction Design. Vulnerability of steel members in high temperatures (fire). Historical and contemporary design principles.
Recommended and/or required reading:	<p>J. Gordon, Structures of why things don't fall down, Da Capo Press, 1978</p> <p>N. Hawkes, MACmillan P.G., Structures the way things are built, Oxford, 1993</p>
Textbooks:	Hristos Athanasopoulos, Building construction, design and technology , Hristos Athanasopoulos Edition, 2003.
References:	<p>N.Kalogeras, Ch.Kirpotin, G.Makris, I.Papaioannou, S.Rautopoulos, M.Tzitzas, P.Touliatos, Architectural Technology, Symmetria Editions, Athens, 1999.</p> <p>Mario Salvadori, Why Buildings stand up- The strength of Architecture, Norton and Co, 1990.</p> <p>W.Huntington-R. Mickadelt, Building Construction Materials and Types of Construction, J. Wiley and Sons, 1981.</p> <p>Mario Salvadori, The bearing structure in architecture, Themeli Editions, Athens, 1981.</p>
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"> • Project 100%
Language of instruction:	<p>Greek</p> <p>English offered for Erasmus Students</p>
Work placement(s):	