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| Course unit title:                       | Architectural Technology III   |                |      |
| Course unit code:                        | APX231   |                |      |
| Type of course unit:                     | Compulsory   |                |      |
| Level of course unit:                    | Diploma Degree Architect - Engineer  |                |      |
| Year of study:                           | 2  |                |      |
| Semester when the unit is delivered:     | 3 (Fall)   |                |      |
| Number of ECTS credits allocated :       | 5  |                |      |
| Name of lecturer(s):                     | Prof. Panayiotis Touliatos, Marios Pelekanos   |                |      |
| Learning outcomes of the course unit:    | <ol style="list-style-type: none"> <li>1. Interpret the history of light structures. Review the development of timber and steel structures in the ancient and modern times.</li> <li>2. Identify timber and steel as building materials. Compare the properties of wood and steel as basic building materials. Compare the natural material of wood and the industrially produced steel. Examine the characteristic structure of wood and interpret its properties. Classify the types of construction wood: Natural and industrially produced wood.</li> <li>3. Analyze the behaviour of wooden bearing members under load. Recognize the weaknesses of wood and the role of design in avoiding them.</li> <li>4. Identify the pathology of the wooden structure: Biological agent and fire. Interpret fire resistance of wood, based on proper design and calculation. Use wood protection specifications.</li> <li>5. 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 constructural scale. Review project examples and methodology of wooden structures design.</li> <li>6. 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.</li> </ol> |                |      |
| Mode of delivery:                        | Face-to-face   |                |      |
| Prerequisites:                           | APX131, APX133   | Co-requisites: | None |
| Recommended optional program components: | None   |                |      |
| Course contents:                         | The course deals with the technology of the light structures, i.e. those whose bearing structure is made out of wood or steel. In particular, the course deals with the analysis of behavior of wooden and steel bearing members under load, the pathology and fire resistance of the wooden structure, the study of joints on timber or steel structures and generally the implementation of the steel and wood construction design guidelines.   |                |      |
| Recommended and/or required reading:     | <p>J. Gordon, <b>Structures of why things don't fall down</b>, Da Capo Press, 1978</p> <p>N. Hawkes, MACmillan P.G., <b>Structures the way things are built</b>, Oxford, 1993</p>  |                |      |
| Textbooks:                               | Hristos Athanasopoulos, <b>Building construction, design and technology</b> , Hristos Athanasopoulos Edition, 2003.  |                |      |

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| References:                                       | <p>N.Kalogeras, Ch.Kirpotin, G.Makris, I.Papaioannou, S.Rautopoulos, M.Tzitzas, P.Touliatos, <b>Architectural Technology</b>, Symmetria Editions, Athens, 1999.</p> <p>Mario Salvadori, <b>Why Buildings stand up- The strength of Architecture</b>, Norton and Co, 1990.</p> <p>W.Huntington-R. Mickadelt, <b>Building Construction Materials and Types of Construction</b>, J. Wiley and Sons, 1981.</p> <p>Mario Salvadori, <b>The bearing structure in architecture</b>, 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 small light structure. 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"> <li>• Project 45%</li> <li>• Final Examination 55%</li> </ul>  |
| Language of instruction:                          | <p>Greek<br/>English offered for Erasmus Students</p>   |
| Work placement(s):                                |   |