

## CONTEMPORARY MATERIALS FOR WOOD STRUCTURES

<b>SCHOOL</b>	School of Technology		
<b>DEPARTMENT</b>	Department of Forestry, Wood science and Design		
<b>LEVEL</b>	<i>Undergraduate</i>		
<b>CODE</b>	ΞΣΥ911	<b>STUDENT SEMESTER</b>	9th
<b>COURSE TITLE</b>	CONTEMPORARY MATERIALS FOR WOOD STRUCTURES		
<b>ACTIVITIES</b>		<b>WEEKLY HRS</b>	<b>ECTS</b>
	Lectures and Workshops	3	6
<b>TYPE OF COURSE</b>	Scientific area		
<b>PREREQUISITES:</b>	none		
<b>LANGUAGE TEACHING AND EXAMINATION:</b>	Greek or English		
<b>THE COURSE OFFERED TO STUDENTS ERASMUS</b>	Yes		
<b>WEBPAGES COURSE (URL)</b>			

### 1. LEARNING OUTCOMES

<b>Learning Outcomes</b>
<p>Aim of the course is the growing technological and scientific background of students in the significance of exploitation of remains from the various industries of wood , wood of small dimensions, the wood of special uses from a side and the satisfaction concrete, difficult more times of requirements of the final consumer. Simultaneously will be given the occasion in the students to see and to know new products that will help they give solutions in a lot of applications. Simultaneously it will help they differentiate their way of thought so that are developed the possibilities of new products.</p> <p>With the completion of the academic semester, the Student owes to know:</p> <ul style="list-style-type: none"> <li>• Technologies of production of new products that will be taught. Simultaneously it will know ways of exploitation of remains from various phases of production as well as the requirements that are presented in specialised manufactures.</li> <li>• The attributes, the advantages and disadvantages of all new products depending on their way of production as well as the cost of each product so that they can judge that they can use in order to they give solution in various problems that the compact timber but also the complex sykkollimena products cannot satisfy.</li> <li>• These likely uses of all of new products.</li> </ul>
<b>General Skills</b>
<ul style="list-style-type: none"> <li>• Search, analysis and composition of data and information with regard to the products and the ways of production of these that are examined .</li> <li>• Growth of criticism thoughts for the discovery and resolution of problems with the use of this materials.</li> <li>• Familiarization with the use of also essential modern requirements</li> <li>• Decision-making</li> <li>• Autonomous Work</li> <li>• Promotion free, creative and inductive thought</li> </ul>

### 2. COURSE CONTENT

In the theoretical part of the course the student is taught and learns for:

- New materials that have not been presented in the previous courses of technology. Are presented the problems of the final consumer that ask solutions in various wood construction as well as raw material that is presented from agroforestry (big quantities of small dimensions).
- Are presented the technology of production but also the attributes of joist that are manufactured from trapezoids cross-section sawnwood .
- Afterwards are analyzed the possibilities of production scribe and the attributes that it presents.
- Follows the presentation of products that develops remains of production of veneer with final products that give attributes better than the compact timber. Such products are PSL and LSL products with the form of joists (joists from bands of timber and joists produced from timber) . For this products becomes analysis of so much production of what attributes that has each one with particular analysis of advantages and disadvantages of this materials.
- CLT . The product that has conquered the structural manufactures in Europe America (solid wood panels) with the two ways of production.
- Bigger accent is given afterwards in the joists of type I where becomes report in the different types depending on the material that is used in dokides (compact timber, LVL, PSL).
- The next product that is analyzed is FRP plywood strengthened with fibres of glass for special uses.
- Finally is analyzed new many promising product the WPC product that results from mixed timber with plastic . Are presented his uses and his attributes.

### 3. TEACHING AND LEARNING METHODS - EVALUATION

<b>DELIVERY METHOD</b>	Face to face  The course is organized in two parallel streams:  1. Lectures, which analyze the concepts and methodologies that form the core of the course material  2. Workshops (studios), where students: get acquainted with methods and tools of creative thinking and analysis, consultation, synthesis of ideas and plans are organized in groups - with emphasis on interdisciplinarity	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC , transparencies ppt, projector <ul style="list-style-type: none"> <li>• Interactive board</li> <li>• Laboratorial equipment with the all essential instruments but also samples of composite products.</li> </ul>	
<b>MANAGEMENT OF TEACHING</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures	39
	Individual work on issues of quality but also her application in various phases of production.	20

	Educational excursion / Small individual work exaskisis	20
	Individual and work study for term assignment	71
	<b>Course Total</b>	<b>150</b>
<b>STUDENT EVALUATION</b>	Written final examination (100%) that it includes:	

#### 4. RECOMMENDED-BIBLIOGRAPHY

-Προτεινόμενη Βιβλιογραφία :

- APA . *Engineered Handbook* , 2002. APA Tacoma Washington
- Ehart, R., Stanzl-Tchegg, S., Tschegg, E. 1999. *Mode III fracture energy of wood composites in comparison to solid wood. Wood science and Technology* 33. pp 391-405
- Knudson, R. 1992. *PSL 300 LSL :The challenge of a new Product. Proceedings 26th International Particleboard/Composite Materials Symposium W.S>U. 1992:206-214.*
- Lee, S. 1991. *Wood laminates . In: International Encyclopedia of Composites Vol.6:97-110.*
- Mc Natt, D., Galligan, W. , Hans, G. 1982. *Forest products for Building construction. Wood and fiber science . April 1984. V 16(2).*
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- Pease, D. 1994. *Panels Products Applications and Production Trends. Wood Technology, Miller Freeman Inc.*
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- *Cross-laminated timber: Design and performance. TRADA*