

MODULE DESCRIPTION

General

School	Geotechnical Sciences
Department	Forest and Natural Environment Sciences

Module Information

Title	Wood Technology & Biocomposites
Course Code	D.Y.6
Level of Studies	Undergraduate Studies
Teaching Period	Spring
Attendance Type	Compulsory
Prerequisites	Not applied

Orientation	Weekly Hours		Year	Semester	ECTS
	Lectures	Laboratory work			
Landscape Architecture & Restoration	3	2	2	4	4

Faculty Instructor

Dr. Antonios N. Papadopoulos

Type of Module

- General Foundation
- Specific Foundation / Core
- Knowledge Deepening / Consolidation

Mode of Delivery

- Face to face
- Distance learning

Digital Module availability

- E-Study Guide
- Departments Website
- E-Learning

Language

	Teaching	Examination
Greek	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

English	<input type="checkbox"/>	<input type="checkbox"/>
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Erasmus

- The course is offered to exchange programme students

Learning Outcomes

The students learn how to identify wood species based on their macroscopic and microscopic characteristics and they learn about the physical, mechanical and chemical properties of wood and the variability and differences among different species. They can recognize wood defects on standing trees and grade wood assortments. Finally, they can choose the correct species for further usage according to its properties. The students learn about the technology production of wood products (poles, stakes, saw wood, parquets, veneers, plywood, laminated wood, particle board, fibre board, OSB, LVL, PSL, LSL, I-beam and wood-plastic composite products-WPC). Finally, they can choose the appropriate products for further usage according to its properties.

List of General Competences

- Apply knowledge in practice
- Work autonomously
- Work in teams
- Work in an international context
- Work in an interdisciplinary team
- Respect natural environment
- Advance free, creative and causative thinking

Module Content (Syllabus)

Macroscopic characteristics and identification of softwoods and hardwoods. Microscopic structure, chemical composition and wood infrastructure. Mechanism of wood formation. Variation and abnormalities of wood structure. Density, hygroscopicity, shrinkage and swelling of wood. Mechanical, thermal, electrical and acoustic properties. Natural durability of wood. Production technology (raw material, machines, processing, technological conditions) of wood products (poles, stakes, saw wood, parquets, veneers, plywood, laminated wood, particle board, fibre board, other composite products, wood-plastic composites-WPC). Properties and uses of wood products.

Keywords
Wood identification, wood structure, wood technology, wood products, properties and uses of wood products.

Educational Material Types

- Book
- Notes
- Slide presentations
- Video lectures

- Multimedia
- Interactive exercises
- Other:

Use of Information and Communication Technologies

- Use of ICT in Course Teaching
- Use of ICT in Laboratory Teaching
- Use of ICT in Communication with Students
- Use of ICT in Student Assessment

Module Organization

Course Activity	Workload (hours)
Lectures	39
Laboratory work	26
Field Trip/Short Individual Assignments	15
Independent Study	20
Total	100

Student Assessment Methods

- Written Exam with Multiple Choice Questions
- Written Exam with Short Answer Questions
- Written Exam with Extended Answer Questions
- Written Assignment
- Report
- Oral Exams
- Laboratory Assignment

Suggested Bibliography (Eudoxus and additional bibliography)

1. Τσουμής, Γ.(2009). Δομή και Ιδιότητες Ξύλου. Εκδόσεις Γαρταγάνης. (Κωδ. Εύδοξου 2268)
2. Τσουμής, Γ.(2009). Επιστήμη και τεχνολογία ξύλου, τόμος Β, Βιομηχανική αξιοποίηση (Κωδ. Εύδοξου 2271)
3. Dinwoodie, J.M. (1981). *Timber: its nature and behaviour*. Van Nostrand Reinhold, New York, pp: 61-63.
4. Eaton, R.A. and M.D.C. Hale. (1993). *Wood: Decay, Pests, Protection*. Chapman and Hall, London.
5. Fengel D. & G. Wegener (1984). *Wood: Chemistry, Ultrastructure and Reactions*. Walter de

Gruyter. Berlin/New York.

6. Kollman F. and W. Cote (1968). *Principles of Wood Science and Technology I. Solid Wood*. Springer-Verlag, Berlin/New York.
7. Maloney, T.M. (1993). *Modern particleboard and dry process manufacturing*. Miller Freeman Inc, San Francisco.
8. Marra, A (1992). *Technology of wood bonding: principles in practise*. New York. Van Nostrand Reinhold.
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10. Tsoumis G. (1968). *Wood as Raw Material*. Pergamon Press. New York.
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12. Walker, J.C.F. (1993). *Primary wood processing: principles and practise*. London, New York: Chapman & Hall.
13. Wood Handbook (1999). *Wood as an engineering material*. USDA Forest Service.
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