# COURSE OUTLINE

## 1. GENERAL

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| **INSTITUTION** | University of Thessaly | | |
| **SCHOOL** | School of Technology | | |
| **DEPARTMENT** | Dept. of Forestry, Wood Sciences and Design | | |
| **LEVEL** | *Undergraduate* | | |
| **CODE** | ΞΣΥ841 | **STUDENT SEMESTER** | 8th |
| **COURSE TITLE** | **Chemical Technology of Wood** | | |

| **ACTIVITIES** | **WEEKLY HRS** | **ECTS** |
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| Lectures | 3 | 5 |
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| **TYPE OF COURSE** | Compulsory (orientation: *Wood sciences & design*) |
| **PREREQUISITES:** | None |
| **LANGUAGE TEACHING AND EXAMINATION:** | Greek |
| **THE COURSE OFFERED TO STUDENTS ERASMUS** | **Yes** |
| **WEBPAGES COURSE (URL)** | http://mantanis.users.uth.gr/Chemical-technology-of-wood.pdf |

## 2. LEARNING OUTCOMES

**Learning Outcomes**

The aim of the course is the students, who are in the direction of *Wood sciences & design*, to emphasize more and learn topics related to the wood chemical technology, that is, to get educated respecting the chemical composition and structure of wood and its chemical properties.

Additional scope is to get acquainted with some important chemical technologies such as chemical and thermal modification, resin modification, pulping, adhesion, pelletisation, etc., which are applied in processes to yield valuable end products from wood via chemical or thermochemical or mechanochemical means.

**General Skills**

Upon successful completion of this course, the students will be able to develop and cultivate basic professional and social skills:

- Search, analysis and synthesis of data and information
- Autonomous work
- Respect for the natural environment
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking
- Understanding highly technological developments and their implications

## 3. COURSE CONTENT

The course focuses on issues related to:

- Chemical composition and structure of wood as a lignocellulosic material
- Isolation of wood polymeric components
- Extraction of wood – laboratory processes
- Importance of chemical characteristics of wood to end uses & material properties
- Acidity of wood and its consequences to specific processes

- Modification of wood (chemical, thermal, impregnation) and products thereof
- Hydrothermal modification of wood
- Wood adhesion and adhesives
- Pelletisation – production of wood pellets and qualities / end-product properties
- Natural products from wood extractives & uses
- Pulping of wood & derived products (pulp, paper, cardboards)

During the course, in addition to lectures:

- Case studies are used which are the subject of discussion during the lectures
- Search in the internet: Students are assigned to look up for specific modern technologies

Course lectures are supported by **videos** shown to the students regarding several industrial chemical processes. Demonstration of wood samples of end (chemical) products in the classroom.

## 4. TEACHING AND LEARNING METHODS - EVALUATION

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| **DELIVERY METHOD** | Face to face<br><br>The course is organized in one main stream:<br><br>-- Lectures, which analyze the concepts and methodologies that form the core of the course materials. |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | Use of course websites both on UTH and also on the **e-Class platform** for posting (a) notes, (b) internet links, (c) announcements, search tools and other materials |
| **MANAGEMENT OF TEACHING** | |

| ***Activity*** | ***Semester Workload*** |
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| Lectures | 40 |
| Individual homework | 30 |
| Laboratory workshops | -- |
| Individual and work study for term assignment | 55 |
| Term assignment presentation | -- |
| ***Course Total*** | ***125*** |

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| **STUDENT EVALUATION** | Student assessment is largely based on the group work done by students, while the final grade takes into account:<br><br>• the written final examination<br><br>• the outcomes of the assigned homework<br><br>• participation in course activities |

## 5. RECOMMENDED BIBLIOGRAPHY


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- Lin et al. (2020) High leach-resistant FRs for wood, http://mantanis.users.uth.gr/R2021-04.pdf