**Annex 2**
**to Order No. 646 of May 21, 2025**

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE**

Department of Technology and Design of Wood Products

**APPROVED**
Educational and Research Institute of Forestry and Landscape Park Management
"11" _06_2025

# CURRICULUM OF ACADEMIC DISCIPLINE

Current Problems of Woodworking

Area of knowledge Engineering, manufacturing and construction
Specialty G14 "Woodworking and Furniture Technologies"
Academic programme Woodworking and Furniture Technologies
Education and Research Institute of Forestry and Landscape-Park Management
Developed by: PhD Andrii Spirochkin
(position, academic degree, academic rank)

Kyiv – 2025

# **Description of the discipline** Current Problems of Woodworking

*(up to 1,000 printed characters)*

*Aim formation of students' knowledge, abilities and skills to solve production tasks using a foreign language*
*Objectives: solving the problems of manufacturing technologies: sawn products from wood of various species, value-added products, board materials, structural materials, paper, energy and residential complexes based on wood;*
*knowledge and use of English terminology in the field of woodworking and furniture production*

| **Area of knowledge, specialty, academic programme, academic degree** | | |
|---|---|---|
| Academic degree | *master's* | |
| Specialty | *G14 "Woodworking and Furniture Technologies"* | |
| Academic programme | *Woodworking and Furniture Technologies* | |
| **Characteristics of the discipline** | | |
| Type | optional | |
| Total number of hours | 90 | |
| Number of ECTS credits | 3 | |
| Number of modules | 2 | |
| Form of assessment | *exam* | |
| **Indicators of the discipline for full-time and part-time forms of university study** | | |
| | **University study** | |
| | **Full-time** | **Part-time** |
| Year of study | 1 | 1 |
| Term | 2 | 2 |
| Lectures | *15 hours* | *6 hours* |
| Practical classes and seminars | *15 hours* | *4 hours* |
| Laboratory classes | *hours* | *hours* |
| Self-study | *60 hours* | *80 hours* |
| Number of hours per week for full-time students | *2 hours* | |

1. **Aim, competences and expected learning outcomes of the discipline**

Aim formation of students' knowledge, abilities and skills to solve production tasks using a foreign language

***Competences acquired:***

Integral competence (IC):_ The ability to solve complex tasks and problems in professional, educational, scientific, research and innovation activities related to the production of woodworking products, furniture and wood products, research on wood, wood and non-wood materials, as well as research, design and implement relevant resource-saving and environmentally friendly technological processes characterized by uncertainty of conditions and requirements.

General competence (GC): GC 02 Ability to identify, pose and solve problems.

GC 03 Ability to conduct research at an appropriate level.

GC 04 The ability to generate new ideas and implement them in the form of sound innovative solutions.

GC 11 The ability to communicate in a foreign language in professional (scientific and technical) activities.

Special (professional) competence (SC): SC 2 The ability to use modern mathematical and optimization methods of research in woodworking and furniture industries to solve complex

technological problems related to the development and improvement of technological processes.
SC 5 Ability to analyze existing production processes, design and implement new efficient processes of woodworking and furniture production.
SC 7 The ability to solve engineering tasks related to special woodworking productions and the design of wooden structures.
SC 10 The ability to develop and implement measures for the use of wood residues and waste at the enterprises of the industry.
***Expected learning outcomes (ELO***): ***ELO 03*** Ability to conduct research at an appropriate level.
***ELO 07*** Conduct experimental work aimed at determining the characteristics and properties of wood, wood and non-wood materials, wood products and furniture, and develop and implement technological regimes and processes in production.
***ELO 08*** Determination and persistence in relation to assigned tasks and assumed responsibilities.

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## 2. Programme and structure of the discipline

| **Modules and topics** | **Number of hours** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **full-time** | | | | | | | **part-time** | | | | | |
| | weeks | total | including | | | | | total | including | | | | |
| | | | l | p | lab | ind. | s.st. | | l | p | lab | ind. | s.st. |
| Module 1. ***Wood Structure and Processing*** | | | | | | | | | | | | | |
| Topic 1. Wood Structure | 1,2 | 8 | 2 | 8 | | | 4 | 8 | 0,5 | 2 | | | 7 |
| Topic 2. Wood Processing | 3,4 | 8 | 2 | | | | 4 | 8 | 0,5 | | | | 7 |
| Topic 3. Furniture Manufacturing Process | 5,6 | 10 | 2 | | | | 6 | 10 | 0,5 | | | | 9 |
| Topic 4. Woodworking Equipment | 7,8 | 10 | 2 | | | | 6 | 10 | 0,5 | | | | 9 |
| Total for module 1 | 36 | | 8 | 8 | | | 20 | 36 | 2 | 2 | | | 32 |
| Module 2. ***Wood Science*** | | | | | | | | | | | | | |
| Topic 5. Development of Wood Science | 9 | 12 | 1 | 7 | | | 20 | 12 | 1 | 2 | | | 10,5 |
| Topic 6. Actual Problems of Wood Cutting | 10,11 | 14 | 2 | | | | | 14 | 1 | | | | 12,5 |
| Topic 7. Actual Problems of Wood Drying | 12,13 | 14 | 2 | | | | | 14 | 1 | | | | 12,5 |
| Topic 8. Actual Problems of Wood-Based Composite Materials Manufacturing | 14,15 | 14 | 2 | | | | 20 | 14 | 1 | | | | 12,5 |
| Total for module 2 | 54 | | 7 | 7 | | | 40 | 54 | 4 | 2 | | | 48 |
| Total hours | 90 | | 15 | 15 | | | 60 | 90 | 6 | 4 | | | 80 |

## 3. Topics of lectures

| No. | Topic | Hours |
|---|---|---|
| 1 | Topic 1. Wood Structure | 2 |
| 2 | Topic 2. Wood Processing | 2 |

| | | |
|---|---|---|
| 3 | Topic 3. Furniture Manufacturing Process | 2 |
| 4 | Topic 4. Woodworking Equipment | 2 |
| 5 | Topic 5. Development of Wood Science | 1 |
| 6 | Topic 6. Actual Problems of Wood Cutting | 2 |
| 7 | Topic 7. Actual Problems of Wood Drying | 2 |
| 8 | Topic 8. Actual Problems of Wood-Based Composite Materials Manufacturing | 2 |

## 4. Topic of practical classes

| No. | Topic | Hours |
|---|---|---|
| 1 | Study of English terms in the field of woodworking and furniture production | 8 |
| 2 | Analysis of current research in woodworking and furniture technologies | 7 |

## 5. Topics of self-study

| No. | Topic | Hours |
|---|---|---|
| 1 | Microscopic structure of wood | 4 |
| 2 | Macroscopic structure of wood | 4 |
| 3 | Materials in woodworking and furniture production | 6 |
| 4 | Woodworking machines | 6 |
| 5 | Scientists in woodworking | 20 |
| 6 | Current research in woodworking and furniture technologies | 20 |

## 6. Methods of assessing expected learning outcomes:

***(select necessary or add)***

- oral or written survey;
- interview;
- test;
- defending practical works, projects.

## *7.* Teaching methods *(select necessary or add):*

- problem-based method;
- practice oriented studying method;
- learning discussions and debates method;
- team work, brainstorm method.

## 8. Results assessment.

The student's knowledge is assessed by means of a 100-point scale converted into the national grades according to the "Exam and Credit Regulations at NULES of Ukraine" in force

### 8.1. Distribution of points by types of educational activities

| Educational activity | Results | Assessment |
|---|---|---|
| Module 1. **Wood Structure and Processing** | | |
| practical work 1. | To know the structure of wood, how the tree makes wood, the furniture manufacturing process, different types of machines used<br>To be able to speak about the main elements in the wood structure and equipment used in the furniture manufacturing process | **30** |
| Module control work 1. | | **70** |
| **Total for module 1** | | **100** |
| Module 2. **Wood Science** | | |
| practical work 2. | To know the actual problems of the | **30** |

| | | |
|---|---|---|
| Module control work 2. | woodworking processes<br>To be able to speak about current scientific research in woodworking technologies, to find scientific publications dealing with current problems of woodworking | **70** |
| **Total for module 2** | | **100** |
| **Class work** | | **(M1 + M2)/2*0,7 ≤ 70** |
| **Exam/credit** | | **30** |
| **Total for year** | | **(Class work + exam) ≤ 100** |

## 8.2. Scale for assessing student's knowledge

| Student's rating, points | National grading (exam/credits) |
|---|---|
| 90-100 | excellent |
| 74-89 | good |
| 60-73 | satisfactory |
| 0-59 | unsatisfactory |

## 8.3. Assessment policy

| | |
|---|---|
| ***Deadlines and exam retaking rules*** | *EXAMPLE:* works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g. a sick leave). |
| ***Academic integrity rules*** | *EXAMPLE:* cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used |
| **Attendance rules** | *EXAMPLE:* Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean's consent) |

## 9. Teaching and learning aids:

- e-learning course of the discipline https://elearn.nubip.edu.ua/course/view.php?id=4604;
- lectures and presentations (in electronic form);
- guidelines for studying a discipline by full-time and part-time students.

## 10. Recommended sources of information


1. *Borg Madsen P. Structural Behavior of Timber. Timber Engineering LTD, North Vancouver, 1992, 405 p.*
2. *General Technical Report. Wood Handbook. Wood as an Engineering Material. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, 2010, 508 p.*
3. *Dry Kiln Operator's Manual. Agricultural Handbook # 188. Department of Agriculture, Forest Service, Forest Products Laboratory, 1991, 274 p.*
4. *Бехта П.А., Бехта І.А. Англо-український українсько-англійський словник деревообробної промисловості. – Київ: Основа, 2003. – 634 с.*
5. *Adkins, Miles. Woodworking for Beginners: An Essential Guide to Learn the Art of Woodworking, Its Processes and How to Produce Incredible DIY Projects. N.p., Independently Published, 2020, 102 p*