

CIRCULAR ECONOMY PRINCIPLES IN FURNITURE MANUFACTURING

Department of Technology and Design of Wood Products

Educational and Research Institute of Forestry and

Landscape-Park Management

Lecturer:	Vasyl V. Lomaha
Semester:	2
Degree level:	Master's
ECTS Credits:	3
Form of assessment:	Exam
Contact hours:	30 (15 hours of lectures, 15 hours of practical classes)
Self-study:	60 hours

General Course Description

The course "Circular Economy Principles in Furniture Manufacturing" aims to prepare specialists capable of leading the transition of furniture enterprises from linear production systems toward circular and sustainable business models. Students will gain knowledge and practical skills for implementing circular economy strategies in furniture companies, including waste reduction, optimization of material and energy consumption, utilization of secondary wood resources, recycling technologies, sustainable production planning, and innovation in business models.

The course develops students' ability to analyze manufacturing processes, identify waste generation points, assess resource efficiency, apply Life Cycle Thinking principles, and develop strategies for circular transformation at company, industrial network, and territorial levels.

Lecture Topics

1. Circular Economy: Concepts, Principles and Transition from Linear Economy.
2. Sustainable Development in the Furniture Industry: Strategies and Criteria.

3. Resource Efficiency and Waste Reduction in Furniture Manufacturing.
4. Production Planning and Optimization of Mechanical Processing.
5. Waste Management Hierarchy and Capitalization of Secondary Wooden Resources.
6. Circular Design and Life Cycle Thinking (LCA, European Legislative Context).
7. Digitalization, Industry 4.0 and Digital Twins in Circular Furniture Production.
8. Circular Business Models and Strategy Development.

Practical Training Topics

1. Process Mapping and Identification of Waste in Furniture Production.
2. Assessment of Resource Efficiency in a Furniture Company.
3. Analysis of Production Waste: Types, Causes and Reduction Methods.
4. Evaluation of Circularity Potential at Enterprise Level.
5. Business Model Analysis of Furniture Enterprises.
6. Development of Circular Economy Strategy and Implementation Plan.