CLOSE-TO-NATURE AND CLIMATE-SMART SILVICULTURE

Department of Silviculture

Educational and Research Institute of Forestry and Landscape-Park Management

Lecturer:	Oleksandr Soshenskyi
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 «Close-to-Nature and Climate-Smart Silviculture» aims to train specialists capable of implementing sustainable forest management practices and adapting forests to climate change. Students will gain comprehensive knowledge of multifunctional forestry, continuous cover forestry principles, natural regeneration processes, and the transformation of even-aged into mixed, uneven-aged stands. The course addresses forest management approaches that maintain ecosystem resilience, preserve biodiversity, and ensure forest ecosystem services under changing climatic conditions, with a focus on the Ukrainian context and European best practices.

Course objectives: studying the principles of close-to-nature silviculture in sustainable forest management; analysing natural regeneration processes and the structure and dynamics of primeval forests; mastering methods for transforming even-aged stands into mixed uneven-aged forests; examining international experience across European countries; assessing prerequisites for implementing close-to-nature silviculture in Ukraine; understanding tree adaptation strategies under climate-smart silviculture; and

applying practical approaches including marteloscope training and virtual reality tools.

Lecture Topics

1. Principles and concepts of close-to-nature silviculture.
2. Natural regeneration as the basis of close-to-nature forest management.
3. Old-growth and primeval forests as a reference model for close-to-nature silviculture.
4. Stand conversion towards close-to-nature forest structures.
5. European experience in stand conversion and transformation fellings.
6. Ecological, economic, technological, and legal prerequisites for implementing close-to-nature silviculture in Ukraine.
7. Stress tolerance and adaptation mechanisms of woody plants in climate-smart silviculture.

Practical Class Topics

1. Natural regeneration assessment in mixed and pure forest stands.
2. Survey and description of old-growth and primeval forests.
3. Conversion towards close-to-nature forest structures.
4. Tree stress tolerance and adaptation mechanisms in the context of climate-smart silviculture.
5. Tree marking training for transformation fellings and record sheet preparation.