FOREST PHYTOMASS ESTIMATION BY GROUND AND REMOTE METHODS

Department of Forest Mensuration and Forest Management

Educational and Research Institute of Forestry and Landscape-Park Management

Lecturer:	Viktor Myroniuk, Roman Vasylyshyn
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

This course equips students with essential methodologies for assessing forest phytomass through integrated ground-based and remote sensing approaches. Participants gain practical skills in data collection, modeling, and analysis to quantify biomass at tree, stand, and regional scales while exploring its role in ecosystem dynamics and carbon cycling. Through lectures and hands-on exercises, students learn to leverage satellite imagery, spectral analysis, and online processing tools for accurate, scalable forest monitoring. By course end, learners can independently design phytomass inventories, validate remote sensing models against ground truth, and contribute to sustainable forestry research – skills directly applicable to Ukraine's forest monitoring needs amid environmental challenges.

Lecture Topics

1. Field methods for estimating forest stand phytomass.
2. Phytomass of trees and forest stands.
3. Mathematical modeling of forest phytomass.

4. Phytomass and forest ecosystem functions.
5. Fundamentals of remote sensing for forest phytomass estimation.
6. Spectral properties of forest stands and phytomass quantification.
7. Methods of image interpretation.
8. Online platforms for remote sensing data processing.

Practical Class Topics

1. Preparing data for phytomass calculations.
2. Calculating phytomass for individual trees.
3. Calculating phytomass for forest stands.
4. Satellite imagery acquisition and visualization.
5. Data processing using online services.
6. Calculating vegetation indices.
7. Interpreting and estimating stand phytomass from imagery.