

ACADEMIC YEAR: 2018-2019

COURSE: Forest Mensuration

TYPE OF EDUCATIONAL ACTIVITY:

TEACHER: Nicola Moretti

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Language: Italian

ECTS: (lessons / tutorials/practice): 6 (5 frontal lectures; 1 practice)	n. of hours: 40 hours lectures 16 hours practice	Campus: Potenza School: SAFE Program: LM Forest and Environmental Sciences	Semester: II
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EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course aims to provide students with a framework of knowledge about the theoretical and practical principles of methods used for volume estimation of single trees, entire forests and harvested wood products, useful for management of forest resources. In addition the course aims in providing knowledge on main instruments used for measuring standing trees and felled trunks. This framework of knowledge will be functional and complementary to the topics covered by the Ecology and Dasonometry course.

- **Knowledge and understanding:** Knowledge and ability to understand the techniques used for measuring the trees and methods employed to estimate the volume of single tree and forest stands.
- **Applying knowledge and understanding:** at the end of the course students will be able to carry out dendrometric measurements in forest stands, to analyze and calculate the volume of standing and felled trees.
- **Making judgements:** ability to choose the most suitable forestry tools to measure trees; ability to identify the most suitable methodologies for estimating and calculating the volume of forest stands.
- **Communication skills:** ability to communicate the issues highlighted during the course using a correct language and IT resources.
- **Learning skills:** ability to collect and organize information received during the lesson or obtained by the suggested books and by the available literature.

PREREQUIREMENTS

- knowledge of physics and forest botany

SYLLABUS

ECTS-1:

Basic principle of forest biometry. Techniques employed for measuring the main dendrometric parameters: general information, principles and methods of application. Instruments and errors linked to measurements: study cases analysis.

ECTS-2

Tree structure: shape and tree size. The tree shape indexes. Tree biomass: characteristics and allometry. Volume estimation of standing trees and timbers in the stack: study cases analysis.

ECTS-3:

Forest structure, composition and density: 3-D Stand Visualization Program. Forest surveying methods and techniques: sample areas, caliper tree measurements and virtual testing areas. Main dendrometric parameters to measure by sampling methods.

ECTS-4:

Tree volume estimation in forest: theoretical aspects. Selection of the suitable methods for tree volume estimation: study cases analysis. Direct and easy volume estimation.

ECTS-5:

Core bore methods, woody trunks and core reading analysis. Main parameters measurable from wood material. Density and structure of the wood. Measurements of the main anatomical characteristics of the wood.

ECTS-6 (Practice in field and laboratory):

To acquire knowledge of techniques suitable to identify sample plots, and delimitation of sampling plots in forest, diameters and heights measurements. Data evaluation of measured dendro-auxometric variables. Use of volume log scales and softwares for data processing. Woody trunks and cores reading analysis.

TEACHING METHODS

Students could deepen into the different topics covered during the course through practical field sampling. During practices students will be asked to calculate volume of stands in measured plots.

EVALUATION METHODS

Oral examination and Discussion of the project works.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- Paci M. (2004) *Ecologia forestale*. Edagricole, Bologna.
Piussi P (1994) *Selvicoltura generale*. UTET, Torino.
La Marca O., (2004). *Elementi di dendrometria*. 2^a edizione, Patron Editore, Bologna.
Slides from lessons.

INTERACTIONS WITH STUDENTS

- in the office at planned days/hours
- e-mail

EXAMINATION SESSIONS (Forecast)

Usually the third Tuesday of every month (except August). See on the web site <https://unibas.esse3.cineca.it/Home.do>

EXAMINATION BOARD

Nicola Moretti
Francesco Ripullone
Agostino Ferrara
Luigi Todaro

SEMINARS BY EXTERNAL EXPERTS YES
