

4.0 credits	30.0 h + 22.5 h	2q
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Teacher(s) :	Ponette Quentin ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	iCampus
Prerequisites :	Supplementary courses: The course focuses on ground-based assessment methods. Air-borne methods for natural resource assessment are developed in the courses of geomatics, surveying and photogrammetry.
Main themes :	1. Main concepts: - Definitions, interest, measurement and / or estimation of static characteristics of trees (e.g. diameters, heights, volumes, tree form) and stands (e.g. distributions, density and stocking, productivity and site quality); - Growth of trees and stands: concepts, estimation, production tables, modeling principles; - Complete inventory and sampling methods: (i) basic concepts of sampling, (ii) sampling units, (iii) programming, implementation and processing of inventory results, (iv) inventory methods (e.g. systematic inventory, simple random sampling, point sampling, stratified random sampling, single-stage cluster sampling, double sampling).
Aims :	a. Contribution de l'activité au référentiel AA (AA du programme) M1.1, M1.2, M1.4, M2.1, M2.2, M2.4, M3.5, M3.6, M3.7, M3.8, M6.2, M6.5, M6.8,  b. Formulation spécifique pour cette activité des AA du programme At the end of this course, the student: - knows the principles of operation of the main dendrometric instruments and is able to use them appropriately in the field; - knows how to characterize the trees and stands in terms of stocking and growth; - is able to understand the dynamics of forest stands and to formalize the factors involved in a quantitative way; - knows the main 'tools' used to characterize the growing stock (individual tree, stand) ; is able to use existing tools appropriately, and to build them from raw data; - knows and understands the main methods used to estimate the growth of trees and stands ; is capable to use them in a management context; - knows the principles of sampling and is able to establish appropriate sampling strategies to address a management issue related to forestry, forest management and planning; - is able to formalize and synthesize a forest mensuration analysis in a technical report respecting scientific rigor; <i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Evaluation methods :	- written examination and evaluation of the report.
Teaching methods :	- lectures, including concrete examples, case studies and exercises - realization of a mini-project involving the acquisition of field measurements, a computer-aided processing and the writing of an argued report. This report is illustrated with graphs and tables.
Content :	1. Table of contents Volume of trees - volumes and biomasses - stem form assessment - stem form and volume - log rules - volume tables Tree size and height - tree size concepts measurement - heights concepts measurement Characterization of growing stock - mean characteristics: size, heights, volumes - cumulative variables: basal area, volumes - distributions

	<p>- relationships between dendrometric characteristics  dominant height ' age - site fertility  total height ' size - age  Growth of trees and stands  - tree growth  size (circumference, radius, diameter, basal area), height and volume increment  stem analysis  - stand growth  repeated stand inventories  increment core method  applications  - introduction to growth models  Inventories  - fundamentals of sampling  context  variables, scales, units  populations and samples  sampling  types of estimators and tree/plot factors  - sampling units  types of sampling units  comparison between sampling units  sampling units over time and space  - simple random sampling and systematic sampling  simple random sampling  systematic sampling  - point sampling  point sampling in practice  estimators  sample size  - stratified random sampling  definition and interests  estimators  sample size and allocation of sampling units  - single- and multi-stage sampling  definition, interests and limitations  single stage or cluster sampling  two-stage cluster sampling  - double sampling  principles  applications</p> <p>2. Additional information  This course consists of two modules:  - Module 1 (30h): Theoretical course - 14 sessions of 2 hours on the methods of measurement and sampling as well as on the main instruments used for the quantification of trees and forest stands.  - Module 2 (22.5 h): The principles studied in theoretical courses are implemented in the form of a mini-project involving the acquisition of field measurements and their computer-aided processing.</p>
<p><b>Bibliography :</b></p>	<p>- compulsory material (power point slides, transparencies, reference documents) are made available to the student on iCampus;  - for more information, students may usefully consult the following references:  Rondeux, J. 1999. La mesure des arbres et des peuplements forestiers. Les Presses Agronomiques de Gembloux, Gembloux, Belgique, 521 p.  Shiver, B.D., Borders, B.E. 1996. Sampling techniques for forest resource inventory. John Wiley &amp; Sons, New York, USA, 356 p.</p>
<p><b>Cycle and year of study :</b></p>	<p><a href="#">&gt; Master [120] in Forests and Natural Areas Engineering</a></p>
<p><b>Faculty or entity in charge:</b></p>	<p>AGRO</p>