

Teacher(s)	Ponette Quentin ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	Prerequisite: introductory course in forestry, ecology, plant physiology, systematic botany. Supplementary courses: forest valuation and economics, wood science, forest mensuration, forest management, forest tour
Main themes	1. Main concepts: <ul style="list-style-type: none"> - context, tags and constraints: time, cost, types of ownerships and owners, stand and ecosystem stability, wood quality; - evenaged monospecific stands: installation, education / stem formation, growth, regeneration; - complex stands: conversion and transformation, selection system, treatment of irregular and / or mixed-species stands; - dendrology: identification and ecology of the main tree species used for silviculture in temperate Europe; - compared applied silvicultures: optimizing silvicultural prescriptions according to the species (biological and ecological characteristics, wood properties), eco-climatic conditions and techno-economic context (e.g. public forests, private forests.).
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>a. <u>Contribution de l'activité au référentiel AA (AA du programme)</u> M1.1, M1.2, M2.1, M2.2, M4.5, M4.6, M4.7, M6.1, M6.2, M6.5, M6.8</p> <p>b. <u>Formulation spécifique pour cette activité des AA du programme</u> At the end of this activity, the student is able to:</p> <p>1</p> <ul style="list-style-type: none"> - identify the main forest tree species observed in temperate Europe, to determine their taxonomic position and know their ecology; - carry out an ecological and techno-economic stand assessment; on this basis, to establish a detailed and argued silvicultural proposal and write it in the form of an expertise-type report; - establish silvicultural prescriptions for monospecific even-aged stands, with species of contrasting characteristics and in diverse techno-economic contexts; - describe complex stands, understand their dynamics and manage them using current management tools.
Evaluation methods	<ul style="list-style-type: none"> - written closed-book examination (50%); - oral examination on the identification, systematics and autecology of tree species (25%); - individual project report (25%).
Teaching methods	<ul style="list-style-type: none"> - lectures including practical examples; - seminars by stakeholders from the socio-professional sphere; - mini-project focused on combined site-stand assessment, and related silvicultural prescriptions; - training to tree marking in a marteloscope; - practical field and laboratory work dedicated to the identification of tree species; - reading and analysis of technical texts/manuals in groups of students; - thematic field excursions on regeneration, as well as on hardwoods and conifers silvicultures.
Content	<p>a. Table of contents</p> <p>Part I - Principles</p> <ul style="list-style-type: none"> - silvicultural systems - guidelines: socio-economic function; ecological function; multifunctionality; risk management - integrated assessment of sites and stands: principles; forest site quality assessment; stand description and analysis; stand classification <p>Part II - Silvicultural interventions in evenaged stands</p> <ul style="list-style-type: none"> - silvicultural cycle and stages - regeneration stage: objectives and timetable; installation vs qualification; adapting to species and environmental conditions; natural vs artificial regeneration

	<p>- thinning stage: modalities; definition of objectives and selection criteria; tools, guidelines and references; practice of thinnings</p> <p>- early stand management: form pruning and artificial pruning</p> <p>- regeneration methods: concepts; modes of action; typology of regeneration methods</p> <p>Part III - Silviculture of complex stands</p> <p>- description and assessment : components, stand typology</p> <p>- functioning: basic principles; growth and canopy position; ingrowth and regeneration; stationarity</p> <p>- management and stocking control: the de Liocourt model - advantages and limitations; selection system; control; adapting to species and environmental conditions</p> <p>b. Additional informations</p> <p>This course is organized in the form of five interconnected modules.</p> <p>- Module 1: lectures and seminars - 14 sessions of 2 hours on the establishment, management and transformation of forest stands of contrasting structures and species compositions;</p> <p>- Module 2: excursions - three 1-day field trips devoted to the regeneration of stands, to the silvicultures of hardwoods and to the silvicultures of conifers, respectively;</p> <p>- Module 3: tree marking - initiation to tree marking in irregular stands in a marteloscope;</p> <p>- Module 4: project - integrated site quality - stand assessment, and silvicultural prescriptions;</p> <p>- Module 5: dendrology - five 4-hour sessions and one half-day trip in an arboretum to identify and learn the ecological characteristics of the main species of gymnosperms and angiosperms used for silvicultural purposes in temperate Europe.</p>
<p>Inline resources</p>	<p>Moodle http://www.biologievegetale.be</p>
<p>Bibliography</p>	<p>Les supports de cours obligatoires (diapositives power point, documents de référence) sont mis à disposition de l'étudiant sur Moodle. En outre, le module 5 s'appuie sur un support web interactif consultable à l'adresse : http://www.biologievegetale.be</p> <p>Pour en savoir plus, l'étudiant pourra consulter utilement les ouvrages de référence suivants :</p> <p>- Balleux, P., Van Lerberghe, P. 2006. Guide technique pour des travaux forestiers de qualité. Ministère de la Région Wallonne, DGRNE-DNF, Fiche technique n°17. Namur, Belgique, 373 p.</p> <p>- Bastien, Y., Gauberville, C. (coord.). 2011. Vocabulaire forestier. Ecologie, gestion et conservation des espaces boisés. IDF, Paris, France, 554 p. + annexes</p> <p>- Nyland, R.D. 2002. Silviculture : concepts and applications. 2nd ed. McGraw-Hill, USA, 682 p.</p> <p>- Schütz, J.-P. 1990. Sylviculture 1. Principes d'éducation des forêts. Presses polytechniques et universitaires romandes, Lausanne, Suisse, 243 p.</p> <p>- Schütz, J.-P., 1997. Sylviculture 2. La gestion des forêts irrégulières et mélangées. Presses polytechniques et universitaires romandes, Lausanne, Suisse, 178 p.</p> <p>- Smith, D.M., Larson, B.C., Kelty, M.J., Ashton, P.M.S. 1996. The practice of silviculture: applied forest ecology. 9th ed. John Wiley & Sons, New York, USA</p>
<p>Other infos</p>	<p>This course can be given in English.</p>
<p>Faculty or entity in charge</p>	<p>AGRO</p>

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Forests and Natural Areas Engineering	BIRF2M	6		