

6.0 credits	37.5 h + 22.5 h	2q
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Teacher(s) :	Vincke Caroline ; Jacquemart Anne-Laure ; Ponette Quentin (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<ul style="list-style-type: none"> <li>- biogeochemistry of forested ecosystems: carbon, biomass and productivity, water, nutrients;</li> <li>- environmental factors (resources, controllers): targets and impacts on trees and stands;</li> <li>- abiotic stressors: reactivity of trees and stands;</li> <li>- site characterization: risks, constraints, potentialities;</li> <li>- forest diebacks (case studies): process identification, integrated protection strategies;</li> <li>- fundamentals of vegetation analysis: concepts and principles of phytosociology, vegetation data collection and analysis, determinants of vegetation assemblages and dynamics;</li> <li>- phyto-ecology: indicator values of species; demography, reproduction, dispersal.</li> </ul>
Aims :	<p>This course aims at providing students with the competences in ecology necessary for an integrated and sustainable management of semi natural ecosystems - either forested, semi-open or open, in a changing environment.</p> <p>By the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>- identify the main site constraints and potentials, so as to establish tree species in suitable sites and to manage them with appropriate methods;</li> <li>- assess the abiotic risks within a given spatio-temporal context, and to propose appropriate management options;</li> <li>- to diagnose dieback causes and to identify technical measures to mitigate or correct the impacts;</li> <li>- to analyze and interpret vegetation patterns based on in depth ecological understanding.</li> </ul> <p><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></p>
Content :	<p>This course is made of four modules.</p> <p>Module 1 (15h): Fundamentals of vegetation analysis and phyto-ecology - 7 2-hour sessions (theoretical courses and seminars on more applied themes);</p> <p>Module 2 (22.5h): Practical exercises in phytosociology - 2 one-day excursions (a third one is shared with the course 'Applied soil sciences' - BIRE2104), a lab devoted to statistical analysis of vegetation samples;</p> <p>Module 3 (18h): Site evaluation, biogeochemistry of forested ecosystems, tree ecophysiology - 9 2-hour sessions;</p> <p>Module 4 (4h): Case studies.</p>
Other infos :	<p>Precursory courses : Introductory course in silviculture, ecology, plant physiology, botanics, plant taxonomy.</p> <p>Supplemental courses : Silviculture, forest mensuration, forest management and planning, wildlife ecology and management.</p> <p>Evaluation : Oral and written examination, report based on the personal work.</p> <p>Support : Lecture notes, slides, web site icampus.</p> <p>Recommended readings : Barnes, B.V., Zak, D.R., Denton, S.R., Spurr, S.H., 1998. Forest ecology. 4th ed. John Wiley &amp; Sons, New York, USA, 774 p.                  Bazzaz, F.A. 1996. Plants in changing environments. Linking physiological, population, and community ecology. Cambridge University Press, Cambridge, UK, 320 p.                  Chapin III, F.S., Matson, P.A., Mooney, H.A. 2002. Principles of terrestrial ecosystem ecology. Springer, New York, USA, 436 p.                  Fisher, R.F., Binkley, D. 2000. Ecology and management of forest soils. 3rd ed. Wiley, New York, 489 p.                  Kimmins, J.-P., 1997. Forest ecology. A foundation for sustainable management. 2nd ed. Prentice Hall, Upper Saddle River, USA, 596 p.                  Lambers, H., Chapin III, F.S., Pons, T.L. 2000. Plant physiological ecology. Corrected 2nd printing. Springer, New York, 540 p.                  Larcher, W. 2003. Physiological plant ecology. Ecophysiology and stress physiology of functional groups. 4th ed. Springer, Berlin, 513 p.</p> <p>Teaching team : Professor and invited speakers for lectures; Professor, assistant and technician for field excursions and labs.</p> <p>Miscellaneous : Modules 1 and 2 (15h + 22.5h) constitute a mandatory 4-credit course entitled 'Forest ecology and phytosociology, partim phytosociology' for students of option S5E (Land development) within the master in environmental bioengineering.</p>
Cycle and year of study :	<a href="#">&gt; Master [120] in Forests and Natural Areas Engineering</a>

Faculty or entity in charge:	AGRO
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