UCLouvain	lbirf2201 2022	Principes d'économie et de génie forestier

3.00 credits	37.5 h	Q2

Teacher(s)	Bemelmans Valéry (compensates Vincke Caroline) ;Jonard Mathieu ;Vincke Caroline (coordinator) ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	Subjects / titles of prerequisite courses: Introduction to forest sciences
Main themes	Main concepts: Forest economics: - Valuation of forest based on net present value concept knowing the timing of expenditures and revenues; - Optimization of forest management based on profitability criteria (including the internal rate of return); - Formation of timber prices on the market; - Estimation of the value of non-market forest goods and services; Forest engineering: - Advantages and constraints of logging systems and wood skidding, protection of soils form compaction, wood transportation.
Learning outcomes	**At the end of this learning unit, the student is able to :** a. Contribution of the activity to the AA referential (AA of the program) 2.1 2.2 2.4 2.5 5.1 5.4 5.5 5.6 6.2 6.5 6.6 6.7 At the end of this course, the student should be able to : - Identify the main actors in forest economics (wood industry) and explain their respective interdependence and their regional and international role ; - Calculate the market value of a tree or a stand according to various methods ; - Calculate the net present value of a tree plantation based on the timing of expenditures and revenues ; - Briefly describe several methods for assessing non-market values of forests and propose a practical implementation in a particular case ; - Compare the profitability of different management scenarios (or investments) using appropriate criteria depending on the objectives assigned to the forest; - Specify how the tax and legal constraints affect the profitability of forestry investments and mention the uncertainties potentially affecting this profitability; - Estimate the value of a forest ownership or the indemnity associated to a damage caused to the forest based on a brief description of it, write a report justifying how the value was obtained, orally present and defend the report ; - Contribute to formulation of relevant forest policies in order to answer to social demands for forest good and services; - Understand the functioning of the international forest regime and of international strategies related to conservation and use of natural resources and be able to interpret factors influencing forest policies; - Position his/her activity as future manager of natural patrimony in the legislative and institutional framework of Wallonia and the international forest regime; - Summarize and present main legislative and institutional instruments implemented in Wallonia in the framework of forest policy; - Exercise critical thinking in order to identify strengths, weaknesses, threats and opportunities associated with these different instruments.
Evaluation methods	Regarding forest economics, students are evaluated on a 2-hour written examination (theoretical questions + problem solving). For the "Forest Engineering" part, the evaluation is carried out on the basis of a 1-hour written examination (theoretical questions and problem solving). The final score of the exam is calculated based on weighted mean of the scores of both parts (in proportion to the numbers of credits), excepted in the following situation: if the score of one of the parts is below or equal to 8/20, then the final score of the exam is this score, no matter the degree of success of the other part of the course.

Teaching methods	The lectures are interspersed with small exercises or issues involving the notions previously presented in the course. In addition, students are encouraged to interact with the professors and with external stakeholders.
	Regarding forest economics, students have to carry out a project and to make a report and an oral presentation. The objective is to put the students in a situation commonly encountered by foresters.
	For the "Forest Engineering" part, 4 hours of seminars will be given by a forestry expert, in the hours reserved for this course on schedule. No excursions are planned but some aspects of this course will be illustrated in the Silviculture and "Tournée forestière" classes.
Content	1. Contents
	1.1 Forest Economics
	1.1.1 Introduction : wood sector & ecological transition
	1.1.2 Stakeholders in the wood sector
	1.1.3 Forest goods and services (market and non-market)
	1.1.4 Calculation of the net present value of a forest stand
	1.1.5 Value of a forest property
	1.1.6 Optimization criteria and indicators of forest management according to the owner's objectives
	1.1.7 Timber market
	1.1.8 Accounting for the uncertainties in economic calculations
	1.1.9 Subsidies, taxation and compliance with legislation
	1.1.10 Forest expertise
	1.2 Forest Engineering
	1.2.1 Forest harvesting systems
	1.2.2 Manual and mechanized felling and associated operations: machinery, methods, advantages / disadvantages
	1.2.3 Logs removal:
	- Skidding, cableways, horse: machinery, accessories, conditions of use,efforts
	- Selection criteria (field conditions, hardwood / softwood etc.)
	- Forest roads
	- Other service roads (compartmentalisation of exploitation etc.)
	- Machinery / soil interactions: risks, solutions
	1.2.4 Timber transport: road, rail, inland waterways
	1.2.5 Forest works: soil preparation, afforestation and reforestation, protection ...
	2. Complementary explanations (if needed)
Bibliography	• Economie forestière : présentation ppt et syllabus mis à disposition dans Moodle. Les présentations ppt servant de support au cours magistral sont mises disposition des étudiants un jour ou deux avant le cours.
	Pour la partie "Génie forestier", les supports utiles au cours sont disponibles sur le site Moodle 1 jour ou 2 avant le cours en question.
Other infos	This course is given in French.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Forests and Natural Areas Engineering	BIRF2M	3		🔍