Faculty of Biological, Agronomic and Environmental Engineering

BIR1343 Economy of natural resources and the environment

[37.5h+7.5h exercises] 3.5 credits

This course is taught in the 2nd semester

Teacher(s):	Frédéric Gaspart
Language:	French
Level:	First cycle

Aims

The objective of this course is to familiarize the students with the economic analysis applied to the management of the environment and natural resources. It is centered on a microeconomic approach to the optimal management of the natural resources and the environment. Economic models are used to analyze the efficiency of the market's allocation and the different instruments which the public decision makers dispose of. Project evaluation methods and the models of natural resources' management are presented. At the end of the course, the students will have acquired a basis allowing them to analyze environmental problems and policies inform an economic point of view. The students will have to master the concepts of opportunity costs in the political or private decision making and the importance of discounting of future costs and benefits.

Main themes

In the first part, the course presents and discusses the theoretic fundamentals, necessary to apprehend the questions of environment and natural resources conservation and management (theory of the social welfare and of efficiency, public goods and externalities, property rights and cost-benefit analysis.)
In the second part, the course presents and compares 1) the most common evaluation methods of damages and benefits to the environment and 2) the economical and statutory instruments of the environmental politics (standards, taxes, subsidies, tradable pollution permits.)
In the third apart, the course approaches the questions of optimal resource allocation, distinguishing the renewable from the exhaustible resources.
The course concludes on questions of sustainable development. Case studies, examples and exercises are used to illustrate the concepts and the methods studied.

Content and teaching methods

Summary: content and methods
1. Individual choice in a finite set and in a vectorial space under budget constraint, properties of individual demands, behaviour of a private firm
2. General equilibrium: one consumer and one firm, Edgeworth box ; fundamental theorem of welfare economics
3. Competitive models with unilateral pollution (Pigou), renewable resources ("Easter Island") and non-renewable (Hoteling's rule)
4. Strategic models of public goods, reciprocal pollution, Tragedy of the Commons
Every three courses, students are given a few exercises in order to consolidate previously studied topics and to explore topics to be studied shortly. These exercises must be solved individually in ten days of time and are solved later in class.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Precursory courses : BIR 1241 'Economie politique et sociale', BIR 1342 'Economie rurale' or a course of micro-economics
Supplemental courses : BAPA 2203 'Recherche opérationnelle en agriculture' or a course of environmental economics
Evaluation : at the end of the course, written examination
Support : Lecture notes, text book, personal notes and overhead slides
Teaching team : teacher + assistant
Miscellaneous : The course is given in two parts: 7.5h of revision of micro- and welfare economics and 30h of natural resource and environmental economics. The course is followed by practical exercises covering case studies and the application of microeconomic tools.

Other credits in programs

BIR13BA/A	Troisième année de bachelier en sciences de l'ingénieur, orientation bioingénieur (option : agronomie)	(3.5 credits)	Mandatory
BIR13BA/E	Troisième année de bachelier en sciences de l'ingénieur, orientation bioingénieur (option : environnement)	(3.5 credits)	Mandatory
BIR22/8A	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences agronomiques (Intégrée, productions animales, végétales & économie)	(3.5 credits)	
ECOS3DS	Diplôme d'études spécialisées en économie et sociologie rurales	(4 credits)	Mandatory
ENVI3DS/1	Diplôme d'études spécialisées en science et gestion de l'environnement (Industrie et environnement)	(3.5 credits)	Mandatory
ENVI3DS/2	Diplôme d'études spécialisées en science et gestion de l'environnement (Agriculture et environnement)	(3.5 credits)	Mandatory
ENVI3DS/3	Diplôme d'études spécialisées en science et gestion de l'environnement (Gestion de l'espace et environnement)	(3.5 credits)	Mandatory
ENVI3DS/4	Diplôme d'études spécialisées en science et gestion de l'environnement (Administration publique, environnement)	(3.5 credits)	Mandatory
ENVI3DS/5	Diplôme d'études spécialisées en science et gestion de l'environnement (Santé et environnement)	(3.5 credits)	Mandatory
ENVI3DS/6	Diplôme d'études spécialisées en science et gestion de l'environnement (Science et environnement)	(3.5 credits)	Mandatory
GEOG22	Deuxième licence en sciences géographiques	(3.5 credits)	
SC3DA/G	Diplôme d'études approfondies en sciences (Géographie)	(3.5 credits)	