Environmental impact analysis and management

Lecturer
Wouter ACHTEN (Coordinator)

Course mnemonic
ENVI-F452

ECTS credits
5 credits

Language(s) of instruction
English and French

Course period
First term

Course content

- General overview of environmental assessment and management concepts, tools, methods, ...
- Environmental management systems – ISO 14001 & EMAS
- Eco-innovation, cleaner production, life cycle thinking, industrial ecology, cradle-to-cradle.
- Corporate Social Responsibility – ISO 26000
- Environmental / Sustainability indicators
- Principles, Criteria & Indicators
- Material and Energy flow analyses
- Life cycle assessment and footprint
- Environmental and Strategic impact assessment
- Multi-Criteria Analysis

Objectives (and/or specific learning outcomes)

Environmental sustainability is becoming increasingly important for policy makers, entrepreneurs, consumers, research and development. All these stakeholders are confronted with sustainability questions about the developments they are creating, maintaining or supporting. Consumers want to be informed about the environmental performance of what they consume. Entrepreneurs and politicians are often confronted with their responsibilities regarding the environment. At all stages decision support regarding environmental sustainability is needed.

Therefore this course aims to acquaint students of all disciplines with commonly used concepts and tools to assess and manage environmental impacts of products, projects, organizations, strategies, policies, etc.

The objectives of this course are:

Environmental management

- To get an overview of the environmental management concepts and tools in private enterprises and public authorities.

Environmental impact assessment

- Get insight in the plurality of environmental impact assessment and management methods
- Get insight in the procedures of the different techniques. Which questions can they answer, which data is needed, which methodological choices have to be made, ...
- Get insight in strength and weaknesses, pitfalls, shortcommings, ... of the techniques

Decision support

- Acquaint with the structuring of a multi-criteria decision problem (definition of alternatives, criteria, modelling of preferences, problematics, etc.)
- Experiment with solving an original problem by using te D-SIGHT WEB platform (using visual and interactive tools, sensitivity and robustness analyses, multi-decision-taker aspects, etc.)

Aimed competences

After taking this course the students should be able to:

1) advice on suitable concepts, tools and techniques for a given environmental impact assessment and management problem or question,

2) design / layout an environmental management or research approach for a given environmental impact assessment, management or decision support question,

3) critically evaluate the value of a given environmental management, impact assessment or decision support report.

Teaching method and learning activities

LANGUAGE: Ms Godart and Mr De Smet will teach in **French**, M. Achten will teach in **English** (with slides in French)

As a big part of the objectives are related with concepts and methods, a big part of the lectures will be theoretical and conceptual for which ex-cathedra lectures will be organized. However, many applications and examples will be shown, and where possible interactions, exercises (e.g online tools) or video's will be organized.

There will also be sessions where professionals and experts from the field will complement the theoretical concepts with a more practical view.

Both for the part on impact assessment methods, as on multi-criteria an interactive session with exercises will be organized

Contribution to the teaching profile

Relevant competences from the competence framework (http://smileyee-prd2.ulb.ac.be/img/ref_comp/

Master_en_sciences_et_gestion_environnement.docx) of the *Master en Science et Gestion de l'environnement*

1° Master and Use Knowledge

Acquire knowledge, contexts and specificities on the environment

Analyse the actions, instruments, reactions and strategies installed by public and private actors regarding environmental problems

Analyse the environment on the short, medium and long term, both in the past and in the future.

Bring up the content and understand the relevance of non-scientific knowledge, if it consists of profane, political or administrative knowledge regarding environmental problems.

Use knowledge to understand the environment

Accept the complexity of environmental questions and employ simplifications (frames of analysis) needed in the scientific approach towards the complexity.

Develop an approach which allows to integrate knowledge of different natures, scales, contexts and disciplines in an interdisciplinary approach which links analysis and problem solving proposals for environmental problems.

4° Become a social responsible actor

Develop critical thinking on the sense and the relevance of his/her own knowledge and competences.

References, bibliography and recommended reading

Will be communicated during the sessions and on UV

Other information

Contact(s)

Wouter Achten - wouter.achten@ulb.ac.be

Evaluation method(s)

Other

Evaluation method(s) (additional information)

Written exam for the environmental management and impact assessment part.

+ for the part on multi-criteria decision support: a written report on the solving of an original multi-criteria problem using the D-SIGHT WEB tool

If the report on the part of multi-criteria decision support is not submitted, you will have an 'absence' for that part, and consequently an absence for the whole evaluation. Without submitted report you will not have a score for the evaluation, even if you did (and passed) the written exam.

Determination of the mark (including the weighting of partial marks)

The written exam counts for 13 point out of 20:

- Knowledge questions (4/20)- Question on application of knowledge (4/20)- Question linked to the analytical capacity (5/20)

The report on he part of multi-criteria decision support counts of 7 point out of 20

Programmes

Programmes proposing this course at the faculty of Sciences

MA-BIOR | Master in Biology of Organisms and Ecology | finalité Erasmus Mundus Joint Master Degree in Tropical Biodiversity and Ecosystems - TROPIMUNDO/unit 1, MA-ENVI | Master in Environmental Science and Management | finalité Management of the environment/unit 1 and finalité Environmental Science/unit 1 and MA-IRBE | Master in Environmental Bioengineering | finalité Professional/unit 2

Programmes proposing this course at the Brussels School of Engineering

MA-IRAR | Master of science in Architecture and Engineering | finalité Professional/unit 2, MA-IRBE | Master in Environmental Bioengineering | finalité Professional/unit 2, MA-IRCB | Master of science in Biomedical Engineering | finalité Professional/unit 2, MA-IRCN | Master of science in Civil Engineering | finalité Professional/unit 2, MA-IREL | Master of science in Electrical Engineering | finalité electronics and information technologies/unit 2, MA-IREM | Master of science in Electromechanical Engineering | finalité Professional/ unit 2 and finalité Operations engineering and management/unit 2, MA-IRIF | Master of science in Computer Science and Engineering | finalité Professional/unit 2, MA-IRMA | Master of Science in Chemical and Materials Engineering | finalité Professional/unit 2 and MA-IRPH | Master of science in Physical Engineering | finalité Professional/unit 2

Programmes proposing this course at the school of Public Health

MA-SAPU | Master in Public Health | finalité Environmental Health/ unit 1