

## Ecosystem Management and Services (C003327)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)  
Credits 7.0 Study time 210 h Contact hrs 147.5 h

### Course offerings and teaching methods in academic year 2020-2021

| A (year) | English | Gent | lecture        | 18.75 h |
|----------|---------|------|----------------|---------|
|          |         |      | work placement | 122.5 h |
|          |         |      | microteaching  | 6.25 h  |

### Lecturers in academic year 2020-2021

|                   |      |                    |
|-------------------|------|--------------------|
| Hoffmann, Maurice | WE11 | lecturer-in-charge |
| Van Colen, Carl   | WE11 | co-lecturer        |
| Vyverman, Wim     | WE11 | co-lecturer        |

### Offered in the following programmes in 2020-2021

|  | crdts | offering |
|--|-------|----------|
| <a href="#">Master of Science in Teaching in Science and Technology (main subject Biology)</a> | 7     | A        |
| <a href="#">Master of Science in Biology</a>   | 7     | A        |
| <a href="#">Exchange Programme in Biology (master's level)</a>                                 | 7     | A        |

### Teaching languages

English

### Keywords

Conservation Biology; Ecosystem Management; Ecosystem Services; Natural Capital; Millennium Nature-based Solutions; Ecosystem Assessment; Society and Ecosystems; Society and Biodiversity; Nature and Human Health; Monetary and non-monetary ES Valuation, Business, Agriculture

**Remark concerning language:** a number of lessons (of some of the guest lecturers) will be given in Dutch, though slides will always be in English; in case of participating students that do not speak Dutch, lessons (slides and discussion) will be given in English.

### Position of the course

Students learn about the application of ecological principles in management in a societal context and are given clues of how to relate ecological theory with economic and societal reality. They learn about ecosystem health and its relevance to human well-being and learn about the ecosystem services approach as an indirect tool to promote biodiversity conservation.

Through individual work (internship, essay writing, symposium organization, ...), they experience how to apply their ecological knowledge into practice.

### Contents

*Formal Lectures are given by the titularis and his colleagues, and by external experts; FL's are strongly interactive; students are responsible for micro-teaching MT's in small (up to three students) group, they deal with topics within ecosystem management and services. The concepts of Ecosystem Services 'Nature's Contribution to People' and Ecosystem Management are not dealt with separately, but form the red thread in the course.*

- Introduction, Definitions, Millennium Ecosystem Assessment, IPBES Assessments, examples from the terrestrial environment,... (Hoffmann)

Topics that will be dealt with (some still to be confirmed)

- ESS and EM examples marine environment (Van Colen)
- ESS and EM examples fresh water environment (Vyverman)
- Nature Outlook 2050 for Flanders (Michels, INBO)

- Post-2020 global biodiversity strategy (Eggermont, Biodiversa)
- Valuation and Assessment of Nature: some basics (Jacobs, INBO)
- Natural Capital Accounting (NCA) (De Smet, INBO)
- Ecosystem Services and Business (Lammerant, Arcadis)
- Nature and Public Health (Keune, UAntwerpen en INBO)
- Does the Ecosystem Services Concept help local decision makers? (Turkelboom (INBO)
- Joanna Macy's concept on work that connects again (Simoens, INBO)
- How can we produce food in equilibrium with our ecosystems? (Sannen, Bioforum)
- Connecting agriculture with biodiversity and vica versa (Dumortier, INBO)
- Perspectives of Rewilding Symposium (NIOO, Wageningen) still to be confirmed
- Alternet Conference on Biodiversity and Health: Time for Transformative Change? to be confirmed (Hoffmann)

### **Exercise: Internship, Essay OR Symposium Organisation**

1. a three week internship at an internationally recognized scientific institute (e.g. INBO, ILVO, VLIZ, CEH, SYKE, ILE-SAS, NINA, Irstea, ...), a commercial firm dealing with environmental/conservation issues, a research group at another faculty or university, OR

2. a three week project at an administration or ngo (e.g. MDK, ANB, VMM, VLM, Natuurpunt, ...), e.g. short-term advisory activities on down to earth questions on local or regional conservation, management or ecosystem services issues, resulting in a concrete advice and activities report, OR

3. write a personal essay in which an opinion on an ecosystem management, ecosystem services, nature conservation, biodiversity, environmental issue in a societal context is scientifically underpinned and defended OR

4. organize with a group of colleague students a symposium, dealing with issues within the theme of Global Change Ecology, with links to society

**Important remark concerning the internship option:** the 3-week internship can be combined with the optional course Beroepsstage I or Beroepsstage II; this gives the opportunity to carry out a more substantial internship up to nine weeks, something that is usually greatly appreciated by the internship supervisor of a host institute. If you choose this format, you should contact Prof. Lens and Prof. Hoffmann on forehand.

### Initial competences

General ecological and biological knowledge, specific knowledge on nature management, biodiversity politics, societal involvement in biodiversity conservation

### Final competences

- 1 Students are able to apply their scientific knowledge in day-to-day issues involving nature conservation, nature management and/or ecosystem services, ecology in society.
- 2 Students are capable of expressing a science-based opinion to a general public in a comprehensible way, with the aim to implement sustainably, scientific insights in society/politics

### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

### Conditions for exam contract

This course unit cannot be taken via an exam contract

### Teaching methods

Lecture, microteaching, work placement

### Extra information on the teaching methods

1. **Formal Lectures:** the lecturers give introductory lessons at the start of the course, and each treats an elaborated case study of one of the three major ecosystems of the world (terrestrial, marine and fresh water environment)
2. **Microteaching:** students individually or in group prepare and give a lesson on a predefinitely defined topic to the participants of the course, and lead a discussion around the topic
- 3, 4 OR 5:
3. **Exercise:** three weeks internship in Belgium or abroad
4. **Project:** the whole group organises a workshop together with external invited speakers; the workshop is organised in the last week of the semester; target group are primarily students in Biology, possibly supplemented with interested students from other disciplines within our outside the faculty (bioscience engineering, political and social sciences, law, ...)
5. **Essay:** personal essay on an EM&S issue in a societal context

### Learning materials and price

Several specialized books will be used in the lectures, but need not necessarily be

bought; (travel, board and lodging) costs of a three week work placement depend from the institute and country where it is realized; **there is no funding available for the internship.**

#### References

- Hein, L. , 2010. Economics and ecosystems: efficiency, sustainability and equity in ecosystem management.
- Kareiva, P., Tallis, H., Ricketts, T.H. & Daily, G.C., 2011. Natural Capital: Theory and practice of mapping ecosystem services.
- Kidd, S., Plater, A. & Frid, C., 2011. The ecosystem approach to marine planning and management.
- MEA, 2005. Ecosystems and Human Well-being. A framework for assessment.
- Meffe, G., Nielsen, L., Knight, R.L. & Schenborn, D., 2002. Ecosystem management: adaptive, community-based conservation.
- Michels, H. et al., 2018. Natuurverkenning 2050. Inspiratie voor de natuur voor de toekomst. Syntheserapprt. Mededelingen van het Instituut voor Natuur- en Bosonderzoek 2018 (3), 106p., Brussel.
- Naeem, S., Bunker, D.E., Hector, A., Loreau, M. & Perrings, C., 2009. Biodiversity, ecosystem functioning, & human well-being.
- Schmitz, O.J., 2007. Ecology and ecosystem conservation.
- Townsend, C.R., 2008. Ecological applications. Towards a sustainable world.
- Vogt, K.A., 1996. Ecosystems: balancing science with management.

#### Course content-related study coaching

Interactive support using Ufora, email and lectures, individual contact moments (appointment necessary)

#### Evaluation methods

end-of-term evaluation and continuous assessment

#### Examination methods in case of periodic evaluation during the first examination period

Oral examination, portfolio, participation, job performance assessment, peer assessment, report

#### Examination methods in case of periodic evaluation during the second examination period

#### Examination methods in case of permanent evaluation

Oral examination, portfolio, participation, job performance assessment, peer assessment

#### Possibilities of retake in case of permanent evaluation

not applicable

#### Extra information on the examination methods

1. **portfolio**: every student makes a portfolio (presentation or document) on the whole of her/his activities (exercise, microteaching, discussion participation, symposium organisation,...); it is presented to the colleagues at the end of the second semester;
2. **participation**: the tutor evaluates the individual student on her/his participation in the different work forms (the quality of and contribution to the presentation as such, the discussions during interactive lectures, workshop participation, ...);
3. **peer-evaluation**: the lessons given by the student are evaluated through a group evaluation by the colleague students, using pre-defined criteria; a specific team evaluation is foreseen for the team that organizes the symposium.
4. **behaviour evaluation**: in a exercise report, the external exercise assistant evaluates the day-to-day activity and the level of maturity/professionality of the student

#### Calculation of the examination mark

Portfolio:Participation:Peer-Evaluation:Behaviour Evaluation= 5:5:5:5

#### Facilities for Working Students

to be agreed case by case with involved students