



## Contents

Students learn how to use the land evaluation terminology and concepts and how to judge and apply a number of existing tools. Interpretation of results is oriented towards land use planning, land consolidation and soil protection policies at local and regional scales.

The following aspects will be addressed:

- Origin, terminology, principles of land evaluation
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- Soil quality
- Urban soil functions/ecosystem services
- Land suitability
- Dealing with uncertainty in land evaluation

## Initial competences

The student

- has insight in the composition of soils, can explain the behaviour of soils on the basis of their physico-chemical properties, and understands classification of soils on a basic level.
- has basic knowledge of meteorological processes.
- can perform spatial analyses using GIS software on digital maps representing vector and raster data structures

## Final competences

- 1 Correctly use the specific terminology and principles in land evaluation techniques when communicating with experts.
- 2 Explain the selection and evaluation of different land characteristics or soil quality indicators as they are used in existing land evaluation techniques.
- 3 Critically evaluate the basic concepts, advantages/disadvantages, and output quality of existing land evaluation techniques, and use this to decide upon their applicability
- 4 Apply existing land evaluation techniques to evaluate land suitability, delivery of soil functions or soil quality
- 5 Judge the environmental and socio-economical uniqueness of each land evaluation study, and translate it into adapted land evaluation techniques.
- 6 Integrate soil degradation and climate change scenarios with land suitability assessment in a GIS environment
- 7 Display interest, insights and a critical attitude in/towards recent evolutions in land evaluation technologies and applications
- 8 Report and communicate (own) land evaluation research methods and results clearly, unambiguously, soundly, and critically
- 9 Collaborate with fellow students in a (interdisciplinary) team to solve land evaluation assignments

## 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

Group work, Seminar, Lecture, Independent work, Peer teaching

## Extra information on the teaching methods

**Seminar:** series of guided exercises (individual or in group)

**Peer teaching:** the groups present a scientific paper of their own interest (related to land evaluation) to the class.

**Independent work:** homework, being preparation of practical sessions by watching short instruction video's or reading guidelines and - when needed - finalisation of individual reports

**Group work:** homework being finalisation of group reports and preparation of microteaching activity

## Study material

Type: Syllabus

Name: Land Evaluation

Indicative price: Free or paid by faculty

Optional: no

Language : English

Number of Pages : 300

Available on Ufora : Yes

Online Available : No  
Available in the Library : No  
Available through Student Association : No  
Additional information: Course notes - part theory

Type: Slides

Name: Land Evaluation  
Indicative price: Free or paid by faculty  
Optional: no  
Language : English  
Available on Ufora : Yes  
Online Available : No  
Available in the Library : No  
Available through Student Association : No  
Additional information: PowerPoint presentation (pdf-formaat) as used during lectures - part theory

Type: Software

Name: GIS software - QGIS  
Indicative price: Free or paid by faculty  
Optional: no  
Available on Athena : Yes  
Online Available : Yes  
Available in the Library : No  
Available through Student Association : No  
Usability and Lifetime within the Course Unit : intensive  
Additional information: Intensively used during multiple exercises

Type: Other

Name: Digital materials in support of the practical exercises  
Indicative price: Free or paid by faculty  
Optional: no  
Language : English  
Available on Ufora : Yes  
Online Available : No  
Available in the Library : No  
Available through Student Association : No  
Additional information: Tasks, PowerPoint presentations, datasets, literature, and video-recording to support the exercises

## References

- UNEP (2016). Unlocking the sustainable potential of land resources: evaluation systems, strategies and tools. A report of the working group on land and soils of the international resource panel.
- Nguyen, T.T., Verdoodt, A., Tran, V.Y., Delbecq, N., Tran, T.C., and Van Ranst, E. (2015). Design of a GIS and Multi-criteria Based Land Evaluation Procedure for Sustainable Land-use Planning at the Regional Level. *Agriculture Ecosystems & Environment* 200: 1–11.
- Constantini, E.A.C. (2009). *Manual of Methods for Soil and Land Evaluation*. Science Publishers.
- FAO (2007). Land evaluation. Towards a revised framework. FAO Land and Water Discussion paper n°6. FAO, Rome. ([http://www.fao.org/NR/lman/abst/lman\\_070601\\_en.htm](http://www.fao.org/NR/lman/abst/lman_070601_en.htm))
- Lehmann, A., David, S., Stahr, K. (2006). TUSEC – Technique of urban soil evaluation in city regions – a method for the assessment of natural and anthropogenic soils. Hohenheim.
- FAO (2003). Global agro-ecological assessment for agriculture in the twenty-first century (CD-ROM). FAO Land and Water Digital Media Series n° 21, FAO, Rome. (<http://www.fao.org/ag/agl/agll/gaez/index.htm>)
- Verdoodt, A. and Van Ranst, E. (2003). A Two-Level Crop Growth Model for Annual Crops. Ghent University, Laboratory of Soil Science, Ghent (available in library)
- Sys, C., Van Ranst, E., Debaveye, J. and Beernaert, F. (1991, 1993). Land Evaluation. Part I, II and III, *Agricultural Publ. N° 7, ABOS, Brussels* (being revised)

## Course content-related study coaching

Personal coaching before and after the lectures and during the guided exercises. Feedback about the corrected applications during the guided exercises.

## Assessment moments

end-of-term and continuous assessment

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

Written assessment with open-ended questions

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

Oral assessment, Written assessment with open-ended questions

#### **Examination methods in case of permanent assessment**

Skills test, Presentation, Peer and/or self assessment, Assignment

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

#### **Extra information on the examination methods**

##### **End-of-term assessment:**

The end-of-term assessment is a written examination (closed book) comprising theoretical questions with more emphasis on general comprehension of the basic principles, boundary conditions, and scope of application of the different land evaluation tools than on encyclopaedic knowledge, as well as questions that check the students individual understanding of the practicals.

##### **Continuous assessment:**

During the course of the semester, students have to submit **individual and group assignments**. Deadlines for submission need to be strictly respected. Four aspects will be evaluated:

- the acquired **skills**, evaluating to what extent calculations, software were correctly done/used,
- the ability to critically and thoroughly analyse specific cases, come to integrated conclusions (**assignment**),
- the group dynamics (planning, tasks, individual contributions summarised in a **report = participation**), and
- an assessment on your performance and growth as team member in different roles by your peers (**peer assessment**).

At the end of the semester, students will present the scientific paper of their interest to the fellow students (**peer teaching**). Each student contributes by presenting part of the paper, and participating in question and answer sessions (= **presentation**).

Each student is held responsible for the timely submission and reporting of (a part of) the practicals. Each student is expected to contribute to all practicals, group reports and microteaching. The group members can organise themselves and agree upon a fair task distribution (reflected in the reports). Through peer assessment they help each other in understanding and exploiting/correcting their strengths and weaknesses when working in a team.

#### **Calculation of the examination mark**

- End-of-term assessment: 40%
- Continuous assessment: 60%

The lecturer can decide to deviate from or not consider the peer assessment scores at all when determining individual scores per student for the group tasks.

Unfoundedly eschewing a practical session for this course unit leads to a score of 0 for that assignment. In case of foundedly eschewing the practical sessions, a solution is searched; this can imply that (an) alternative task(s) is provided.