

## Introduction to Soil Science (C000741)

Course size (nominal values; actual values may depend on programme)

Credits	4.0	Study time	120 h	Contact hrs	28.0 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 2)	Dutch	excursion	8.75 h
		lecture	15.0 h
		seminar: coached	5.0 h
		exercises	

Lecturers in academic year 2018-2019

Verheye, Willy	WE12	lecturer-in-charge
Goossens, Rudi	WE12	co-lecturer

Offered in the following programmes in 2018-2019

	crdts	offering
<a href="#">Bachelor of Science in Geography and Geomatics (main subject Geography)</a>	4	A

Teaching languages

Dutch

Keywords

Soils, soil properties, applied soil science, environment (ecopedology), Belgian soil map

Position of the course

This course is positioned in the 2nd year Bachelor, but requires no previous academic courses. The course provides a basic knowledge on soil science, the orientations in this profession, the major soil characteristics and associated terminology. General information on reactions and processes occurring in soils in relation to the environmental conditions and from an earth science perspective. Attention is paid to laboratory data and restrictions in their interpretation. The acquired knowledge must be sufficient to consult the legend of the soil map of Belgium (1:20,000). The major soil types of Belgium are treated. A field excursion is foreseen in the neighbourhood of Ghent showing the major soil types indicated on the soil map as well as field mapping methods.

Contents

- 1 Introduction  
Definition of soil, soil profile, soil horizons, soilscape, soil system and soil dynamics.  
The agricultural heritage and current applications of soil science.
- 2 Basic components of soils.  
Solid mineral, solid organic, pores, air, water.
- 3 Main reactions and processes in soils  
Swelling and shrinkage, pressure, solution, precipitation, crystallization, cementation, hydration, hydrolysis, acid attack, oxido-reduction, ion exchange, organo-metal complexes, dispersion-flocculation.
- 4 Main soil characteristics.  
Acidity, soil texture, colour, temperature, hydrophobia.
- 5 Major soil genetic processes  
Weathering, migration-accumulation, structure formation, cycle of organic matter and minerals, turbation, erosion-sedimentation, horizonation.
- 6 Factors of soil understanding, soil classification and the Soil map of Belgium.
- 7 The soils of Belgium: Importance and limitations of a soil map. Applications.

Initial competences

No previous university courses required, but some elementary knowledge of Geography, Physics, Chemistry and Meteorology is needed.

## Final competences

- 1 The student is able to consult simple soil data and documents (maps, reports) and evaluate critically, and is aware of associated quality aspects such as positional accuracy, currency and other sources of uncertainty.
- 2 The student is able to recognise the most important soil forming processes from the soil map legend codes and from analytical data.
- 3 The student is able to participate actively in elementary discussions on soil data and soil processes in the context of national and EU environmental policies.

## 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

Excursion, lecture, seminar: coached exercises

## Extra information on the teaching methods

Mainly oral lectures, richly illustrated. The lessons are supported by a book. In each college some practical exercises are foreseen and the practical applications of different soil types are discussed. A field excursion is foreseen.

## Learning materials and price

A syllabus, also containing a set of exercises in the Dutch Language covering the contents are available via Academia Press. No mandatory books.  
Cost: Syllabus: E 5 (2015). Excursion: 7 Euro

## References

## Course content-related study coaching

Continuous possibility to ask questions during lectures, by e-mail or after appointment. Exercises are treated during the lectures. Powerpoints and other visuals distributed via Minerva. Reference to relevant literature.

## Evaluation methods

end-of-term evaluation

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

Oral examination

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

Oral examination

## Examination methods in case of permanent evaluation

## Possibilities of retake in case of permanent evaluation

not applicable

## Extra information on the examination methods

An evaluation of the student report on the individual exercise.  
Written exam, partly multiple choice, partly open questions. Both parts have equal weight. Multiple choice questions evaluated according to 'standard setting'.

## Calculation of the examination mark

A written exam (90%; period bound) and evaluation of a submitted exercise (10%; not period bound).