

MASTER OF SCIENCE IN PHYSICAL LAND RESOURCES

MAIN SUBJECTS: SOIL SCIENCE • LAND RESOURCES ENGINEERING

Master's Programme organised jointly by Ghent University (Faculty of Sciences/Faculty of Bioscience Engineering), Vrije Universiteit Brussel (VUB) (Faculty of Engineering)

120 ECTS CREDITS – LANGUAGE: ENGLISH – DEGREE: MASTER OF SCIENCE

COURSE CONTENT

The overall objective of the programme in Physical Land Resources is that graduates gain expertise to critically reflect on and give answers to questions like:

- What is soil?
- From what did the soil originate and how will it further develop under different conditions?
- Which factors and properties determine the suitability of soil for either agricultural or non-agricultural purposes and how can this be assessed?
- How can soil be improved for specific uses?
- How can degradation and desertification problems be tackled?
- How do we manage the soil and land capital and how do we protect it?
- What is the impact of the factor soil on the dynamics of natural ecosystems and how can this knowledge be used for nature conservation?
- What does soil learn us about environmental problems?
- How can we improve soil water management for sustainable crop production?
- How can we improve the efficient use of our scarce water resources?

A country's physical land resources are a fundamental pillar of support for human life and welfare. Worldwide, population pressures and severe degradation, pollution and desertification problems are threatening these - for several countries relatively scarce - natural resources, and cause competition between agricultural or industrial purposes, urban planning and nature conservation. To guarantee their proper use and management for a nation basic commodity, well trained specialists with a thorough knowledge of the properties and characteristics of physical land resources, and a solid insight in factors and measures that may alter their actual state and value are warranted and call for a high standard scientific and practical education.

COURSE STRUCTURE

The first year provides a fundamental basis in physical land resources, with a main subject in either Soil Science or Land Resources Engineering. The second year offers specialised courses in one of the two main subjects. The students have to prepare a dissertation.

The course curriculum of the first year, and of the main subject in Soil Science of the second year, is organised at Ghent University, whereas all courses of the main subject in Land Resources Engineering of the second year are organised at the Vrije Universiteit Brussel. Students in Land Resources Engineering have to reside in Brussels during the second year.

> Main subject: Soil Science

This main subject has a strong focus on agricultural use and applications. Graduates acquire the knowledge and skills to understand the development and evolution of soils under natural conditions or following human interference using field, map, laboratory and remote sensing data. They have the scientific knowledge to use and manage soil and water in a sustainable way, and to optimize land use under different natural and environmental conditions.

> Main subject: Land Resources Engineering

This main subject offers training in non-agricultural use and application of soil, and includes geotechnical aspects (use of soil as a building material or for foundations, slope stability and stability of excavations), the role of soil- and groundwater for water management and supply, soil management in relation to environment and land use (erosion, sediment transport, coastal development and protection).

> Master's dissertation

Students are encouraged to tackle a topic relevant for their home country (and employing institution), if possible with data/samples collected locally. The master's dissertation research accounts for 30 credits, and as such represents an important part of the MSc Programme. The fourth semester of the programme is fully reserved for this research work. The student has to integrate the acquired knowledge with (guided) self study, which involves experimental work, (data) analysis and interpretation, writing and communication. The master's dissertation is an important measure of the final competences obtained by the student. The master's dissertation has to be defended orally before a jury and an audience of peers.

CAREER PERSPECTIVES

The graduates have the competence to be active in both basic and applied research at universities, research institutes and other government institutions and non-governmental organisations, and to apply their knowledge and skills as required by the overall development policy of their country. In particular:

- graduates have the basics to conduct field work (soil survey, soil profile description, soil classification), use existing cartographic and remote sensing data, and interpret analysed data. This is the basis for regional planning, land evaluation, land degradation risk assessment, soil and water management, etc. This regards all staff from (government) institutions and universities involved in the inventory and management of natural resources (pedologic and geologic survey and cartography).
- graduates are trained to characterise soil physically, chemically and mineralogically with advanced techniques, to translate this into soil quality and to assess the influence by and on natural and anthropogenic factors. This is important for staff active in laboratories for research in soil science, agro-ecology and sustainable land management, geomorphology and surface geology, attached to nature reserves and research institutes, and for academics.

Graduates from Belgium and Europe are trained to look at their profession from a situation that is different from their home situation, and are well placed for work in development co-operation projects. The obtained skills are of course also relevant for jobs related to physical land resources within a European context. Implementation of the EU Thematic Strategy on Soil Protection by the member countries demands for well-trained personnel in physical land resources.

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TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

Rechtstreeks:

- Ba bio-ingenieurswetenschappen
- Ba chemie
- Ba biologie
- Ba geologie
- Ba geografie en geomatica
- Ba geografie
- Ba fysica
- Ba fysica en sterrenkunde
- Ba biochemie en biotechnologie
- Ba ingenieurswetenschappen (alle)
- Ba industriële wetenschappen
- Ba biowetenschappen
- Ba Environmental Technology (Incheon)
- Ba Food Technology (Incheon)
- Ba Molecular Biotechnology (Incheon)

TAAL

Je voldoet aan de taalvoorwaarden op basis van je Vlaams diploma.

PRAKTISCHE INFORMATIE

Studieprogramma:

<https://studiegids.ugent.be>

> faculteiten > opleidingstypes > ga naar de opleiding van je keuze

Alternatieve trajecten

Vrijstellingen / Doorstroomprogramma's

Ben je in het bezit van een relevant bachelor- en/of masterdiploma (zie toelatingsvoorwaarden categorie "rechtstreeks") en denk je in aanmerking te komen voor studieduurverkorting via vrijstellingen, contacteer de trajectbegeleider.

Ben je in het bezit van een masterdiploma waarvan het bachelorvoortraject bij de toelatingsvoorwaarden vermeld staat onder de categorie "via voorbereidingsprogramma", dan kan je eventueel – na toelating op basis van dossieronderzoek – onmiddellijk starten in de betreffende masteropleiding (horizontale instroom). Je volgt dan een geïndividualiseerd traject van minstens 120 sp. De trajectbegeleider is je contactpersoon.

Meer info: www.ugent.be/bw/start-een-master

Infomomenten

Masterbeurs - www.ugent.be/masterbeurs

Trajectbegeleiding/Learning path counsellor

Mevr. Isabelle Vantornhout

studietraject.coupure.bw@ugent.be - www.ugent.be/bw

Contact

Ghent University - Faculty of Bioscience Engineering

International Training Centre

Coupure Links 653 - 9000 Gent

www.itc.ugent.be - itc@ugent.be

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ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Each application will be evaluated by a board of admission of the specific programme and has to be approved by the Faculty Council and by the Rector's office.

Entry conditions:

Applicants must have a bachelor's degree of minimum 3 years with good overall scores (at least a second class or equivalent, preferably higher) from a university or recognized equivalent.

Specific academic requirements:

Applicants are expected to have a basic science training in (1) mathematics or statistics and (2) chemistry or biochemistry, and an overall academic education background in a relevant discipline like (either) agriculture, biology, forestry, environment, land and water management, physical geography, geology or civil engineering.

LANGUAGE

The applicant must be proficient in English. More details on the requirements at www.itc.ugent.be.

PRACTICAL INFORMATION

Study programme

www.ugent.be/coursecatalogue
> by Faculty > Programme types > select your programme

Application deadline

Consult www.itc.ugent.be for programme specific application procedures and deadlines.

Enrolling institution

Ghent University (Soil Science) and Vrije Universiteit Brussel (VUB) (Land Resources Engineering)

Tuition fee

Standard tuition fees apply - www.ugent.be/tuitionfee
More information about scholarship opportunities:
www.ugent.be/bw/en/international-training-centre/scholarship
More information at www.itc.ugent.be.

Trajectbegeleiding/Learning track counsellor

Mevr. Isabelle Vantornhout
studietraject.coupure.bw@ugent.be - www.ugent.be/bw

Contact

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