

PEER-LEARNING VISIT

PHYSICAL LAND RESOURCES

REPORT

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[Information sheet](#)

PHYSICAL LAND RESOURCES	
Degree and qualification	Master of Science in Physical Land Resources
Credit load	120 credits
Faculty	BioScience Engineering
Departments	
Tracks	Soil Science – Physical Land Engineering
Internship	optional
Number of degrees recently granted	(source: UGI, <u>only</u> data on the <u>soil science track</u> is available): 9 in 2017-18; 15 in 2016-17; 13 in 2015-2016; 16 in 2014-2015
Language	English
start up	1997 - the MSc in Soil Science (started in 1963) merged with the MSc in Eremology (started in 1988) in 1996 and VUB joined in 1997
Date peer learning visit	17th May 2019

I. Study Programme's Educational Vision and Policy

Vision

Physical Land Resources is a two-year interfaculty (UGent faculty of Sciences, faculty of Bioscience Engineering) and interuniversity (UGent – VUB) master. The master is open to students who already have an academic (bachelor's) degree in a relevant discipline (Agriculture, Biology, (bio)Chemistry, Geology ...). A number of common course units (33 credits) enable students to gain basic knowledge related to soil and water. Students need to choose one of the two main subjects, 'Soil Science' or 'Land Resources Engineering' upon registration. The Soil Science track is organized at UGent and focuses more intensely on agriculture, the 'Land Resources Engineering' track at VUB focuses more on non-agricultural issues. The 'monitoring portfolio' is primarily focused on the UGent part of the programme.

- Every year about 25% of the defended master's dissertations end in **A1 publications**, which is an indication of the fact that the programme meets **international standards**.
- The 'Physical Land Resources' programme focuses on **water and soil**. As there is a worldwide decline of 'soil and water' masters, the UGent master fills an important gap, according to the programme management. KUL and Wageningen University have related programmes but Wageningen focuses more on agricultural applications and on sociological aspects, and KUL's main focus is on water. The team met only one student who takes the VUB track. The other students (from Ghana, Kenya, Germany, India, China...) who take the UGent track, say the main asset of the programme is the fact that soil science is studied from different perspectives (i.e. not only from a bio-engineering perspective). A student with a bachelor in Geology appreciates the transfer to agriculture. The Physical Land Resources programme appears to be **well known in the student's home institutions**.
- One of the main challenges for the programme is the **recent fall in student numbers** due to the fact that VLIR-UOS study grants cannot be offered at this moment. This year 7 students are enrolled in the programme. The study programme committee hopes to regain the support of VLIR-UOS in the future. Meanwhile the programme wants to explore additional funding options for study grants. A recent initiative that has been taken in this respect (with Prof. Finke as promotor) is the application for an Erasmus Mundus, which was approved in July 2018. In addition, the programme committee wants to attract more European students and plans to organize an international track in the South.
- The programme was historically focused on (development in) the South. In the past there were more opportunities for Belgian students to work in the development sector after graduation. It is clear to the peer-learning team that a number of conditions have changed. The team suggests to reflect upon the following issues:
 - When applying for a job in their home countries, students and alumni say they will present themselves as 'soil scientists' and not as holders of a master's degree in Physical Land Resources. The current **programme title** is possibly too vague and this may also be an issue of attracting students. The team would (like to) suggest to choose a programme title that clearly reflects the study programme's contents
 - The programme should take more into focus the needs and interests as well as the future job opportunities of European students, also in regard of changing funding opportunities. This was to some extent addressed in the last programme change by introducing courses on entrepreneurship, precision agriculture, geostatistics, among others.

- The expert recommends (in line with the critical reflections made in the portfolio) that **'soil biology' and environment** be integrated into the programme. The Soil Science track is the part of the programme that is well-known worldwide.
- The VUB track course units seem to have changed recently. One student states that the track he follows now at the VUB is very different from the track he chose during the application procedure. Although there was only one VUB student present, the team recommends the programme managers to set up a better communication strategy between the UGent track and the VUB track. Based on the conversation with students and (UGent) lecturers, the team has the impression that **the soil science part at Ghent stands in itself**. Most students who choose the soil science option do not go to the VUB, not even for elective courses.

Programme – didactic methods

- The **students and alumni** of the Soil Science track appeared to be very **satisfied** with the programme. Very positive programme evaluations (only the results of the evaluation of the Soil Science track are available) are in line with the opinions expressed by the group of students and alumni the team met.
- A **large number of elective courses** (57 out of the total 120 credits) allow students to choose the expertise they need. 30 credits are dedicated to the master dissertation. The students appreciate the tailor-made programme. It is not very clear to the team how the programme management keeps the curriculum coherent and how constructive alignment is monitored. The team also questions whether organizing a lot of elective courses for a limited number of students is profitable, but programme managers assure that most of the courses are organized anyway within other programmes at UGent and VUB or that vice versa other programmes take up courses from the PLR course list. It is the team's suggestion to keep a close eye on the balance between the number of compulsory courses and the number of electives.
- **Internship** (5 credits) is optional in the second master's year. Students conduct research activities in an institute during at least twenty working days. According to the programme managers this is the standard duration of internships at FBE. Some programs do offer an extended internship (40 days). The team questions whether the internship really adds value if it is so short. Few students choose to do an internship. Among the students the team met, the one student who plans to do an internship, claims it is 'easy credits'. The team has the impression that lecturers do not consider the internship as a crucial aspect of the programme. The team suggests to rethink the (position of) the internship and to make a clear choice between either investing in this option or eliminating it.
- The students present are satisfied with the master's dissertation procedure. Students say promotors are very helpful. Students appreciate the assistance of their tutors, usually PhD-students, in the laboratory. The preparatory part in the first master is considered a good method. Students write a research proposal in the first year and work on the master's thesis during the entire second semester of the second master's year. Some think it is better to spread the work over one entire academic year instead of just one semester.
- A lot of **activating didactic methods** are used in the programme: students work in the laboratory, they do fieldwork etc. Almost all courses consist of a theoretical part and a practical part. The programme managers are aware of the fact that students want more practical work, but in depth courses are also an essential part of the curriculum. Programme managers think that theory and practical work are well-balanced. Introducing more practical work would require more supporting staff.

- According to the students the team met, Soil Science students are not really interested in following **courses at VUB**. Video-streaming those courses would not be a solution because the content does not correspond to what soil scientists want to learn. Students say VUB courses focus strongly on water engineering and if this is not the expertise one needs, one would not choose the course, even if it was video-streamed. The team recommends that programme management puts more effort in attuning the two tracks (in order to present an integrated programme) and that communication towards students is at all times sufficiently clear, regardless of the track they have enrolled in.

Assessment Strategy and Policy

The programme's assessment policy aligns with the 17 university-wide evaluation principles.

The team has the following recommendations:

- The team recommends the introduction of a **more structured (and proactive) monitoring approach** with regard to evaluation policy. At this moment the programme committee occasionally discusses topics related to evaluation, especially when there is a problem. The team suggests to reflect on the advantage of an assessment commission where lecturers can monitor, compare or discuss evaluation methods, distribution scores, the application of 'the four-eye principle' etc. Another option would be to organize a yearly programme committee meeting specifically dedicated to assessment policy. The aim of this type of meetings would be to stimulate peer learning and to improve evaluation strategies, to align evaluation methods of different lecturers across course units. The team thinks there is room for growth and improvement at this level.
- Overall the students and alumni present are satisfied with **evaluation of the master's dissertation**.

II. Permanent Quality Assurance

Embedding external perspective

- Recently the programme director conducted a **benchmark** with a similar programme at Wageningen University. The team recommends the programme to keep investing in (even more detailed) external and internal (@UGent) benchmarking exercises, which is very important to face the severe competition for students. Based on the conversation with a number of lecturers, it is clear that there is a tradition of discussing the study programme's vision and the structure of the curriculum among lecturers, students and alumni. Programme changes are checked with alumni and professionals. The team considers this to be a good practice.
- The team advises to monitor and reflect upon **the profile of the programme**. The faculty organizes programmes that (seems to) target a similar student profile (for instance 'International Master of Science in Soils and Global Change'; 'International Master of Science in Environmental Technology and Engineering'). The team asks whether the difference between the programmes is clear (enough) for international students. The team also wonders if there is an actual need for several similar programmes. If every programme is needed, the **unique profile** of every programme should be very clear. This unique profile should correspond with the vision and name of each programme. Embedding a lot of courses from other programmes in the can endanger the unicity of the profile.
- Another piece of advice for the programme committee is to continue keeping a good balance between tradition and experience on the one hand, and being more *future-oriented*, on the other. Circumstances are changing (for instance funding opportunities) and the committee should reflect thoroughly on how to adapt to new situations.

Programme Committee

- The committee usually meets once in two months or more regularly through e-consultations. The team is positive about the **active participation of the students** in programme committee meetings: the student representatives present say that whenever the meeting is scheduled students see and hear each other to detect and talk about problems that should be discussed at programme committee meetings. Students have a whatsapp group to reach each other. Students also say there is a strong informal contact between students and the programme management: students can easily discuss problems in an informal way with the programme director. The team is very positive about the programme director's dedication: students and lecturers express great appreciation for his work.
- The program is able to set up successful improvement measures. The (last/previous) NVAO assessment report suggested to pay more attention to entrepreneurship. Entrepreneurship is now included in the learning outcomes. Special attention to this topic is given in the course unit 'Scientific Communication in Physical Land Resources'.
- The team also wants to express some concerns
 - The scores in the **self-evaluation** part of the monitoring portfolio were all very positive. Many 'acts' were left empty. The team wonders whether the programme was **self-critical** enough. The team invites the programme to make a realistic analysis in the future.
 - According to the lecturers present there is a growing awareness among teaching staff of the importance of some pedagogical concepts like 'constructive alignment' or 'the four eye principle'. Lecturers talk about this more often in an informal way. The team appreciates the growing interest in educational (quality assurance) concepts. At the same time it is important to **formalize reflections and discussions** on education or quality assurance in order to involve all the members of the programme committee and to prevent an ad hoc approach.
 - Some concerns are related to the VUB track:
 - Since there are no results available of the programme evaluation related to the 'Land Resources Engineering' track organized at the VUB, the team asks how the programme committee is able to monitor the quality of this track. **Crucial quality assurance information is not available**: this is a problem that should be resolved as soon as possible. The team only spoke to one student who takes the **VUB track**. This one student mentioned some problems, at least at communication and organizational level: e.g. students being ignored and not be helped in case of problems, students experiencing difficulties finding the right service or staff, administrative staff having little knowledge of the track, and (coordinating) staff members at the VUB being difficult to contact. The team recommends the programme to check the statements of the student present (for instance by organizing focus group discussions).
 - According to the student of the VUB track, the programme was changed between the application and the start of the courses. The main focus has apparently shifted from engineering to hydrology. The student would not have chosen the current programme. When confronted with the question how and why the VUB track changed, the explanations given by the lecturers and programme management did not really correspond. The decision-making process is not clear to the team. The team

recommends the programme to monitor the communication between UGent and VUB.

III. Ghent University's Educational Objectives

1. Dare to Think and Multiperspectivism

- The team doesn't identify any negatives related to the strategic goal 'dare to think and multiperspectivism'.
- The team is very positive about the fact that the programme brings together students from different countries and backgrounds. One student present explicitly mentioned the international character of the programme as one of the main assets that determined his choice for the UGent programme. The fact that international students follow elective courses together with Belgian students is an added value.
- Soil science students appreciate the fact that soils are being studied from different perspectives and not only from the point of view of bio-engineering.

2. Education Based on Research

- The programme is very **research-based**. This is reflected in the fact that 25% of the master's dissertations culminate in **A1 publications** and in the fact that a lot of students successfully proceed to **PhD- studies** before becoming lecturers in their country.
- In the first semester of the first master's year students participate in guided visits to research units. The team considers this a good practice. Students say they are very familiar with the research expertise of their lecturers: professors they did not meet during the lab visit, make an effort to present their research in another way, for instance during lectures. Students elaborate a research proposal in the second semester of the first year. In the second master's year, an entire semester is dedicated to the master dissertation. Students present are very satisfied with the way they are being coached by promotors and tutors. The 'Science communication course on Physical Land Resources' is highly appreciated by the students. The team believes few programmes succeed so well in **guiding their students to a master's dissertation**.

3. Focus on Talents of Students and Staff

- The students of the Soil Science track appear to be very satisfied with the way they are being **coached** throughout the master's programme.
- According to the **Soil Science** students there is **no overlap between courses**, timewise or content wise. Students say the programme allows them to acquire the expertise they need. The one VUB student states that this is not the case for the 'Land Resources Engineering' track.
- The **quality of incoming students** is very high. The programme is able to recruit the top students in their countries. Lecturers have a long tradition in collaborating with institutions in the South. The programme management has a very good idea of the level of students coming from these institutions. A lot of alumni become lecturers in their home countries. According to the students present, UGent is

very strict on the conditions one has to meet in order to get the permission to start the programme. The programme managers nevertheless realize they should remain vigilant about the quality of incoming students.

- The students the team met expressed some concerns:
 - The **workload** can be high, especially because **deadlines** all come together in one and the same period of time. Quality assurance officers of the faculty say some other programmes are trying to make an inventory of all the deadlines. This practice could be applied to other programmes. The team recommends the Physical Land Resources programme to monitor the workload and to work on an inventory of all the deadlines, even if this is not easy because of the big number of elective courses. Starting from the inventory lecturers could discuss the possibility of a more even distribution of deadlines. Deadlines could also be mentioned in the course sheets. According to the programme management this is anyway foreseen with the introduction of Ufora.
 - Students have to work with different **software** ('R', 'Python') programmes in different courses. Belgian students know the software programmes since the bachelor's programme but international students starting the Physical Land Resources master have to learn all the programmes from scratch: students struggle getting to know those software programmes. In any case the time and effort students have to put into getting to know all the separate programmes presents an obstacle to acquiring the actual course content. The team recommends to make an inventory of all the software programmes students now have to use, to reflect on the possibility to use only one software programme, and to introduce some tutorials in the preparatory programme.

4. Involvement of Stakeholders

- The team congratulates the programme on the *open culture between students and lecturers*, and on the **involvement of students** (of at least the 'Soil Science' track) in the programme committee.
- The team thinks it might be useful to market the programme during the 'open campus days' organized by the faculties that participate in the master's programme. It might also be interesting to organize a short questionnaire to (bachelor) students in Geography, Geology, etc. and ask them for the reasons why they did not opt for the 'Physical Land Resources' programme. This kind of questionnaire could offer interesting information related to student needs and the profile of the programme.
- The programme keeps in touch with **alumni** through personal contacts, e-mail and a newsletter. Lecturers also keep in touch with alumni through projects in the South. The fact that alumni are consulted on programme changes is a good practice. The team has no information on the number of alumni that are usually consulted. Therefore the team advises the programme to watch over the representativeness of the group of alumni consulted.
- The team met a number of lecturers (all of them of the UGent track) who expressed a strong engagement and dedication to the master programme. The team has a strong impression, however, that the lecturers miss 'the bigger picture' of the two tracks. The team thinks the UGent track stands in itself and that there is no frequent contact or intense collaboration with the lecturers of the VUB

track. It is not clear to the team how lecturers of the two tracks make sure the curriculum is well aligned. According to the programme management, although educational issues are discussed at programme committee meetings, overall communication to the entire group of lecturers is rather minimal: almost all the lecturers are involved in other study programmes and are overloaded with activities. The team understands the specific context of the programme but at the same time advises to organize at least one (formal) meeting a year where lecturers are explicitly asked to reflect on educational issues related to the 'Physical Land Resources' programme (Educational day/ session). Some UGent programmes link a yearly formal educational meeting to an informal event, like e.g. a new year's reception.

5. Internationalization

- The programme is **taught in English** and almost exclusively attracts **international students**. Internationalisation is a core element of the programme.
- The participation of international students in courses that are shared with other (bio-science engineering) programmes contributes to **i@home**. The collaboration with international students broadens the perspective of Belgian students.
- The programme plans to organize an **international track in the South**.
- **Lecturers** participate actively in international projects and networks.