# INTERNATIONAL MASTER OF SCIENCE IN SUSTAINABLE AND INNOVATIVE NATURAL RESOURCE MANAGEMENT

PROGRAMME JOINTLY OFFERED BY GHENT UNIVERSITY, TU BERGAKADEMIE FREIBERG, UPPSALA UNIVERSITY

MAJORS: MA SINR 00 UPPSALAU ENTREPRENEURSHIP - MA SINR 00 TUBFREIBERG - MA SINR 00 UGENT RECOURCE RECOVERY - MA SINR 00 UPPSALAU GEORESOURCE EXPLORATION - MA SINR 00 UGENT CIRCULAR SOCIETIES

120 ECTS CREDITS - LANGUAGE: ENGLISH



## WHAT

The increasing demand for raw materials, their price volatility, the production concentration and the market distortions imposed by some countries, confront Europe and other world regions with a number of challenges along the entire value chain. To tackle this supply risk challenge and to deal with environmental problems arising from too large emissions of waste (such as CO2), technological innovation is required with respect to exploration of new resources and sustainable primary mining, sustainable use of resources in specific products and production processes (e.g. substitution of critical metals in materials), prevention of waste generation, valorisation of secondary (alternative) resources and recovery/recycling of resources from end-of-life products. The International Master of Science in Sustainable and Innovative Natural Resource Management (SINReM) educates a new range of professionals focused on developing such novel technologies, engineering and re-inventing the value chain to make it more sustainable. Therefore, SINReM gives students a broad view on the entire value chain in its different aspects. They learn about the different (technological) options for optimizing flows of natural resources in the different parts of the chain, ranging from resource exploration over sustainable materials use and use of resources in production processes to recovery/recycling of resources from end-of-life products. SINReM graduates have an entrepreneurial mind-set, a multidisciplinary view and creative innovative problem-based technology development skills. They are qualified for a professional career in the private (supporting companies in making processes, products and services more sustainable), research (applied research at universities, research institutes or companies) or public sector (consulting in local, regional and (inter)national administrations, defining and implementing sustainable development policies). Moreover, SINReM promotes networking and exchange of knowledge and experience between different nationalities, between academic and non-academic partner and between scholars and students from European and non-European countries which are rich in natural resources and/or can be considered as rapidly growing markets for sustainable products, processes and services.

## STRUCTURE

Student mobility within Europe is an integral part of the 2-year programme (120 ECTS). In the first semester in Ghent, the second semester in Uppsala, and during the summer course 'Problems and Innovations in the Process Chain of Mineral Resources' in Freiberg, students are introduced to the value chain, management of natural resources, the circular economy, its economic, policy and legal aspects, inventory techniques, the clean technology concept and life cycle assessment tools to assess sustainability of products, services and processes. In the second year, students choose a major: Georesource Exploration (Uppsala University), Sustainable Entrepreneurship (Uppsala University), Sustainable Processes (TU Freiberg), Resource Recovery and Sustainable Materials (Ghent University), or Circular Societies (Ghent University), containing (elective) courses in combination with an internship and the master thesis research. SINReM students interact with the professional sector through cooperation in thesis research, internships, lectures and seminars. SINReM also provides complementary skills training in innovation management, entrepreneurship, and business case development.

### Master dissertation

The master dissertation or thesis is a requirement for every candidate to obtain a master degree. The master dissertation is an original piece of research work. It aims to develop and strengthen the research capacity skills of the students. The student selects a topic and is given guidance by a promoter or supervisor. The master dissertation consists of a literature review part, a theoretical reflection and an original analysis of the topic. Dissertation research in SINReM is conducted at one of the partner universities in cooperation with a non-academic partner for example from industry.

## LABOUR MARKET

The limited availability of raw materials, together with worldwide phenomena such as fossil depletion and climate change has urged Europe and other world regions to develop sustainable resource management strategies. However, this challenge can also be transformed into an economic opportunity, by for example re-invigorating the mining industry in a sustainable way and stimulating the recycling industry. This requires a shift in economic and business models but also in the education and training of the professionals who will be developing these models. There is a clearly identified need for professionals with a holistic overview on resource management and up-to-date processing technologies, who are familiar with sustainability concepts and possess an innovative mind-set to boost the economic importance of this sector. These new professionals are educated by SINReM.

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FACULTY OF BIOSCIENCE ENGINEERING

2023-24

## TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

1 **Na onderzoek van de bekwaamheid van de student om de opleiding te volgen:**
- Een diploma van een bacheloropleiding in het academisch onderwijs binnen één van de volgende studiegebieden (of een combinatie ervan):
  - Biotechniek
  - Industriële Wetenschappen en Technologie
  - Toegepaste Biologische Wetenschappen
  - Toegepaste Wetenschappen
  - Wetenschappen

Additional Information on Admission (Flemish Degree)

All prospective students must register with the Management Board no later than May 31 prior to the academic year in which they wish to enroll.

## ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

SINReM is particularly suited for (but not limited to): bioscience engineers, biotechnology scientists, chemical engineers, chemists, environmental scientists and engineers, geologists, geophysicists, mining engineers, mineralogists, materials scientists, metallurgists and process engineers.

To be admitted to the SINReM programme, you need to:

1. hold a Bachelor degree (equivalent to at 180 ECTS) in a discipline closely related to the SINReM scope (see above for examples);*
2. have a strong background in science (equivalent to at least 15 ECTS in mathematics and/or physics and 10 ECTS in chemistry);*
3. have completed your previous degree(s) with good or very good grades (typically top 30% of the students);
4. submit a convincing motivation letter with your application, which shows that the SINReM scope matches your previous education and future goals;
5. fulfil the English language requirements listed below.

* If you do not fully meet criteria 1 and 2, you may still be admitted if you have excellent grades (typically top 10% of the students) in your previous degree(s). Please note that in this case you will have to invest more time within the first year to catch up with fundamentals of science and engineering.

For more information on specific academic and language requirements consult the programme website.
Information on admission requirements and the administrative procedure for admission on the basis of a diploma obtained abroad, can be found on the following page: www.ugent.be/prospect/en/administration/enrolment-or-registration.

## LANGUAGE REQUIREMENTS

Language requirements  Dutch: no language requirements

Language requirements for this study programme differ from the required standard level for English taught study programmes as specified in the Ghent University Education and Examination Code:
**English**:
Only nationals of all EU and EEA countries, Australia, Botswana, Cameroon, Canada, Eritrea, Gambia, Ghana, Guyana, India, Ireland, Jamaica, Kenya, Liberia, Malawi, Namibia, New Zealand, Nigeria, Pakistan, Philippines, Rwanda, Sierra Leone, South Africa, Sri Lanka, Tanzania, Uganda, UK, USA, Zambia, and Zimbabwe, can provide a stamped and signed certificate of English as the language of instruction during at least 1 year (equal to 60 ECTS) of higher education issued by the home university.
Candidates from any other nationality need to present test results of one of the following tests (validity of 5 years):
- TOEFL iBT 86
- TOEFL pBT 570
- Academic iELTS 6,5 overall score with a min. of 6 for writing
- Cambridge Certificate of Advanced English (CAE)

The above-mentioned language requirements can be changed yearly before the start of the applications period, after approval by the MB and by the partner universities.
See also https://sinrem.eu/admission-applying/

## PRACTICAL INFORMATION

### Study programme

studiekiezer.ugent.be/international-master-of-science-in-sustainable-and-innovative-natural-resource-management-en/programma

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### Information sessions

**Graduation Fair**
afstudeerbeurs.gent/en/students/further-studies

### Enrolling institution

Ghent University, TU Bergakademie Freiberg, Uppsala University

Information on enrolment at Ghent University.

### Application Deadline (for International degree students)

More information on programme specific application procedures and deadlines for both **Belgian and international students.**

### Tuition fee

More information is to be found on: www.ugent.be/tuitionfee


**Contact**
Ghent University
Faculty of Bioscience Engineering
International Training Centre
Coupure Links 653
9000 Gent
applications.itc@ugent.be

**Learning path counsellor**
Mevr. Isabelle Vantornhout
studietraject.coupure.bw@UGent.be


www.itc.ugent.be
www.sinrem.eu

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