INTERNATIONAL MASTER OF SCIENCE IN SUSTAINABLE AND INNOVATIVE NATURAL RESOURCE MANAGEMENT

International Master's Programme funded by EIT Raw Materials, offered by a consortium of 3 leading Higher Education Institutes (Ghent University (Belgium), University of Uppsala (Sweden), and TU Bergakademie Freiberg (Germany)). The programme is supported by a wide range of non-academic partners, active in mining and geo-resource exploration, chemical, environmental and recycling technology and development of sustainable materials.

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

COURSE CONTENT

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.

COURSE STRUCTURE AND STUDENT MOBILITY

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 field trip and Summer School 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: geo-resource exploration (Uppsala), sustainable processes (Freiberg) or sustainable materials and resource recovery (Ghent), containing (elective) courses in combination with master's dissertation research. They 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's dissertation

The master's dissertation is a requirement for every candidate to obtain a master's degree. The master's 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's 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 institutes or with one of the associate (industrial) partners.

CAREER PERSPECTIVES

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.

FACULTY OF BIOSCIENCE ENGINEERING

2017–18

BW23

INTERNATIONAL MASTER OF SCIENCE IN SUSTAINABLE AND INNOVATIVE NATURAL RESOURCE MANAGEMENT

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

TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

Na onderzoek naar de geschiktheid van de student:

- academisch bachelordiploma (bij voorkeur in (ingenieurs)-wetenschappen of toegepaste biologische wetenschappen). Voor de toelating moet (met puntenlijsten) een basis aan wetenschappelijke kennis aangetoond worden in de volgende vakgebieden: (1) wiskunde en/of fysica, (2) chemie.

TAAL

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

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:

To be admitted, candidates are considered to have at least a bachelor's degree (minimum 180 ECTS credits) in engineering or science (physics, chemistry, biology, mathematics, earth science, materials science) including 15 ECTS in mathematics and/or physics and 10 ECTS pure or applied chemistry or an equivalent level from a recognised university or Engineering College.

LANGUAGE

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

PRAKTISCHE INFORMATIE

Studieprogramma:
https://studiegids.ugent.be
> faculteiten > opleidingstypes > ga naar de opleiding van je keuze

Infomomenten
Masterbeurs
www.ugent.be/masterbeurs

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

Tuition fee
Separate amounts apply.
www.ugent.be/tuitionfee

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
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200 YEARS
GHENT UNIVERSITY