

A large, stylized, light blue graphic of a microscope is centered in the background of the main blue rectangle. The text "Faculty of Sciences" is overlaid in white.

Faculty of Sciences

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WELCOME TO GHEENT, THE LARGEST STUDENT CITY IN BELGIUM!



Ghent is a great city to be a student; at present days Ghent is even the biggest student town in Flanders attracting more than 80,000 students. It is a pleasant and lively city; cosy corners alternate with pleasant and busy shopping streets. The city centre still breathes history and sociability. What's more, it is also a strong cultural attraction pole with important music and film festivals, as well as a variegated theatre and performance scene. The University campus is spread all over the city, which enlivens the atmosphere.

In the 16th century Ghent was one of the most powerful cities in north western Europe. Nowadays it is the capital of the Province of East Flanders (part of the Dutch-speaking community). Situated at the intersection of two European traffic arteries (E17 and E40), Ghent is very easy to reach by car as well as by train; the seaside or Brussels and Antwerp are only half an hour away. Other cities like Paris, London, Amsterdam and Köln are within reach for a one-day city trip.

Curious to learn more about the city of Ghent? Check out one of the websites below:

- website of the City of Ghent: <https://stad.gent/en>
- website of Use-It: <http://www.use-it.be>





Ghent University, abbreviated as UGent, is a top 100 university, founded in 1817, and one of the major universities in Belgium with more than 50,000 students and 15,000 employees. Our eleven faculties offer more than 200 courses and conduct in-depth research within a wide range of scientific domains. Our credo is 'Dare to Think', challenging everyone to question conventional views and to dare to take a nuanced stand. We are a pluralistic university open to all, regardless of their ideological, political, cultural or social background. Ghent University Global Campus is also the first European university in Songdo, South Korea.

Each year more and more international students choose Ghent University for their study. More than 8500 foreign students (16% of the total student population), including exchange students, studied at Ghent University.

Ghent University's international image is reflected in the basic facts and figures and Ghent University's attitude to and position in the major rankings.

More information:

- <http://www.ugent.be/en/ghentuniv>

GHENT UNIVERSITY GLOBAL CAMPUS

Ghent University is, since 2014, the first European university to become part of the Global Campus in Songdo, South Korea. Ghent University Global Campus offers three bachelor degree programmes: Molecular Biotechnology, Environmental Technology and Food Technology. They are taught by a permanent staff, supplemented by a 'flying faculty' made up of Ghent University lecturers that periodically fly over to teach four-week-long modules.

More information:

- <http://www.ghent.ac.kr/>



The **Faculty of Sciences** is very diverse. Researchers within the faculty focus on the study of the smallest and the largest in the universe, the living and non-living matter, seeking knowledge on the most fundamental level or developing high-tech applications. Therefore we provide education and research at a high international level, with science and technology directed towards the needs of the society. Next to this we offer courses and programmes in all traditional fields, but also in many more specialised disciplines.

Through active cooperation agreements we welcome approximately 170 exchange students every year and this number is still increasing. Most exchange students come from European countries. A lot of these students take part in research work in the laboratories of the faculty. We also accept about 1200 regular international students from all over the world in our bachelor, master, postgraduate and PhD programmes.

We are proud to be attentive to the needs of our foreign students, offering guidance on all levels.

FACTS AND FIGURES

Departments: 13

Staff members

- Professors: 175
- Assistants and Scientific Staff: 500
- Administrative and Technical Staff: 230


Students


- Bachelor students: 1470
- Master students: 1100
- Doctoral students: 850





 Master's Programme

 2 year - 120 credits

 Dutch

MASTER OF SCIENCE IN MATHEMATICS

Mathematics is an independent scientific discipline with many parallels and constant interactions with various other sciences. Mathematics proved impossible to ignore in any scientific discipline where a certain level of accuracy is involved. For example, the spectacular advances in molecular biology have not only inspired biologists but also many great mathematicians, resulting in a fascinating interaction. This has created many new research fields, both in mathematics and in biology. However, pure mathematics without applications in science and technology in itself also merits its place.

Sometimes applications are very indirect and unexpected: some branches of pure mathematics appear very useful for practical applications such as encoding and decoding, and cryptography. Mathematics has in fact long been one of the most fundamental manifestations of man's efforts to better understand the world. Therefore, it remains an essential element of the culture we transmit to future generations.

PROGRAMME

The master's degree programme offers two majors:

- Pure Mathematics
- Applied Mathematics.

The research groups consist of incidence geometry, algebra, functional analysis and number theory, logic and analysis, analysis & PDE's, Clifford analysis, numerical analysis and mathematical modelling, combinatoric algorithms and algorithmic graph theory, computational biology, numerical mathematics, statistics, stochastic modelling, representation theory and special functions, and fuzziness and uncertainty modelling.

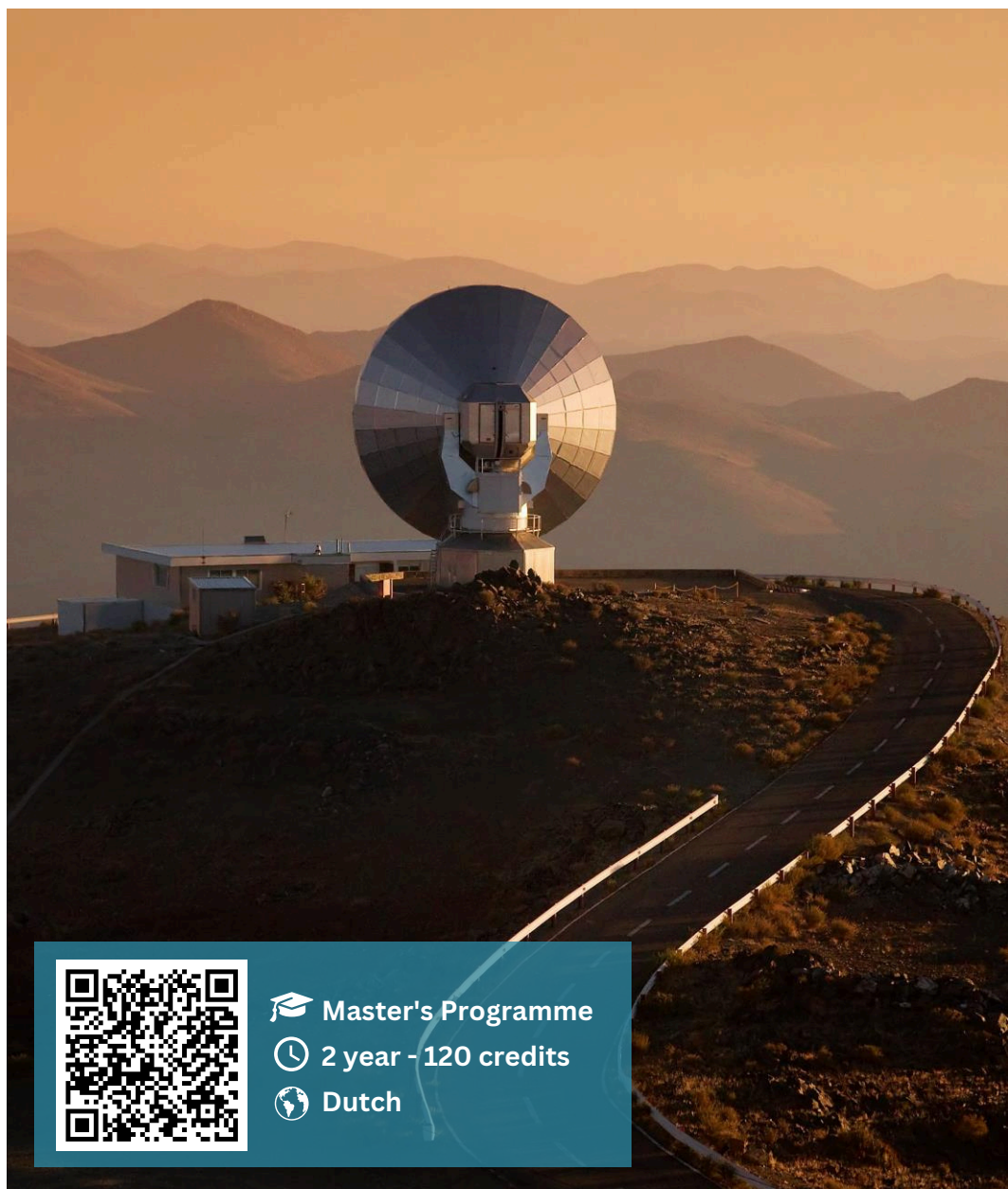
DEGREE

The two-year programme (Dutch, 120 credits) consists of the following parts:


- 24 credits for general courses
- 24 credits for major courses:
 - Pure Mathematics and Applied Mathematics
- 42 credits for elective courses
- 30 credits for the master's dissertation

EXCHANGE

The exchange programme contains a preferred list of English courses taught at UGent of the Master of Science in Mathematics. The programme offers a selection of courses with subjects in the two majors.



 **Master's Programme**

 **2 year - 120 credits**

 **Dutch**

MASTER OF SCIENCE IN PHYSICS AND ASTRONOMY

(Programme jointly offered by Ghent University and VUB Brussels)

The importance of physics in our knowledge-based society can hardly be overestimated. In particular, technology and medicine have highly benefited from advances made in physics. The research domain of physics and astronomy is very wide, and extends from the world of the smallest (the elementary particles) to the study of the largest objects (the cosmos). Both at a national and international level, physics is the cradle of numerous important and innovative concepts, models and techniques, many of which have an interdisciplinary character. This is clearly illustrated by the existence of specialised disciplines of present interest, such as “medical physics”, “biophysics”, “econophysics”, etc. Not only the principles but also the applications of physics can be found in many aspects of our knowledge based society. A large number of scientific developments in Physics and Astronomy found their way from the laboratory to the technological applications which color our daily lives. There is not a single reason to assume why this would be any different in the future.

PROGRAMME

This study programme is aimed at the study of the fundamental aspects of physics and astronomy and aspires to train

physicists and astronomers through the balanced combination of courses. The expertise of this discipline is divided in two departments:

- Physics and Astronomy
- Solid State Sciences

DEGREE

The two-year programme (English, 120 credits) consists of:

- 36 credits for general courses
- 54 credits for specialising elective courses
- 30 credits for the master's dissertation

The programme is jointly offered with the VUB (Brussels). The expertise of both institutions give students a broader range of elective courses, thesis subjects, etc.

EXCHANGE

The exchange programme contains a preferred list of English courses taught at UGent of the Master of Science in Physics and Astronomy.

For example: Physics and Chemistry of Nanostructures, Nuclear Methods in Material Research, Capita Selecta Solid- State Physics, Computational Physics, etc.



 Master's Programme

 2 year - 120 credits

 Dutch

MASTER OF SCIENCE IN COMPUTER SCIENCE

Computer science is now pervasive. At each office IT serves as an essential element of the organisation, almost all electronic devices are controlled by software and computer science has made its way into the living room through the Internet. As a result, the demand for highly qualified IT specialists is soaring, even to the extent that the supply cannot keep up with the demand. Furthermore, the increasing social importance implies an increasing demand for quality, which has substantial implications for the education of computer science specialists.

PROGRAMME

The Master of Science in Computer Science focuses on the algorithmic and software side of computer science and emphasises the modern developments in this field. This is reflected in a number of hot topics covered by compulsory courses, such as software engineering, machine learning and big data science, supplemented by courses on algorithmic graph theory, soft computing or network security that are fields that are since long of great importance in computer science. Teaching at Ghent University is based on research. In addition to the topics in the compulsory courses which are all based on research

experience, there is also research in combinatorial algorithms and algorithmic graph theory, computational biology, fuzziness and uncertainty modeling, machine learning and artificial intelligence, numerical mathematics, theory of programming languages, statistics and stochastic modeling.

DEGREE

The two-year programme (Dutch, 120 credits) consists of the following parts:

- 60 credits for general courses
- 30 credits for minor courses
- 30 credits for the master dissertation


EXCHANGE


The exchange programme contains a preferred list of English courses taught at UGent of the Master of Science in Computer Science.

Many courses in the main programme are taught in Dutch, but most of these can be followed based on e.g. English course material and guidance.



 Master's Programme

 2 year - 120 credits

 English

MASTER OF SCIENCE IN CHEMISTRY

(Programme jointly offered by Ghent University and VUB Brussels)

We owe our current quality of life to developments in the exact sciences in general and more specifically to chemistry. Chemistry has had, and continues to have a major influence on numerous branches of Science, such as medicine, biology, agriculture and geology, but also connects to sciences such as physics and mathematics, establishing it as a truly central science. The impact of chemistry is omnipresent in industry: numerous areas of industry involve chemistry, including for example production, quality control but also product improvement, waste processing. Innovation and the development of new products and processes are simply not possible without a fundamental knowledge of chemistry. The structure of matter and insights into molecular processes and reactions contribute to scientific breakthroughs that will address current and future challenges.

PROGRAMME

The Master of Science in Chemistry provides a broad scientific education and experience in chemical research. It contains scientifically and profession- oriented courses. It is also structured to develop a critical attitude, logical

and analytical reasoning skills, and a sense for generalization and abstraction. It is organized to initiate students to research and seek scientific progress. The students can choose from three main subjects: Analytical and Environmental Chemistry, (Bio)organic and Polymer Chemistry, Materials and Nano Chemistry.

DEGREE

The two-year programme (English, 120 credits) consists of three main subjects.

Students spend half the time on project-based education. Already in the first year of the master's programme students will start with their master dissertation. The master ends with a full semester internship, which can be completed within a company or in a foreign research laboratory.


EXCHANGE


The exchange programme contains a preferred list of English courses taught at UGent for the Master of Science in Chemistry.

The programme offers a wide selection of courses with subjects in: analytical, inorganic, macromolecular, organic, and physical and theoretical chemistry, as well as exciting research projects in these areas.



 **Master's Programme**

 **2 year - 120 credits**

 **English**

MASTER OF SCIENCE IN BIOCHEMISTRY AND BIOTECHNOLOGY

The training in biochemistry and biotechnology has the aim of forming scientists who not only have a thorough knowledge of biochemistry, molecular biology, genetics, cell biology and physiology but who can also use the biochemical and biotechnological techniques in a creative and inventive manner on plants, animals or humans. The students are also initiated in the interesting world of bioinformatics.

This training also has a social aim: to apply research and knowledge in favor of humanity and society. The focus within the training reflects this social involvement in research on the origin and treatment of all kinds of illnesses (such as cancer, chronic inflammation and metabolic diseases), on the improvement of plants (sustainable food production, production of food with improved nutritional quality, production of bio-fuels) and on the use of micro-organisms in certain chemical processes (detoxification of contaminants).

PROGRAMME

The English master programme offers five majors: Biochemistry and Structural Biology, Bioinformatics and Systems Biology, Biomedical Biotechnology, Microbial Biotechnology, and Plant Biotechnology.

The expertise in these different disciplines is offered by three departments:

- Plant Biotechnology and Bioinformatics
- Biochemistry and Microbiology
- Biomedical Molecular Biology

DEGREE

The two-year programme (English, 120 credits) consists of four modules of 30 credits each:

- common general courses (general, broadening)
- major course package (specialising)
- minor course package (broadening)
- master dissertation (practical training)

EXCHANGE

The exchange programme contains a preferred list of English courses taught at UGent of the Master of Science in Biochemistry and Biotechnology.



Master's Programme



2 year - 120 credits



English



MASTER OF SCIENCE IN BIOLOGY

The research domain of biology is very broad, basically covering the full spectrum of the origin and diversity of life and its different levels of biological organisation, ranging from cells to ecosystems and the biosphere.

Actual topics and challenges such as the conservation of threatened species, global change, sustainable use of natural resources, cloning of organisms, infectious diseases and medical progress find their roots in biology. As such, the Master of Science in Biology has strong links with various aspects of science and society.

PROGRAMME

The programme aims at teaching master students the latest scientific developments in global change ecology, biodiversity and evolutionary biology or functional biology. These programmes deal with interactions of organisms, populations, species and communities with their biotic and abiotic environment, thereby focusing on underlying morphological, functional and evolutionary processes. Such focus closely corresponds to the research experience available at Ghent University and allows students to specialise in one of the chosen domains.

Research at the department is essentially fundamental in nature, and is carried out in 14 research groups covering a suite of zoological, botanical, functional and ecological disciplines.

In-depth training in research skills is provided through the minor 'Research'. Yet, the gained knowledge and research competences are also implemented towards applications in a context of innovation and sustainable development. This is the focus of the minor 'Bio-inspired Innovation and Sustainability', where students are trained in bio-inspired design thinking and valorisation.

The department has close links with the botanical garden and the zoology collection of the Ghent University Museum, each of which plays an essential role in the training of biology students and in supporting various research programmes.

DEGREE

The two-year programme (English, 120 credits) consists of the following parts:

- 18 credits for general courses
- 42 credits for major courses
- 30 credits for minor (elective) courses
- 30 credits for the master dissertation, situated within the research area of the major course package you have chosen.

EXCHANGE

This is a full English programme of the Master of Science in Biology, allowing students to enroll for the complete 120 credits.



 **Master's Programme**

 **2 year - 120 credits**

 **English**

MASTER OF SCIENCE IN BIOINFORMATICS

(Programme jointly offered by Faculty of Sciences, Faculty of Engineering and Architecture, Faculty of Bioscience Engineering)

Bioinformatics is an interdisciplinary field of science in which biology, computer science, statistics, mathematics and engineering are combined to study and process biological data. Bioinformatics aims at gaining a better and quantitative understanding of cellular processes by integrating, analysing and modeling molecular data (so-called 'omics' data). Within this context, bioinformatics has evolved into a basic scientific discipline which is essential not only for fundamental biological research but also for medical diagnosis, cancer research, drug development, agriculture, etc.

Recent technological advances allow for the generation of huge amounts of molecular data at an ever increasing pace and have dramatically changed our view on life science research. It goes without saying that this data avalanche, together with the need for multi-angle approaches to analyse these data, has created an urgent need for highly trained scientists with an interdisciplinary mindset.

PROGRAMME

In a common track the master programme offers courses covering the different application domains of bioinformatics. This track, followed by all students irrespective of their background, primarily aims at educating the interdisciplinary competences that are the key importance to

bioinformatics. Depending on the specific background of the student (Bachelor in Biochemistry and Biotechnology, Bachelor in Bioscience Engineering or Bachelor of Computer Science Engineering/Bachelor in Informatics), this common track is complemented with one of the following specialisation tracks:

- Systems Biology
- Bioscience Engineering (title of 'Bioscience engineer')
- Engineering (title of 'Engineer')

DEGREE

The two-year programme (English, 120 credits) seeks a balance between generalisation and specialisation. In addition to a common package designed for the acquisition of interdisciplinary competences, we try to respect the individuality of the different students' backgrounds by offering numerous specific courses in each of the specialisations.


EXCHANGE

The exchange programme contains a preferred list of English courses taught at UGent of the Master of Science in Bioinformatics.

The programme offers a wide selection of courses with subjects in Systems Biology, Bioscience Engineering, Engineering, Applied Mathematics and Informatics, and Biology.



 Master's Programme

 2 year - 120 credits

 English

MASTER OF SCIENCE IN GEOLOGY

(Programme jointly offered by Ghent University and KU Leuven)

Our society is facing a number of key challenges, such as the sustainable use and management of the natural resources of our planet (water, soil, mineral resources and energy), and the protection of our population and infrastructure against the natural hazards (earthquakes, volcanic activity and climate change) that come with living on a dynamic planet. To meet these challenges, a fundamental knowledge of the composition, structure, evolution and functioning of our planet is required.

The Department of Geology consists of five research units (applied geology and hydrogeology, marine geology, mineralogy and petrology, paleontology, geomaterials) and conducts research in three major thematic research domains: global change geology, geomaterials and natural resources, and earth sciences and environment.

PROGRAMME

The master programme in Geology is offered jointly by Ghent University and KU Leuven. Ghent University offers two majors:

- Groundwater and Mineral Resources addressing the integrated management of those natural resources

- Basins and Orogens focusing on sedimentary processes, the dynamics of sedimentary basins, oceans and climates, the evolution of the biosphere, geochemistry, geophysics, geodynamics and geochronology.

At KU Leuven, one major is offered:

- Geosciences

DEGREE

The two-year programme (English, 120 credits) offers the possibility to specialise in one of the three majors (36 up to 60 credits). Depending on the chosen major students take up an additional 30 to 54 credits for elective courses. In the second year, a research project (master's dissertation) of 30 credits is scheduled.

EXCHANGE

The exchange programme comprises the English-taught courses of the Master of Science in Geology of UGent, with subjects in Basins and Orogens, and Groundwater and Mineral Resources.



 Master's Programme

 2 year - 120 credits

 Dutch



MASTER OF SCIENCE IN GEOGRAPHY AND GEOMATICS

Geographical challenges, such as climate change, migration, mobility and transportation management, urban planning and development, smart cities, nature and landscape conservation, and so on, require an interdisciplinary approach, based on a broad natural and social scientific basis in geography and including new technological developments in geomatics. The Master of Science in Geography and Geomatics is therefore a unique programme that integrates both research components and emphasises spatial and critical thinking and problem-solving, based on analytical and synthesising insights and skills. The research domain of geography focuses on all elements, processes, and changes, both natural and anthropogenic, that occur on the surface of the earth. Geomatics is a highly interdisciplinary and applied science, dealing with the methods and technologies of collecting, distributing, storing, analysing, processing, and presenting geospatial data, as well as their use in addressing geographical issues and questions. Various geospatial technologies covered in this master programme (e.g., remote sensing, cartography/geovisualisation, and GIS) are found in many disciplines of today's knowledge society and have become indispensable in a significant part of the business world.

PROGRAMME

The overall objective of this master's programme is to educate (critical) geographers who, based on their expertise and attitude, can play an active role in contemporary society. Graduated master students quickly find their way in spatial planning, sustainable development, mobility and tourism management, cartography and GIS, environmental planning, nature and heritage preservation, disaster management, etc.

DEGREE

The two-year programme (Dutch, 120 credits) consists of:

- general courses (30 credits)
- two majors to select out: Physical Geography, Landscape Science, Urban Geography, Cartography and GIS, and Topography and Hydrography (30 credits)
- minor courses: Research and Development, Environment and Planning, Surveying (30 credits)
- master dissertation (30 credits)


EXCHANGE

The exchange program contains a list of English courses taught within UGent's Master of Science in Geography and Geomatics. Recommended English courses in other related study programs such as Urbanism, Archaeology, Sustainable Land, Management, Geology, ... can also be followed.

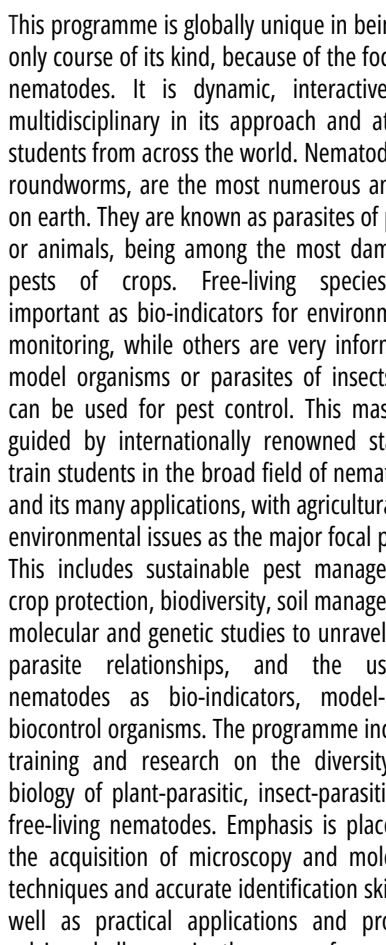


 **Master's Programme**

 **2 year - 120 credits**

 **English**

INTERNATIONAL MASTER OF SCIENCE IN AGRO- AND ENVIRONMENTAL NEMATOLGY



This programme is globally unique in being the only course of its kind, because of the focus on nematodes. It is dynamic, interactive and multidisciplinary in its approach and attracts students from across the world. Nematodes, or roundworms, are the most numerous animals on earth. They are known as parasites of plants or animals, being among the most damaging pests of crops. Free-living species are important as bio-indicators for environmental monitoring, while others are very informative model organisms or parasites of insects that can be used for pest control. This master is guided by internationally renowned staff to train students in the broad field of nematology and its many applications, with agricultural and environmental issues as the major focal points. This includes sustainable pest management, crop protection, biodiversity, soil management, molecular and genetic studies to unravel host-parasite relationships, and the use of nematodes as bio-indicators, model- and biocontrol organisms. The programme includes training and research on the diversity and biology of plant-parasitic, insect-parasitic and free-living nematodes. Emphasis is placed on the acquisition of microscopy and molecular techniques and accurate identification skills, as well as practical applications and problem solving challenges in the area of agronomy and/or environmental sciences.

PROGRAMME


The students follow compulsory courses in nematology during the first master year, after which they can either choose to continue their programme with elective courses at Ghent University, at one of our partner universities, or choose to get experience in the South by following a study programme of 2 months in Kenya. The latter includes a professional internship in the region, applying the obtained knowledge to train African agricultural extension workers and technical staff of higher education and research institutes during a Nematology Crash Course, and acquiring field experience with tropical pests and agricultural extension with a focus on nematology. The Master Dissertation can be either done at Ghent University (Faculty of Sciences or Bioscience Engineering) or at any of our associated partners. Some examples are: Bonn University (D), University Côte d'Azur (FR), E-Nema Kiel (D), International Institute of Tropical Agriculture - IITA (KE), International Centre of Insect Physiology and Ecology - ICIPE (KE), Wageningen University (NL), North-West University (SA), Federal University of Pernambuco (BR), Max Planck Institute (DE), University of Alicante (ES), Polytechnic University of Catalonia (ES), and many more...

More information:

- <https://www.imanema.ugent.be>



 Master's Programme

 2 year - 120 credits

 English

INTERNATIONAL MASTER OF SCIENCE IN MARINE BIOLOGICAL RESOURCES

(Programme jointly offered by Ghent University, University of Pierre and Marie Curie, University of the Algarve, University of Oviedo, Galway- Mayo Institute of Technology, University of the Basque Country, Polytechnic University of Marche, University of Bergen, Université de Bretagne Occidentale)

IMBRSea is supported by the European Marine Research Institutes belonging to the European Marine Biological Resource Centre (EMBRC). Based on the objectives of the EMBRC consortium, IMBRSea covers a wide, yet consistent, range of subjects related to the sustainable use of marine biological resources. With an emphasis on marine biological and ecological processes, the programme links biology of marine organisms and environmental studies with subjects in marine policy and planning.

IMBRSea aims to prepare students for the rapidly evolving demands of the blue bio-economy and research on the sustainable use of marine biological resources. The international, interdisciplinary and intersectoral nature of these challenges demands the integrated approach which IMBRSea fully encompasses.

PROGRAMME

IMBRSea is a two-year (English, 120 credits) study programme that starts with a first semester of courses within the Fundamental Modules in which students gain the core competences required for starting any of the five specialisation tracks of the programme:

- Marine Food Production (#Production),
- Management of Living Marine Resources (#Management),
- Applied Marine Ecology and Conservation (#Conservation),
- Marine Environment Health (#Environment),
- Global Ocean Change (#FutureSeas).

IMBRSea also offers a series of jointly developed activities in which transferable skills and competences are acquired: six weeks of Professional Practice offered by potential future employers, a Joint School with training on multi-disciplinary topics. During the last semester students have the opportunity to develop an individual Thesis research project, tailored to their personal interests. This project can be undertaken at one of the institutions from our large network of (associated) partners.

More information:

- <http://www.imbrsea.eu>

Partnership for the sustainable development goals

Zero hunger

Sustainable cities and communities

Life on land

Climate action

Quality education

Clean water and sanitation


 **Master's Programme**

 **2 year - 120 credits**

 **English**

MASTER OF SCIENCE IN SUSTAINABLE LAND MANAGEMENT

(Programme jointly offered by Ghent University and VUB Brussels)



Sustainable land use, urban land issues, groundwater management, and environmental engineering are crucial contemporary environmental concerns on a global scale. In numerous countries, these scarce natural resources face growing population pressures, degradation, pollution, and desertification, leading to competition among agricultural and industrial uses, urban planning, and nature conservation. To ensure sound and effective management of these resources, it is imperative to have specialists well versed in their properties and characteristics. Moreover, a profound understanding of the factors and interventions capable of influencing their current condition and value is essential and requires rigorous scientific and practical education. The interuniversity Master of Science in Sustainable Land Management aims at training a new generation of experts with a broad, advanced and up-to-date knowledge in the field of sustainable land management, with a focus on (urban) land, soil water, and surface and groundwater management in a holistic way. The programme provides students with an in-depth understanding of physical land resources in relation to climate change, food and water insecurity, environmental degradation, urbanisation and engineering applications and thus addresses directly and indirectly many of the 17 UN Sustainable Development Goals. The target group includes applicants who are already employed but wish to deepen their knowledge and develop new skills and attitudes needed in the labour market, as well as early career candidates who have just graduated.

Being an internationally oriented programme, we strive for an intercultural, diverse and diversified (in terms of background education at bachelor or master level) mixture of students. The programme crosses several disciplines and addresses hydrologists, geologists, geographers, civil engineers, agronomists, soil scientists, environmentalists, i.e. all specialists who focus on land and water resources.

PROGRAMME

The two-year programme (English, 120 ECTS credits) offers a basic as well as in- depth research-embedded training in sustainable land management, in which one of the two following main subjects must be chosen:

(i) Land and Groundwater Management, focusses on land, soil water and groundwater and their management. Graduates acquire the knowledge and skills to understand the physical behaviour of soil water and groundwater, against the overall background of land, as well as the development of groundwater quality under natural and/or human-impacted conditions using field, map, laboratory or remote sensing data. They have the scientific knowledge to use and manage soil water and groundwater in a sustainable way, and to optimize natural land and environmental conditions.

(ii) Urban Land Engineering, focusses on urban land management and engineering, with focus on water and sustainable urban development. Graduates require the knowledge of the use of modelling and decision supporting techniques to plan, design and manage urbanized areas in a sustainable way using Nature Based Solutions and innovative technologies.



Master's Program



2 year - 120 credits



English



MASTER OF SCIENCE IN MARINE AND LACUSTRINE SCIENCE AND MANAGEMENT

(Programme jointly offered by Vrije Universiteit Brussel Ghent University, University of Antwerp)

Bodies of water, including oceans, large lakes, seas and estuaries, make up the largest part of the earth's surface. Well above 70% of the earth's surface consists of water, which is essential for all life. Humans extract both directly and indirectly a major part of their food from the seas, photosynthesis in the oceans is responsible for approximately half of the global oxygen production, the oceans continue to yield unknown life forms at an astonishing rate. In spite of the importance of the water bodies of this earth, much of them remains unknown.

PROGRAMME

The master programme in Master of Science in Marine and Lacustrine Science and Management addresses students with a background in sciences. This two-year master's programme (English, 120 credits) offers a unique combination of study in the marine and lacustrine field. It adopts a multidisciplinary approach integrating physical, chemical, geological, ecological, legislative and societal aspects, also including nature conservation and sustainable development. The programme provides insight into the diversity and

complexity of the life and processes in aquatic environments such as oceans, seas, lakes and estuaries, through a balanced mix of formal teaching and practical exercises. Fieldwork is also an essential part of the programme, with field courses, internships and visits to research centers.

Students are provided with strong fundamental and applied knowledge and are prepared for an active role in the scientific research, management and policy of marine and lacustrine systems.

Information about the programme and about the application procedure, can be found on the following website:

- <http://www.oceansandlakes.be>

SUBSEQUENT MASTER OF SCIENCE IN STATISTICAL DATA ANALYSIS

Increasing computer power and the professional need to extract objective information from observed data have led to complex databases. Statistical science has become a broad discipline with well-developed methods and techniques for the design and analysis of a wide range of empirical studies. Information obtained from correctly analysed data allows to predict, adjust and even optimise processes based on evidence. Inefficient or haphazard data gathering and analysis, however, can lead to inferior or misleading conclusions with possibly far-reaching consequences. Hence, international professional and research standards in various fields demand high quality data analysis, performed by qualified statisticians.

PROGRAMME

This programme offers intensive training in modern statistical methods and data analysis to scientists from a variety of fields including biology, bio-informatics, economy and marketing, environmental and life sciences, engineering, mathematics and physics, psychology and social sciences. The programme aims at improving problem solving skills and evidence based decision making. This will enable scientists to play a distinctly important role within their field of expertise.

More information:

- <https://mastat.ugent.be>



SUBSEQUENT MASTER OF SCIENCE IN SPACE STUDIES

(Programme jointly offered by Ghent University and KULeuven)

Space is central to 21st-century society. It is a nursery for cutting-edge technologies and a domain of great geopolitical, international and commercial importance. Activity in space requires highly-skilled experts with an interdisciplinary perspective on interconnected technological, scientific, political, legal, and economic dimensions. The Master of Space Studies instills postgraduate students with interdisciplinary expertise and critical knowledge skills through a programme focused on the symbiosis between technology, quantitative and biomedical sciences, as well as space law, policy, business, and management.

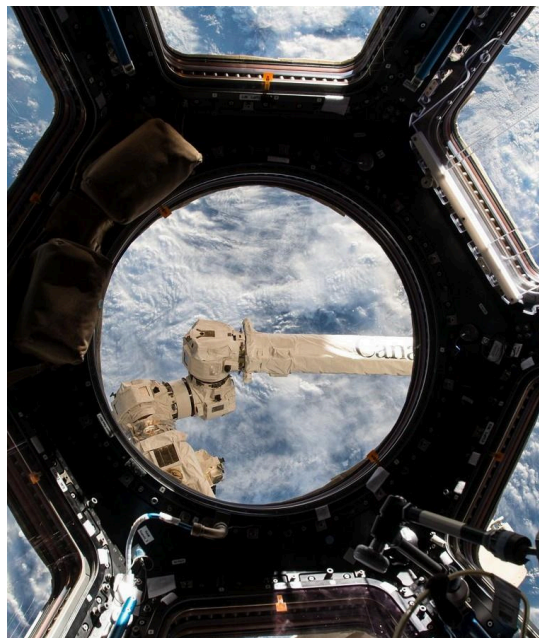
PROGRAMME

Thanks to the interuniversity effort of the programme, students get embedded in the academic research expertise of two internationally-ranked Belgian universities. In addition to coursework in space sciences, the curriculum is enriched by a series of guest lecturers from international, national and regional institutions. Depending on their background and interests, students have the opportunity to deepen their knowledge through more domain-specific optional courses covering the domains of - Space Law, Policy, Business and Management- Space Sciences - Space Technology and Applications.

Extracurricular initiatives are taken to bring the students in contact with actors in the different fields of space studies and students are given the opportunity to take part in several national and international networking events, allowing students to interact with industry leaders, policymakers and research experts, exchange ideas, grow their network and explore new career opportunities.

More information:

- <http://fys.kuleuven.be/ster/education/mss/master-of-space-studies>



SUBSEQUENT MASTER OF SCIENCE IN PLANT BIOTECHNOLOGY

Our training in plant biotechnology is embedded in an environment of top science and industrial entrepreneurship where translational research enables the transfer of knowledge from plant models to crops.

Ghent University in collaboration with the Flemish Institute for Biotechnology (VIB) has a long standing tradition of converting basic plant science into successful industrial entities: Plant Genetics Systems and CropDesign (now BASF Plant Sciences), Devgen (now Syngenta) and more recently Biotallys and Aphea.Bio.

Today, these companies together with our plant research center form the largest European Plant Biotechnology campus. Both our companies and research labs are continuously recruiting talented people for research positions.

PROGRAMME

The curriculum covers all aspects of modern plant biotechnology related to state of the art technologies, plant growth and development, abiotic stress and biotic interactions, IP and safety regulation. Moreover, through elective courses and a substantial master project, students can specialise in their field of interest.



POSTGRADUATE STUDIES

WEATHER AND CLIMATE MODELING

The aim of this postgraduate programme is to prepare scientists in the most efficient way to become active as a researcher in the modern discipline of atmospheric modeling for weather and climate applications. The content of the programme is deeply rooted in the current scientific challenges encountered within the international ACCORD consortium. This consortium develop and maintain the European HARMONIE system that is used for making numerical weather predictions and climate studies.

More information:

- <http://www.wcm.ugent.be>

HYDROGRAPHY

(Programme jointly offered by Antwerp Maritime Academy and Ghent University)

The objective of hydrography is to collect and record about the world's oceans and seas. Hydrography is instrumental in the production of nautical charts for seafarers. It also assists mariners by providing other necessary tools such as tidal predictions, ocean currents, daily up-to-date information about changes related to navigational areas, etc.

In a wider perspective hydrographers can predict erosion patterns and the evolution of beaches for communities and tourism, and are involved in land-winning and offshore activities.

More information:

- <http://www.hzs.be/en>



ACADEMIC YEAR - EXAMINATIONS - ECTS

ACADEMIC YEAR

The academic year at Ghent University is divided into two semesters. The first semester starts in September and closes in February. The second semester starts in February and closes in July. This means that a part of the courses of a study programme is completed by the end of December, followed by examinations in January- February (4 weeks) and that an other part is completed in June (5 weeks).

EXAMINATIONS

Examinations are held in January and June. A course unit must be fully completed before an exam can take place. However, full-year course units take longer than only one semester. Examinations for these courses always take place in June.

At the end of August / beginning of September a second examination period is organised. Students can use this period to retake (failed) courses from both the first and the second semester.

Examinations can be oral and/or written.

This is clearly described in the ECTS course specifications in the Ghent University course catalogue of the current academic year.

ECTS

Ghent University has adopted the European Credit Transfer System (ECTS). An overview of all ECTS per course unit is available via the course catalogue.

1 ECTS credit point equals about 28 hours of study, which includes preparing for and attending classes, practical or lab work, reading books, writing papers, studying for tests and exams, etc; a complete year of study in Belgium encompasses approximately 60 ECTS.

APPLICATION PROCEDURES

DEGREE STUDENT

International students who want to obtain a diploma or degree at Ghent University apply and enroll as regular students on the basis of a diploma obtained abroad.

<https://www.ugent.be/prospect/en>

EXCHANGE STUDENT

International students who temporarily live in a foreign country and attend courses or are involved in other academic activities, have to follow the procedure of exchange students.

PHD STUDENT

An overview of the resources and information available to doctoral candidates at Ghent University:

<https://www.ugent.be/en/research/doctoralresearch>



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Credits photography:

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p. 4-5-14-16-32-34-36-37-38-39: Hilde Christiaens, Christophe Vander Eecken, Nic Vermeulen

p. 6 <http://visibleearth.nasa.gov/view.php?id=68992> – credit: Jacques Descloitres, MODIS Rapid Response Team, NASA/GSFC

p. 8 <http://www.eso.org/public/images/ib-la-silla04/> - credit: Iztok Boncina/ESO

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