WAGENINGEN UNIVERSITY
WAGENINGEN UR

Master programmes Wageningen University

www.wageningenuniversity.eu | 2015-2016

Wageningen University

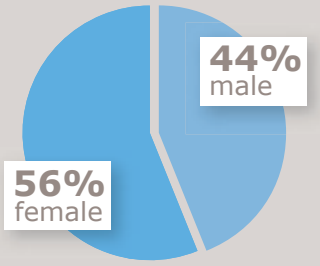
Students

8,814 students

76% Dutch students

24% international students

107 nationalities



9% of the Dutch alumni

78% of the international alumni

live and/or work abroad

Alumni

39,467 graduates

32,946 Dutch **6,521** international

Rankings

Nr. **1** agricultural university in the world.
National Taiwan University Ranking 2013.

Nr. **2** of the 150 best universities in the world in the field of Agriculture and Forestry.
QS World University Rankings 2014.

Nr. **77** of all universities worldwide.
Ranked 22nd for life sciences.
Times Higher Education World University Rankings 2014.

SustainaBul-award for the most sustainable Dutch university.

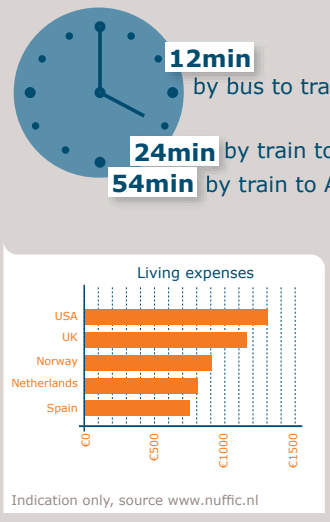
The best university in the Netherlands for the 9th year in a row.
the Dutch study choice guide 'Keuzegids Masters'.

Living in Wageningen

12min by bus to train station

24min by train to Utrecht

54min by train to Amsterdam



Indication only, source www.nuffic.nl

> 60 different sports for only €11,50 a month

24% of the residents is student

Wageningen UR

20 BSc programmes
29 MSc programmes

1 aircraft

87 chairgroups
6 partnerships

New **2** Online Masters

11 research institutes
7 test locations /innovation centres
2 libraries

>15 laboratories

1 sports centre

Welcome

'To explore the potential of nature to improve the quality of life.'

That is the mission of Wageningen UR (University & Research centre). Within the domain of 'healthy food and living environment', Wageningen UR works around the globe conducting research for government agencies and the business community.

'To explore the potential of nature and improve the quality of life.' That is the mission of our scientists and students. Wageningen University is one of the world's leading research and education institutes when it comes to life sciences. We focus on complex issues in food production, the relation between food and health, environmental issues and biodiversity. These issues are of great importance and subject to increasing worldwide concern.

At Wageningen, we take the broader picture into account before zooming in on the finer details. This enables us to both understand processes on a molecular level and their influence on and interaction with higher integration levels, such as ecosystems, crop characteristics or human health. We also interlink socio-economic approaches to problems with biological, chemical or physical approaches. In the complex dynamics of the modern world, it is no longer possible to solve complex issues through a simple mono-disciplinary result or approach.

This conviction is taught to our students and is the driving force behind our leading research groups. Our scientific and educational endeavours are internationally oriented and have an impact on society, policy and science. Students and scientists from around the world gather in Wageningen to form a large international community that bridges cultures in a natural way. This enriches the dynamic climate of our university and gives our Master study programmes an extra dimension.

I hope this brochure captures your interest and that we may welcome you in the near future as a new member of Wageningen University's international academic community.

Prof. Dr. Martin J. Kropff
Rector Magnificus

Master of Science programmes

Life Sciences:

Environmental Sciences:

Social Sciences:

Studying in Wageningen

International character

Wageningen University has a very international character with 24% of its international student body coming from 107 different countries. It is the first Dutch university to hold an international accreditation, given by the Dutch-Flemish Accreditation Organization (NVAO). Wageningen University is one of the best universities worldwide in the field of Life Sciences. Through partnerships with numerous national and international companies and governments, Wageningen University students experience no problems in finding internships, challenging work and career opportunities around the world.

The University

Wageningen University is one of the leading international universities in the field of healthy food and living environment. Studying at Wageningen University guarantees you premium quality education and an international quality benchmark on your curriculum vitae. Here, you will focus on current and future global issues that are of increasing importance to both industry and government. You are ensured personal guidance throughout your student career with a teacher-student ratio of 1:7, which allows you to make the most of all the study options provided. The Code of Conduct with respect to international students in Dutch higher education has been revised as per 1 March 2013. This code sets a minimum standard for Dutch higher education institutions in their dealings with international students: www.wageningenuniversity.eu/whywageningen.

Campus & Facilities

With 70.000 m2, Wageningen Campus equals the size of 11 soccer fields. It offers excellent student facilities and it is a place where students, teachers, researchers and staff from all over the world come together and exchange ideas. Forum is Wageningen University's largest education building. The main library is located in Forum and is open 14 hours per day. Due to a steady increase of the student body, a new education building, Orion, has been constructed and officially opened in September 2013. There are several places on campus where you can relax and enjoy a drink with your fellow students like the 'Grand Cafe' at Forum, 'the Spot' in Orion, or you can have lunch at the 'Restaurant of the Future'. Nearby, sports centre 'De Bongerd' offers over 60 different sports ranging from tennis, squash and indoor biking to football, rugby and athletics. There are multiple student associations and each study programme has its own study association that organises a wide range of activities and services for students.

Housing

Most Dutch and international students of Wageningen University also live in Wageningen. For Dutch students, Idealis is the biggest student accommodation provider in Wageningen and you can apply for one of the several thousands of housing units they own. You can also try to find a suitable room via HousingDesk Wageningen or one of the national organisations mediating housing in the Netherlands.

If you are a prospective international Master student intending to follow the complete study programme at Wageningen University, then you have a bed guarantee. This means that Wageningen University guarantees you a place to stay upon arrival. This will be a single student room containing basic furniture and fast Internet connection. For more information about housing please visit www.wageningenuniversity.eu/housing.

*Please note that at certain times of the year the demand for rooms is very high. It is therefore possible that you may be given temporary housing until a permanent room becomes vacant.

Annual Introduction Days

The Annual Introduction Days (AID) are held prior to the start of the Master programme and are highly recommended for all new students. During the introduction programme, you can become acquainted with Wageningen, your fellow students and the university: www.aidwageningen.nl.

Wageningen town

Wageningen University is centrally located in the Netherlands. The cities Amsterdam, Rotterdam and The Hague are only one-hour travel by train from Ede-Wageningen's station and Utrecht only 25 minutes. From train station Ede-Wageningen to Wageningen Campus is a 12-minute bus ride. Wageningen is built on 'bicycle scale' meaning that all university facilities and the city centre are within cycling distance. There are historic and modern buildings, high-rise student flats, works of art and botanical gardens that all add to the diversity of Wageningen. More than 8.000 students study at Wageningen University and they, accounting for 20% of the population, turn Wageningen into a university town. The many international students, professors and researchers contribute to the international atmosphere. Wageningen has a thriving cultural and social life. Theatres, cinemas, student clubs, bars, nightlife and restaurants create the elegance of a city in a beautiful rural setting. The nearby flood plains of the Rhine River and National Park the Veluwe are ideal for those who enjoy nature, hiking, running or cycling.

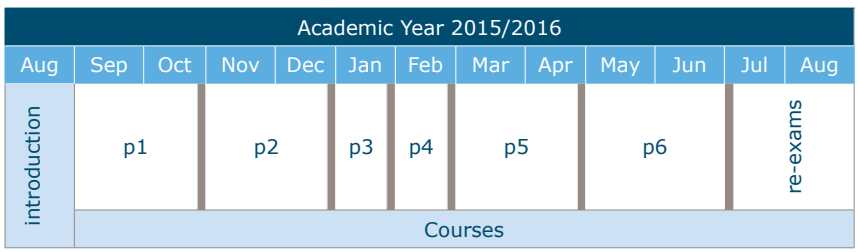
Structure of the programme

Wageningen University offers 29 Master of Science (MSc) programmes and the language of instruction is English. All Master study programmes are full time, have a duration of two years and are comprised of 120 ECTS credits. In addition to this, it is possible to follow one of the two part-time online master specialisations from all over the world through the university's Virtual Learning Environment. This pioneering way of studying is an ideal opportunity for you if you want to obtain a full Master degree, but are not able to spend two full years away from home.

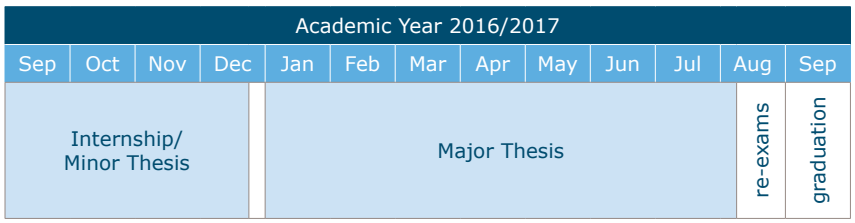
In Wageningen, the academic year is split up into six periods. During each period, you follow one or two courses that are completed with an exam. The first, second and third period, and the fourth, fifth and sixth period run parallel to the European semesters, which means you can combine your courses in Wageningen with courses at other universities without running into scheduling problems.

The first year of the Master study programme is comprised of mandatory courses, but you also have several elective courses which allow you to specialise within your programme.

The second year includes an internship and a master thesis. The subject of the thesis is developed in consultation with a senior staff member of Wageningen University. Students usually propose their own thesis research topics while taking ongoing research in the relevant Wageningen University departments into account.



Exams



MSc Animal Sciences

Dr. René P. Kwakkel | Programme Director | +31 (0)317 48 24 68 | rene.kwakkel@wur.nl www.wageningenuniversity.eu/mas

Alumna Linda van Zutphen. "I work as a Communication Officer for the Research & Development and Quality Affairs department of Nutreco. This company is a global leader in animal nutrition and fish feed. I am involved in marketing and group communication about innovations, quality and sustainability. During my MSc Animal Sciences, I did my internship at Nutreco's research facility in Spain. The MSc programme provided me with multidisciplinary knowledge on animal production and the skills to apply this. To communicate about the application of our research in products for animal health is a great opportunity to combine my scientific background with my passion for communication."

Specialisations

Animal Breeding and Genetics

Understanding the function and sustainable utilisation of genetic differences in a wide range of species plays a central role in this specialisation. Students learn how breeding and genetics can contribute to safe and healthy food from animal origin and how it contributes to the health and welfare of animals.

Animal Nutrition

Students focus on the interaction between animals and their nutrition. Students learn about the way animals digest and convert food by studying the nutrient flows and the physiology of the animals in relation to the composition of feeds. They also learn about the effect of feed in relation to health, welfare and behaviour of the animal.

Applied Zoology

Understanding the relationship between structure and function of all systems within the body is the main focus of this specialisation. Students look at organ structures, hormones, bone structure or the immune system of animals and learn how these systems respond to external influences.

Animal Health and Behaviour

Knowledge of the adaptive capacity of animals is required to be able to determine how to keep an animal healthy and how changes affect the animal. Students learn to study behaviour, stress or immune parameters or energy metabolism to determine e.g. which housing system or feed regime is best for animal health and welfare.

Animal Health Management

Students focus on quantifying the risk of transmission of infectious diseases within and between groups of animals. They investigate the influence of many factors on this process. Students learn to combine animal health management at population level with socioeconomic aspects by studyin aspects of veterinary epidemiology.

Animal Production Systems

Students view animal production systems in relation to the environment worldwide. Students learn about human and animal interaction and the influence of animal production on the environment, health and welfare of people and animals, and the economy.

Professional Tracks and International Programmes

In addition, students can choose a track which leads to a specific type of career. You can focus on Research, Education, Communication & Policy, or Business & Management. We also offer international programmes that lead to a double degree, like a Master in Animal Breeding and Genetics, Sustainable Animal Nutrition and Feeding, European Animal Management or Animal Welfare Assessment.

Programme summary

Humans interact with animals in many different ways, ranging from raising livestock for food to keeping pets for pleasure. Animal husbandry and livestock development are constrained not only by technical factors, such as feed supply, animal health, management and genetics, but also by infrastructural and socio-economic factors. Consequently, today's animal scientists need in-depth scientific training combined with a critical attitude towards all factors that limit the sustainable development of animal husbandry. Students focus on specific disciplines, such as nutrition, breeding, health or marketing with the aim of becoming experts in one of these fields. Our individually tailored programme trains animal scientists to obtain a broad view. They will be well-equipped to tackle the problems of sustainable livestock management and to provide proper care for companion animals, zoo animals and wildlife.

Your future career

Our graduates work as nutritionists, policymakers, breeding specialists, advisors, managers, researchers or PhD students. They work for feed manufacturing companies, pharmaceutical companies or breeding organisations but also within regional and national governmental organisations, non-governmental organisations or research institutes and universities.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Biology - MSc Forest and Nature Conservation - MSc Aquaculture and Marine Resource Management - MSc Biosystems Engineering - MSc Organic Agriculture.

MSc Aquaculture and Marine Resource Management

Dr. Marc Verdegem | Study Advisor | +31 (0)317 48 45 84 | mam@wur.nl | www.wageningenuniversity.eu/mam

Alumna Pascalle Jacobs. "I had already graduated as a terrestrial ecologist before I started the Master Aquaculture and Marine Resource Management. I started the MSc Aquaculture and Marine Resource Management mainly because I saw a lot of potential in marine research. I did my thesis at IMARES and after my graduation they gave me the opportunity to work there as a PhD on a research project. In my research, I look at if and to what extent big amounts of young mussels attached to ropes or nets (mussel seed collectors) change the environment. These young mussels eat a lot so one of my research questions is if this grazing affects the amount of food available for other animals."

Specialisations

Aquaculture

This specialisation deals with the culture of numerous aquatic organisms (such as finfish, shrimp, shellfish, ornamental fish, corrals, sponges and algae) in a wide range of culture environments (from sea enclosures to semi-extensive ponds and high-tech recirculation systems). Production methods should be sustainable, guarantee the health and well-being of the culture organisms, be economically viable, socially accepted, and result in safe and healthy products. This can only be achieved through knowledge and skills in aquatic production ecology based on knowledge of biological, physical and chemical integrity of water bodies and insight in economic and social driving factors.

Marine Resources and Ecology

This specialisation focuses on the sensitivity of marine communities in relation to human interventions, including climate change, fisheries and habitat destruction. You will learn to address limiting factors in order to be able to contribute to an improved biodiversity, environmental quality and sustainability of marine ecosystems. To do so, it requires insight into te ecological processes that form the basis for marine food chains, the interaction between species and the functioning of the different ecosystems.

Marine Governance

In this specialisation, the focus lies on the sustainable governance and economics of marine and coastal systems. The goals and strategies of commercial enterprises, non-governmental and governmental organisations and international institutions are analysed, and their effects are evaluated in relation to both organisations and ecosystems involved.

Programme summary

Oceans, seas, estuaries and lakes are major providers of ecosystem goods and services such as food, tourism and coastal protection. In many cases, exploitation levels have bypassed the carrying capacity of these ecosystems, leading to devastating effects on biodiversity and ecosystem functioning.
To preserve marine biodiversity and its ecosystem functions, innovative and sustainable solutions are necessary. Therefore, there is a need for young professionals who know how to take an integrative approach to marine ecosystems management.
The MAM programme starts with courses that give a common basis on aquaculture and marine resource management. In these courses, you will learn the principles of marine ecology and the governance of marine systems, the biology and ecology of aquatic organisms and the role of science in public policy processes. Within the Aquaculture and Marine Resource master programme, you can choose one of three specialisations: Aquaculture, Marine resources and ecology, Marine Governance. Graduates are skilled in techniques and methods for analysing and solving biological environmental problems in aquatic systems by looking at the organisms and the communities including ecological, management and social aspects.

Your future career

The interest in sustainable management of the seas and coasts is booming, while there are only few professionals available with an integrated and specialised training in this field. Numerous types of specialists are needed, including technical specialists, researchers, consultants and project leaders in commercial, governmental and non-governmental organisations.

ADMISSION REQUIREMENTS
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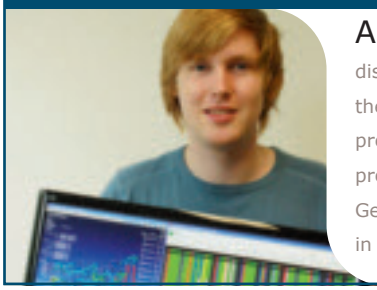
Related programmes
MSc Animal Sciences - MSc Biology - MSc Environmental Sciences - MSc Forest and Nature Conservation.

MSc Bioinformatics

Dr. Peter Schaap | Study Advisor | +31 (0)317 48 51 42 | mbf.msc@wur.nl | www.wageningenuniversity.eu/mbf



Alumnus Tom van den Bergh. "It is sometimes difficult for doctors to diagnose genetic diseases caused by missense mutations. A missense mutation does not necessarily mean that you have the gene-associated disease and will become ill since not all missense mutations lead to appreciable protein changes." Tom created a database for Fabry's disease for his final thesis. He wrote a computer programme that reads publications and stores all information about Fabry mutations in its database. Genetic researchers can, in turn, quickly access this database to determine if the mutation they found in a patient has already been addressed in literature and what the effects were.

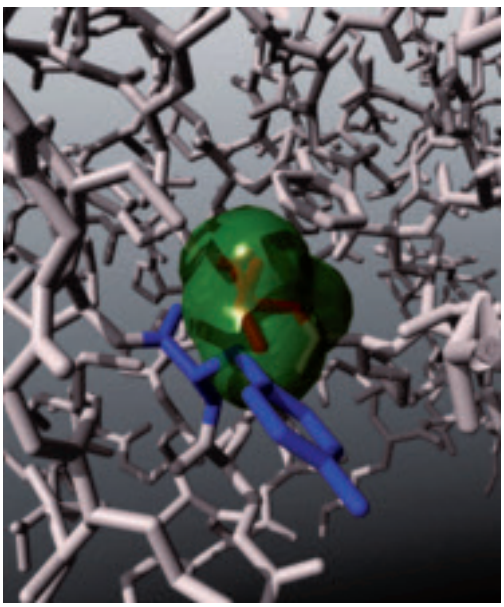
Thesis tracks

Bioinformatics

The bioinformatics track focuses on the practical application of bioinformatics knowledge and skills in molecular life sciences. It aims at creating and using bioinformatics resources to address specific research questions. The knowledge and skills gained can be applied in many life science disciplines such as molecular & cell biology, biotechnology, (human) genetics, health & medicine and environmental & biobased technology.

Systems Biology

The systems biology track focuses on the study of the complex interactions in biological systems and on the emerging properties derived from these. Systems biology approaches to complex biological problems offer a wealth of possibilities to understand various levels of aggregation. It enables control of biological systems on completely different scales, ranging from the molecular cellular level to marine, plant, or animal ecosystems to a desired state. The knowledge and skills gained can be applied in many life science disciplines including molecular & cell biology, applied biotechnology, genetics, medicine and vaccine development, environmental and biobased technology.



Programme summary

DNA contains information about life, but how is this information used? Biological data, such as DNA and RNA sequence information produced by next-generation sequencing techniques, is accumulating at an unprecedented rate. Life scientists increasingly use bioinformatics resources to address their specific research questions. Bioinformaticians bridge the gap between complex biological research questions and this complex data. Bioinformaticians use and develop computational tools to predict gene function(s) and to demonstrate and model relationships between genes, proteins and metabolites in biological systems. Bioinformatics is an interdisciplinary field that applies computational and statistical techniques to the classification, interpretation and integration of large-scale biological data sets. If different data types are joined then complex interactions in biological systems can be studied. The use of systems biology methods to study complex biological interactions offers a wealth of possibilities to understand various levels of aggregation and enables control of biological systems on different scales. Systems biology approaches are therefore quickly gaining importance in many disciplines of life sciences, such as in applied biotechnology where these methods are now used to develop strategies for improving production in fermentation. Other examples include bioconversion and enzymatic synthesis, and in the study of human metabolism and its alterations where systems biology methods are applied to understand a variety of complex human diseases, including metabolic syndromes and cancer. The Wageningen Master programme focuses on the practical application of bioinformatics and systems biology approaches in many areas of the Life Sciences. To ensure that students acquire a high level of understanding of modelling and computing principles, the students are trained in the fundamentals of database management, computer programming, structural and functional genomics, proteomics and systems biology methods. This training includes advanced elective courses in molecular biology and biostatistics.

Your future career

Bioinformatics and Systems Biology are new fast growing biology based interdisciplinary fields of research poorly served by the traditional curricula of Life Sciences. As demand has outpaced the supply of bioinformaticians, the first job after graduation is often a PhD project at a research institute or university. It is expected that five years after graduation, about one third will stay employed as a scientist at a university or research centre, while the others choose for careers at research-oriented pharmaceutical and biotechnological companies.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Biotechnology - MSc Molecular Life Sciences - MSc Plant Biotechnology.

MSc Biology

Dr. Peter de Jong | Study Advisor | +31 (0)317 48 49 37 | office.biologie@wur.nl | www.wageningenuniversity.eu/mbi

Alumna Iris de Winter. "I work as a PhD student at Wageningen University. In my research, I aim to understand the effect of human disturbance on the parasites prevalence in lemurs. I also look at the potential risks of the transmission of diseases and parasites from lemurs to humans, but also vice versa, from humans (and their livestock and pets) to wild lemur population. I alternate my fieldwork in Madagascar with parasite identification, analyses and writing manuscripts in the Netherlands. With this research, I hope to gain more insight in the factors that increase parasite prevalence in natural systems and hereby to improve the protection of both lemurs and their natural habitat."

Specialisations

Animal Adaptation and Behavioural Biology

This specialisation focuses mainly on subjects as adaptation, mechanisms involved in these adaptations and behaviour of animals.

Bio-interactions

In this specialisation, you obtain knowledge about interactions between organisms. You learn to understand and interpret interactions on different levels, from molecular to ecosystem level.

Molecular Ecology

In this specialisation, you learn to use molecular techniques to solve ecological questions. You will use, for example, molecular techniques to study the interaction between a virus and a plant.

Conservation and Systems Ecology

This specialisation focuses initially on fundamental processes that play a key role in ecology. You learn to interpret different relations, for example, the relation between chemical (or physical processes) and bioprocesses. Furthermore, you learn to analyse different ecosystems. You can use this knowledge to manage and conserve these ecological systems.

Evolution and Biodiversity

The systematics of biodiversity in an evolutionary perspective is the central focus of this specialisation. Subjects that will be addressed in this specialisation are: evolution, genetics, biosystematic research and taxonomic analysis.

Health and Disease

This specialisation focuses on regulatory mechanisms that have a central role in human and animal health.

Marine Biology

Choosing this specialisation means studying the complexity of the marine ecosystem. Moreover, you learn about the impacts of, for instance, fishery and recreation on this ecosystem or the interaction between different species in this system.

Molecular Development and Gene Regulation

This specialisation focuses on gene regulations and the different developmental mechanisms of organisms.

Plant Adaptation

This specialisation focuses on the adaptations that different plants gained in order to adjust to various conditions. You learn to understand the regulation processes in plants that underlie these adaptations.

Programme summary

Biological issues are at the forefront of the technological progress of modern society. They are central to global concerns about how we effect and are affected by our environment. Understanding the complexity of biological systems, at scales ranging from single molecules to whole ecosystems, provides a unique intellectual challenge.

The MSc Biology allows students to get a broad overview of the latest developments in biology, ranging from genes to ecosystems. They learn to critically discuss the newest scientific developments in the biological sciences. Within their area of specialisation, students deepen their knowledge and skills in a certain subject. To prepare for a successful international career, we strongly encourage our students to complete part of their programme requirements abroad.

Your future career

Many graduates from the MSc Biology study programme enter careers in fundamental and applied research or go on to become PhD students. Some find a position as communication officer, manager or policymaker. Compared with other Dutch universities, many biology graduates from Wageningen University find a position abroad.

ADMISSION REQUIREMENTS

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Related programmes

MSc Molecular Life Sciences - MSc Animal Sciences - MSc Plant Sciences - MSc Forest and Nature Conservation - MSc Biotechnology - MSc Plant Biotechnology - MSc Aquaculture and Marine Resource Management - MSc Organic Agriculture.

MSc Biosystems Engineering

Joyce Penninkhof MSc | Study Advisor | mab.msc@wur.nl | www.wageningenuniversity.eu/mab

Alumnus Wouter Bac. "I am doing a PhD at Wageningen University about the development of a pepper harvest robot. A number of harvest robots have already been developed, for example, for cucumbers, strawberries and oranges, but often appear to be slow and do not pass the pilot phase. That is why I want to develop software algorithms that can 'learn' in order to pick faster and more accurately. In fact, we want to implement the learning capabilities of humans into a harvest robot!"

Thesis tracks

Agricultural Engineering (Farm Technology)

This topic consists of four main themes, namely automation for bioproduction, greenhouse technology, livestock technology and soil technology. All these topics have the shared goal of designing systems in which technology is applied to the demands of plants, animals, humans and the environment. Examples of such applications include precision agriculture, conservation tillage, fully automated greenhouses and environmentally friendly animal husbandry systems that also promote animal welfare.

Process Dynamics

Production processes and various kinds of machinery have to be optimised to run as efficiently as possible; and with the least amount of possible environmental impact. To achieve this, computer models and simulations are developed and improved. Examples include designing control systems for a solar-powered greenhouse to include a closed water cycle and designing a tomato-harvesting robot.

Information Technology

Information and communication play a vital role in our society. It is necessary to acquire, use and store data and information to optimise production processes and quality in production chains. This requires the design and management of business information systems, software engineering, designing databases and modelling and simulation.

Environmental Technology

Environmental technology revolves around closing cycles and reusing waste products and by-products. Processes have to be designed in such a way that they either reuse waste or separate it into distinct and reusable components. Examples include the production of compost, the generation of green energy or the design of environmentally friendly animal husbandry systems and greenhouses.

AgroLogistics

The goals of agrologistics are to get the right product in the right quantity and quality at the right time and to the right place as efficiently as possible while fulfilling the requirements of the stakeholders (such as government legislation and regulations). This requires the design of effective, innovative logistics concepts in agrifood chains and networks. Examples are the design of greenhouses developed for optimal logistics or designing a dairy production process with minimal storage costs.

Programme summary

During the master Biosystems Engineering, students are educated in finding innovative solutions. The programme combines knowledge of technology, living systems, natural and social sciences with integrated thinking using a systems approach. Solutions can be applied to either the field of food or non-food agricultural production. During the programme, you develop independence and creativity while acquiring skills that enable you to analyse problems and work as part of an interdisciplinary team. Biosystems Engineering is a tailor-made, thesis oriented programme based on the specific interests and competencies of the student.

Your future career

Most graduates are employed in the agro-food sector, or related sectors of industry and trade, from local to international companies. They are project leaders, product managers, technical experts, sales specialists or managers at many kinds of companies including designers of agricultural buildings (animal husbandry systems, greenhouses) and bioenergy production systems. Others find jobs with IT companies (climate control computers, automated information systems) or firms in the agro-food chain that produce, store, process, distribute and market agricultural products. In the service sector or at governments, graduates enter careers as consultants, information officers or policy-makers in the fields of technology and sustainable agricultural production, while others enter research careers at institutes or universities.

ADMISSION REQUIREMENTS
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Related programmes

MSc Animal Sciences - MSc Plant Sciences - MSc Geo-information Science - MSc Geographical Information Management and Applications - MSc Organic Agriculture.

MSc Biotechnology

Dr. Sonja Isken | Programme Director | +31 (0)317 48 22 41 | mbt.msc@wur.nl | www.wageningenuniversity.eu/mbt

Alumnus Sina Salim. In America and Brazil, production of maize and sugar cane for bio ethanol takes up enormous swathes of arable land that could otherwise be used for food production. This leads to the well-known food versus fuel dilemma. An alternative method for producing biodiesel is the use of algae. Currently, too much energy is consumed during the growth and harvesting of algae, but huge efforts are being made to reduce these energy requirements. Sina Salim is trying to develop a cheap and energy efficient harvesting method to ultimately produce biodiesel from algae, a competitor of fossil fuel.

Specialisations

Cellular and Molecular Biotechnology

This specialisation focuses on the practical application of cellular and molecular knowledge with the aim of enhancing or improving production in micro-organisms or cell cultures. Possible majors: molecular biology, biochemistry, microbiology, virology, enzymology and cell biology. The knowledge and skills gained can be applied in food biotechnology, medicine and vaccine development, environmental and bio-based technology.

Process Technology

This specialisation focuses on engineering strategies for developing, enhancing or improving production in fermentation, bioconversion and enzymatic synthesis. Possible majors: bioprocess engineering, food or environmental engineering, applied biotechnology and system and control techniques. The knowledge and skills gained can be applied in food biotechnology, medicine and vaccine development, environmental and bio-based technology.

Marine Biotechnology

This specialisation focuses on the use of newly- discovered organisms from the sea in industrial processes. Applications include production of new medicines, fine chemicals, bio-based products and renewable energy.

Medical Biotechnology

This specialisation focuses on the use of modern biotechnology in the development and production of new vaccines and medicines. Advanced molecular and cellular techniques are used to study diagnostic and production methods for vaccines and medicines. Possible majors: molecular biology, microbiology, virology and cell biology.

Food Biotechnology

This specialisation focuses on the application from biotechnology to food processing. The approach includes microbial and biochemical aspects integrated with process engineering and chemistry. Possible majors: food microbiology, food chemistry and process engineering.

Environmental and Biobased Technology

This specialisation focuses on the design and development of biotechnological processes for solving environmental problems by removing waste products or by producing renewable energy. Possible majors: environmental technology, bioprocess engineering, microbiology and system and control techniques.

Programme summary

Biotechnology is defined as the industrial exploitation of living organisms or components derived from these organisms.
Its practical applications include age-old techniques such as brewing and fermentation, which are still important today.
In recent decades, gene modification has revolutionised the biotechnology industry spawning countless new products and improving established processes. Modern biotechnology has become an applied area of science with a multidisciplinary approach embracing recombinant DNA technology, cellular biology, microbiology and biochemistry, as well as process design, engineering.

Your future career

Graduates in biotechnology have excellent career prospects. More than 60 percent begin their careers in research and development. Many of these Master graduates go on to earn their PhD degrees and often achieve management positions within a few years. Approximately 30 percent of our graduates start working for biotechnology companies immediately.
Relatively few begin their careers outside the private sector or in a field not directly related to biotechnology. In the Netherlands, some graduates work for multinational companies such as Merck Schering Plough, DSM, Heineken, Unilever and Shell, while others find positions at smaller companies and various universities or research centres such as NKI and TNO.

ADMISSION REQUIREMENTS
see page 40.

Related programmes

MSc Molecular Life Sciences - MSc Food Technology - MSc Bioinformatics - MSc Plant Biotechnology - MSc Environmental Sciences.

MSc Food Quality Management

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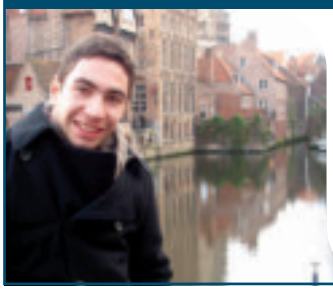

Student Tasioudis Dimitrios. "It was my desire to combine my scientific background with management studies that resulted in my decision to do the Master Food Quality Management. The master gives you a useful tool in understanding the meaning of every result in a real life situation and enables you to select the best solutions to tackle specific problems. Wageningen University is a great university where science flourishes and research is of utmost importance. It is the ideal environment to gain knowledge and to accomplish your goals."

Specialisations

You will combine Food Quality Management courses with several courses based on your educational background and interest. These courses can be in fields of food technology (e.g. product design, process design), food safety (e.g. food safety management, microbiology), management (e.g. case studies management, entrepreneurship) or logistics (e.g. food logistics management, supply chain management). The programme is thesis oriented and tailor-made to your specific interests. The thesis and internship in the second year of the programme are carried out in cooperation with the food industry.

Programme summary

Food quality management assures the health and safety of food and other perishable products (e.g. flowers) and has become increasingly important in today's society, this is due to changing consumer requirements, increasing competition, environmental issues and governmental interests. This has resulted in a turbulent situation on the food market and in the agro-food production chain. The situation is further complicated by the complex characteristics of food and food ingredients, which include aspects such as variability, restricted shelf life and potential safety hazards; as well as many chemical, biochemical, physical and microbiological processes. To face this challenge, continuous improvement in food quality management methods is required wherever knowledge of modern technologies and management methods plays a crucial role.

Quality issues in food and other perishable products are generally tackled using either a technological or a managerial approach. At Wageningen, a concept has been developed that combines both aspects. This 'techno-managerial' approach forms the basis of the Food Quality Management programme. It provides a comprehensive and structured overview of quality management for predicting food systems' behaviour and generating adequate improvements in these systems from a food chain perspective.

The programme prepares graduates to understand and work together with the different players in the food industry (management, Research & Development) in order to ensure high quality products.

Your future career

Graduates from this programme will be experts in the field of food quality management and can enter careers in agribusiness, research and public administration:

- Typical positions include quality assurance manager (responsible for the quality of the ingredients for a specific product).
- Designer/specialist (working on the quality aspects of fresh products in the development process), advisor/consultant (advising companies on certification).
- Researcher (studying the improvement of existing quality assurance systems in the food industry).

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Management, Economics and Consumer Studies - MSc Food Technology - MSc Food Safety.

MSc Food Safety

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Student Moath Almayman. "The courses of the Master Food Safety consist of technical, managerial and legal aspects of food safety and are directly linked to real life situations. This in combination with the ability to perform extensive research and an internship at an international company to enhance my working experience, were reasons for me to choose this master. Even with a small population, Wageningen is a great cosmopolitan town. So many students from different backgrounds make it a very interesting place."

Specialisations

The programme offers three specialisations. All three specialisations have the courses on Food Safety Management and Food Law in common.

Applied Food Safety

This specialisation deals with the more technical (microbiology, toxicology, risk assessment) part of food safety. Food Safety Economics is also part of the programme. Thesis topics are also in these fields and graduates generally work in industry, universities and research institutes.

Food Safety Law

This specialisation is open for students with a technical or legal background. Courses focus on (international) food law, intellectual property rights and management. Theses are on food law. Graduates generally work as regulatory affairs specialists in industry.

Supply Chain Safety

This specialisation deals with safe food and ingredient supply. Globalisation leads to serious risks of contamination. In tropical countries, companies also face wars and political problems. Courses thus focus on Food Security, Risk Management in Food Chains and logistics, in addition to Microbiology and Food Law.

Programme summary

Wageningen University is one of the few universities in Europe able to offer education and research in all fields of food safety. This does not only include technical disciplines such as microbiology and toxicology, but also the legal, economic and communication aspects. The Food Safety programme at Wageningen University is one of the most modern and innovative in the world. Started in 2000 as the first of its kind, it is still the only two-year, full-time Master Food Safety programme offered in Europe and the only programme offering Food Safety Law. The programme prepares graduates for careers in the food industry, government or consumer organisations; the three key players in international food safety management.

The food industry is increasingly confronted with farm-to-table food safety measures, regulations, legislation and guidelines aimed at controlling food hazards. As a result, there is an increasing demand for managers with expertise in food safety evaluation who are able to survey and monitor the chemical, microbiological and physical parameters of product composition and product safety. Food safety experts are able to understand and analyse the variation in quality and safety of products. They are also able to assess the potential risks involved in the adoption of new production methods and processing techniques. Food safety evaluation concerns food constituents, agro-chemicals, environmental contaminants and natural toxins.

Food regulations are getting more and more complex, creating the need for regulatory affairs specialists in industry or in lobbying organisations. The programme is the only programme offering Food Safety Law for students with either a technical or a legal degree, thereby, fulfilling the need in society for such positions.

Your future career

The employment market is promising and all recent graduates found jobs with relative ease. The demand for university-trained professionals in this field is currently higher than the number of graduates available. Most recent graduates found jobs in the private sector, at universities or at food safety research institutes. Many graduates enter careers in government and go on to managerial positions. Due to the increased efforts of the EU in the development of national food safety organisations, there will be many more job opportunities in various European countries, both for technical as well as regulatory specialists.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Food Quality Management - MSc Food Technology - MSc Nutrition and Health.

MSc Food Technology

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Student Harmke Klunder. "It is rich in proteins, unsaturated fats, vitamins and is available in large quantities all over the world. You may conclude, 'The ideal food ingredient.' However, would you still think it was ideal if you knew it was made from insects? With three other students, we added insects to a third world food product, thereby winning an international competition from the IFT (Institute of Food Technologists). Malnutrition in Africa could be fought by enriching their daily porridge, sorghumpap, with protein-enhanced termites. As food ingredients technologist, it is possible to look beyond the products found on the shelves of the local supermarkets."

Specialisations

Ingredient Functionality

This specialisation focuses on the composition of food, especially, on the role of various components, ingredients or structures in the quality and functionality of the final product. It deals with sensory, nutritive and textural aspects of foods in relation to their components. You major in Food Chemistry or Food Physics.

Product Design

While many new products are launched, not all succeed. This specialisation deals with the design and development of new or improved products. The focus is on the processes used in Food Technology, the design of new products from a consumer perspective and on modelling new product concepts/processes and predictive quality control. You major in Food Process Engineering or Food Quality and Design.

Food Innovation and Management

This specialisation combines courses in Food Technology with courses in Management Studies. It is intended for students who wish to work on product development in small businesses or who plan to start their own business. You will do a thesis in Management Studies and an internship in one of the Food Technology groups.

Food Biotechnology and Biorefining

This specialisation focuses on using micro-organisms or enzymes in food production. During this specialisation, you will learn about processes that can be used for biorefinery or agricultural raw materials. The focus is on biotechnological food production. You major in Food Microbiology, Food Chemistry, Food Process Engineering.

Dairy Science and Technology

This specialisation focuses on the dairy production chain. Its core programme consists of dairy-related courses and several additional courses, such as Food Components and Health, Advanced Fermentation Science and Predicting Food Quality. During the second year, you complete a dairy-related thesis research project and internship.

Sustainable Food Process Engineering

This specialisation focuses on the development of processes that are more efficient in their use of resources. Thesis can be carried out under the supervision of one of the following groups: Food Process Engineering; Operations Research and Logistics; Biomass Refinery and Process Dynamics; or Product Design and Quality Management.

European Masters Degree in Food Studies

This international specialisation is developed in cooperation with the universities of Cork (Ireland), Lund (Sweden) and Agro-Paris Tech (Paris, France) as well as with ten large industrial partners. For more information see: www.eurmscfood.nl.

Gastronomy

This specialisation focuses on the molecular science behind products and dishes used in small scale settings. Scientific insights are used to develop improved food preparation techniques. The cultural aspects of food will also receive attention. You major in Food Chemistry, Food Physics or Rural Sociology.

Sensory Science

This specialisation combines Food Technology with Nutrition and Health. You will work with products and humans in different contexts and study how sensory systems function, how this relates to products and how to analyse these aspects.

Programme summary

The Food Technology programme at Wageningen University has been in place for more than 50 years and is considered one of the best and most innovative programmes in its field in Europe. Wageningen University offers high-level courses and research in all areas of food science; ranging from advanced technical fields, such as Process Engineering or Chemistry, to fields with a more economic or sociological focus, such as Marketing and Gastronomy.

The Wageningen Food Science faculty is larger than that of any other European university. It includes professors and lecturers from a wide range of departments: Food Chemistry, Food Physics, Food Microbiology, Food Quality and Design, and Food Process Engineering. Food Technology covers nearly all aspects of food science and technology. As a result of being a very broad field, students are required to choose one of the specialisations offered.

Your future career

Graduates find jobs with relative ease, especially in the Netherlands and Western Europe. Recent graduates found positions in the private sector (from small- and medium-sized companies to large multinationals), at Wageningen University or other universities as PhD students, and at research institutes domestically and abroad. Graduates also work in the field of process technology at innovation centres, innovative food companies or government agencies. Most achieve management positions.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Food Quality Management - MSc Food Safety - MSc Biotechnology - MSc Nutrition and Health.

MSc Molecular Life Sciences

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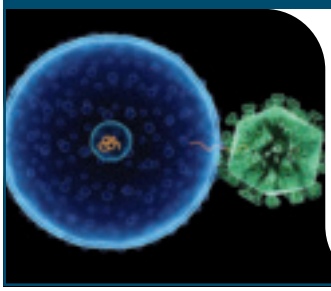


Project Flu Vaccination for bacteria. Together with his colleagues of the Laboratory of Microbiology, professor John van der Oost unravelled part of the working of the immune systems of bacteria that had been infected by a virus. Theoretically, this knowledge allows for other bacteria to be protected against specific viruses and, thus, may be considered to be a flu vaccination for bacteria. Understanding this process in simple organisms on a molecular level, is the first step in revealing the mechanism of viral infection in the human body. From here an entire new line of medicines can be developed.

Specialisations

Biological Chemistry

By combining the principles of chemistry, biochemistry, molecular biology, cell biology, microbiology, genetics and bioinformatics, this specialisation enables students to contribute new insights to the life sciences. Increasingly complex areas are studied, such as the molecular regulation of growth and cell differentiation, gene control during development and disease, and the transfer of genetic traits. Another important field is enzymology where enzyme mechanisms are studied with the aim of understanding and modifying their properties to make new compounds or biological membranes.

Physical Chemistry

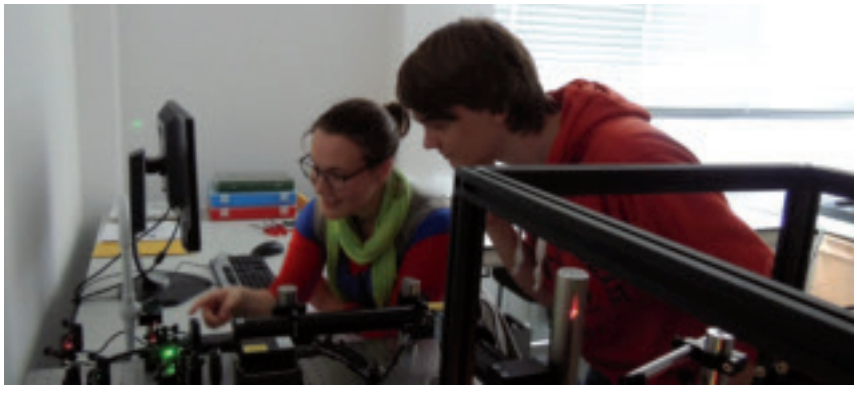
This specialisation uses the most advanced technologies to focus on the chemical and physical properties of molecules and their behaviour in chemical and biochemical processes. The processes in nature are used as models for studying and synthesising new compounds with interesting chemical or physical properties for applications such as LCDs, biosensors or food science. Students can major in the fields of biophysics, organic chemistry or physical chemistry and colloid science.

Biomedical Research

This specialisation equips graduates with key skills in the natural sciences and enables them to use these skills as part of an integrated approach. Many recent breakthroughs in biomedical research have taken place at the interface between chemistry, biology and physics, so it is logical that many of our graduates enter careers in biomedical research. The explicit aim of this specialisation is to prepare students for careers at a medical research institute, academic hospital or a company in the pharmaceutical industry. As a result, students also complete their internships at such locations.

Physical Biology

Students in this specialisation learn to view biomolecules from a physical point of view. They use techniques in biophysics, physical chemistry, microspectroscopy and magnetic resonance (MRI) to contribute to areas such as cell-cell communication, transformation of light into chemical energy, and protein interactions. Students can major in fields such as biochemistry, biophysics, microbiology, molecular biology, plant physiology, physical chemistry and colloid science.



Programme summary

The Molecular Life Sciences programme focuses on molecules and their properties. It seeks to discover relationships between the physical and chemical properties of molecules, particularly the role of complex molecules in living systems. It is an interdisciplinary programme that combines chemistry, physics and biology. The aim of the programme is to enable students to conduct independent research at the interface of chemistry, biology and physics, or in an applied field such as medicine, the environment, food sciences or (bio) nanotechnology. The programme is tailor-made and thesis-oriented, with the thesis being the culmination of the study.

Your future career

By combining the power of chemistry, physics and biology, graduates are able to make a significant contribution to fundamental and/or applied research in fields such as (bio) nanotechnology, biotechnology, environmental research, biomedical research, nutrition and the food sciences.

Our graduates enter careers at universities, research institutes and industrial laboratories. The first job for many of our graduates is a four year PhD project at a university or research institute. This is not only an excellent preparation for a research career, but it also prepares you for management positions. Others become science journalists, teachers or consultants in government or industry.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Biotechnology - MSc Food Technology - MSc Bioinformatics - MSc Nutrition and Health - MSc Plant Biotechnology - MSc Biology.

MSc Nutrition and Health

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Alumna Pascalle Weijzen. Pascalle did a thesis in Epidemiology and Sensory Science. After her graduation, she did a PhD project on the dynamics of food choice and sensory specific satiety. She joined FrieslandCampina afterwards, as a Researcher Sensory & Consumer Science, where she has been responsible for innovation projects aiming at strategies to stimulate healthy food choices. "I really feel I can contribute to profit for the company and to public health at the same time. In this job I still benefit from the broad nutrition and sensory expertise, the strong academic level of thinking, and the worldwide expert network which I built up during my MSc and PhD degrees."

Specialisations

Epidemiology and Public Health

Epidemiologists try to determine causal relationships in large groups of people, such as the elderly or people with cardiovascular problems; between food, lifestyle and the development of diseases. Research results act as starting points for health advice and lead to a greater understanding of cause and effect. If you know that certain behaviour leads to a disease, that behaviour can be addressed, and the effectiveness of the efforts to do so can be measured. You will be helping to improve the overall health of people and may be able to prevent food-related diseases from developing.

Complete Online Master

From September 2015, Wageningen University will also offer the specialisation 'Nutritional Epidemiology and Public Health' as a complete online master. For more information, read the programme description in this brochure, or go to **www.wageningenuniversity.eu/onlinemaster**

Nutritional Physiology and Health Status

In this specialisation, you will study various age groups and situations, such as growth, pregnancy, and food consumption behaviour. You will also review special situations including serious diseases (clinical food), during sports and activity. You may also research the food consumption behaviour and habits of individuals and how you may be able to influence that, for example, through portion sizes. In short, you will review different aspects and will learn what the effects are of food consumption patterns and the physiological processes on the body and what that means for the status of its health and illness.

Molecular Nutrition and Toxicology

In this specialisation, you will learn to use techniques, at molecular and cellular levels, to discover the mechanism driving the relationship between food and health. In toxicology, you will learn to study the possible poisonous effects of substances present in food. For instance, new ingredients in food products and additives, but also natural substances present in our food. The relationship between food consumption, food and medicines can also be researched and through this research, you will find many new leads to improving our health.

Sensory Science

This specialisation is positioned at the interface of the programmes Food Technology and Nutrition and Health. Sensory scientists deal with the way humans perceive the world and act upon sensory input. They address how sensory systems function, from stimulation and perception to cognition and behaviour. You will work with humans and products in different contexts and study the way in which product properties affect, for example, sensory perception. The study always keeps a link to the application of this knowledge in the fields of human health and the design, production and consumption of attractive healthy foods.

Programme summary

Nutrition and Health focuses on the role of dietary and lifestyle factors in human health and disease. This role is studied from a biomedical perspective at the individual and population levels. In addition, the mechanisms underlying beneficial and adverse effects are studied at the sub-cellular (DNA), cellular and organ/ organism levels. Human nutrition is a multidisciplinary field of expertise. To solve problems in nutrition and health, you must consider chemical and biochemical characteristics, physiological and biomedical aspects, the social and behavioural context of nutrition, and the relationships between these factors. Solving problems in this domain requires multidisciplinary biomedical knowledge and skills as well as an interdisciplinary approach to communication with experts in human nutrition and other fields.

Your future career

Many of our graduates begin working as researchers or PhD students. Another group becomes advisors, trainers or take up other jobs in the private sector. The majority of graduates finds employment at universities (including university medical centres), research institutes (TNO Nutrition or RIVM), in the public sector (national, regional and local governments, Netherlands Nutrition Centre, District Health Authorities) or companies involved with nutrition, pharmacology and toxicology (Unilever, Nutricia, Friesland Campina, Danone Research, Novartis). As graduates progress in their careers, they usually advance to a (more) managerial level.

ADMISSION REQUIREMENTS
see page 40.

Related programmes
MSc Food Safety - Health and Society (specialisation).

MSc Organic Agriculture

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Alumna Loes Mertens. "I chose to study Organic Agriculture because of my passion for plants, food and the well-being of (agricultural) communities. I wanted to contribute to the prevention of pollution and work towards a more natural and fair food production system. Since my graduation, I've been working at organic seed and breeding company 'de Bolster' as a member of the breeding team. We produce vegetables, flowers and herbs seeds; and we develop new varieties that are especially adapted to the specific needs of organic growers. I feel I am at the forefront of the developments in the organic sector, because we connect growers and the market through applied research and innovation.

Specialisations

Agro-ecology

Due to concerns about the sustainability of conventional farming practices, food safety issues and pollution of the environment, an ever growing group of consumers is demanding natural and wholesome agricultural products that are produced in an environmentally friendly and socially acceptable manner. Organic agriculture could satisfy these requirements. In addition to the demand for organic products by consumers in industrialised countries, there is a need for scientific ecological farming practices in developing countries and countries in economic distress. This is because farmers in those regions cannot afford external inputs such as pesticides, fertilisers or expensive seeds. A systems approach that integrates interdisciplinary knowledge is crucial. Courses are geared towards the analysis and design of sustainable, organic farming systems; examining the relationships between plant and animal production, soil and natural habitats; understanding management options for sustainable, organic farming compared with conventional farming; studying the factors affecting plant and animal health; and quality of organic products. Finally, students learn to conduct and evaluate integrated research and participate in research projects involving organic farming systems or rural development.

Consumer and Market

To achieve the widely shared goal of expanding organic production, the demand for organic products needs to grow. Socio-economic constraints are major bottlenecks for such an expansion. To attain the societal goal of a healthy and environmentally friendly production of food and renewable resources, improved understanding of consumer preferences and communication theory is essential. Production, processing and the marketing of organic products are increasingly being affected by international and national policies and legislation. Insight into the development of such legislation is crucial to the expansion of organic food and fibre production systems. Courses are geared towards: analysis of consumer perception of product quality; knowledge and insight into the interrelations between government policy and consumer behaviour; development of strategies for certification and trademarks for organic products; globalisation and sustainability of food production and consumption; environmental education and communication; and regionalisation versus internationalisation of production and consumption. Finally, students acquire the skills to analyse complex problems at the intersection of organic agriculture and society in preparation of their thesis research.

Programme summary

This programme has been designed to train students in multiple aspects of organic agriculture and the associated processing and marketing chain. An important goal is to prepare for interdisciplinary teamwork at an academic level. The programme is unique in its combination of detailed consideration of the underlying principles and processes from a natural science perspective with social and economic studies. Creative thinking is required to design new sustainable farming and marketing systems instead of simply optimising existing systems. The programme has an international character that uses case studies and offers project opportunities in both the developed and developing world. The curriculum has been carefully formulated to provide a balance between fundamental and applied science. Various university groups participate including farming systems ecology, soil quality, animal science, entomology, rural sociology, environmental policy, education and economy, making this a well-rounded and holistic programme.

Your future career

Graduates have career opportunities in agribusiness, research, non-governmental organisations and public administration. They often hold jobs such as scientist, consultant, policy maker or quality assurance officer.

ADMISSION REQUIREMENTS
see page 40.

Related programmes

MSc Food Quality Management - MSc Environmental Sciences - MSc Plant Sciences - MSc Animal sciences - MSc Biology - MSc Management, Economics and Consumer Studies - MSc Forest and Nature Conservation.

MSc Plant Biotechnology

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Alumnus Thomas Liebrand. Thomas started his studies with a bachelor degree in Plant Biotechnology at Van Hall Larenstein, University of Applied Sciences in Velp. During an internship at the department of Plant Breeding at Wageningen University, Thomas worked on optimising the transformation of different plant species. In the meantime, he moved to Wageningen and decided to follow the MSc Plant Biotechnology. In his current job he is studying plant immune systems at the University of California Davis. This work is a continuation of his PhD research at the Laboratory of Phytopathology of Wageningen University.

Specialisations

Functional Plant Genomics

Functional genomics aims at understanding the relationship between an organism's genome and its phenotype. The availability of a wide variety of sequenced plant genomes has revolutionised insight into plant genetics. By combining array technology, proteomics, metabolomics and phenomics with bioinformatics, gene expression can be studied to understand the dynamic properties of plants and other organisms.

Plants for Human and Animal Health

Plants are increasingly being used as a safe and inexpensive alternative for the production of valuable proteins and metabolites for food supplements and pharmaceuticals. This specialisation provides a fundamental understanding of how plants can be used for the production of foreign proteins and metabolites. In addition, biomedical aspects such as immunology and food allergy, as well as nutritional genomics and plant metabolomics, can also be studied.

Molecular Plant Breeding and Pathology

Molecular approaches to analyse and modify qualitative and quantitative traits in crops are highly effective in improving crop yield, food quality, disease resistance and abiotic stress tolerance. Molecular plant breeding focuses on the application of genomics and QTL-mapping to enable marker assisted selection of a trait of interest (e.g. productivity, quality). Molecular plant pathology aims to provide a greater understanding of plant-insect, plant-pathogen and crop-weed interactions in addition to developing new technologies for integrated plant health management. These technologies include improved molecular detection of pathogens and transgene methods to introduce resistance genes into crops.

Programme summary

Due to rapid technological developments in the genomics, molecular biology and biotechnology, the use of molecular marker technology has accelerated the selection of new plant varieties with many desirable traits. It also facilitates the design, development and management of transgenic plants. At present, plants are increasingly used to produce valuable proteins and secondary metabolites for food and pharmaceutical purposes. New insights into the molecular basis of plant-insect, plant-pathogen and crop-weed relationships enable the development of disease-resistant plants and strategies for integrated pest management. A fundamental approach is combined with the development of tools and technologies to apply in plant breeding, plant pathology, post-harvest quality control, and the production of renewable resources.

Besides covering the technological aspects, Plant Biotechnology also deals with the ethical issues and regulatory aspects, including intellectual property rights.

Your future career

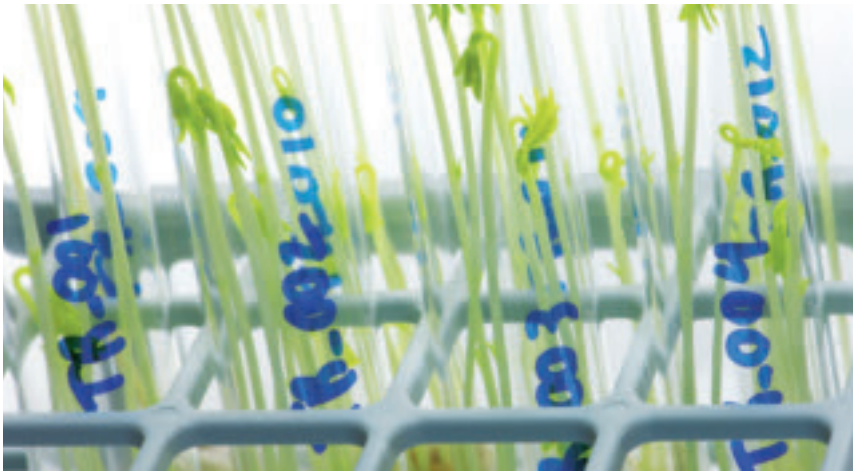
The main career focus of graduates in Plant Biotechnology is on research and development positions at universities, research institutes, and biotech- or plant breeding companies. Other job opportunities can be found in the fields of policy, consultancy and communication in agribusiness and both governmental and non-governmental organisations. Over 75% of Plant Biotechnology graduates start their (academic) career with a PhD.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Biotechnology - MSc Molecular Life Sciences - MSc Plant Sciences - MSc Nutrition and Health - MSc Bioinformatics - MSc Biology.



MSc Plant Sciences

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Alumnus Kibrom Berhe Abreha. He studied Plant Sciences at Jimma University-Ambo College, Ethiopia. Wageningen University was at the top of his destination list for his Master study because of its international reputation, well-celebrated Master programmes, and vibrant academic environment. Kibrom Berhe Abreha, MSc Plant Sciences from Wageningen University, has worked for a higher institute in Ethiopia until he moved to Sweden. Currently, he is pursuing his PhD study at Swedish University of Agricultural Sciences. His PhD project is aimed to unravel the complex molecular interactions between Solanum species and Phytophthora using Next Generation Sequencing technology.

Specialisations

Crop Science

Sound knowledge of crop science is essential to develop appropriate cultivation methods for a reliable supply of safe, healthy food; while considering nature conservation and biodiversity. An integrated approach is crucial to studying plant production at various levels (plant, crop, farm, region). This requires a sound understanding of basic physical, chemical, and physiological aspects of crop growth. Modelling and simulation are used to analyse yield constraints and to improve production efficiency.

Greenhouse Horticulture

Greenhouse horticulture is a unique agro-system and a key economic sector in the Netherlands. It is the only system that allows significant control of (a-) biotic factors through protected cultivation. The advances in this field are based on technological innovations. This specialisation combines product quality with quality of production and focuses on production, quality- and chain management of vegetables, cut flowers and potted plants.

Natural Resource Management

The development of sustainable agro-ecosystems requires understanding of the complex relationships between soil health, cultivation practices and nutrient kinetics. Other important aspects include the interactions between agriculture and nature, and competing claims on productive land worldwide. Natural Resource Management provides knowledge and tools to understand the interactions between the biotic and abiotic factors in agro-systems to facilitate diverse agricultural demands: bulk vs. pharmaceutical products, food vs. biofuel, conservation of biodiversity, climate change, and eco-tourism.

Plant Breeding and Genetic Resources

Plant Breeding and Genetic Resources ranges from the molecular to the population level and requires knowledge of the physiology and genetics of cultivated plants. Plant breeding is crucial in the development of varieties that meet current demands regarding yield, disease resistance, quality and sustainable production. The use of molecular techniques adds to the rapid identification of genes for natural resistance and is essential for accelerating selection by marker assisted breeding.

Complete Online Master

From September 2015, Wageningen University will also offer the specialisation 'Plant Breeding' as a complete online master. For more information, read the programme description in this brochure, or go to **www.wageningenuniversity.eu/onlinemaster**

Plant Pathology and Entomology

The investments made in crop production need to be protected from losses caused by biotic stress. Integrated pest management provides protection by integrating genetic resistance, cultivation practices and biological control. This specialisation focuses on the ecology of insects, nematodes and weeds, and the epidemiology of fungi and viruses, including transmission mechanisms. Knowledge of plant-insect, plant-pathogen, and crop-weed relations establishes the basis for studies in integrated pest management and resistance breeding

Programme summary

Plant Sciences deals with crop production ranging from plant breeding to the development of sustainable systems for the production of food, pharmaceuticals and renewable resources. It is linked with a professional sector that is highly important to the world economy. The programme focuses on the principles of plant breeding, agro-ecology and plant pathology and the integration of these disciplines to provide healthy plants for food and non-food applications. Technological aspects of crop production are combined with environmental, quality, socio-economic and logistic aspects. Students learn to apply their knowledge to develop integrated approaches for sustainable plant production.

Your future career

Graduates in Plant Sciences have excellent career prospects and most of them receive job offers before graduation. They are university-trained professionals who are able to contribute to the sustainable development of plant production at various integration levels based on their knowledge of fundamental and applied plant sciences and their interdisciplinary approach. Graduates with a research focus are employed at universities, research institutes and plant breeding or agribusiness companies. Other job opportunities are in management, policy, consultancy and communication in agribusiness and (non-) governmental organisations.

ADMISSION REQUIREMENTS
see page 40.

Related programmes
MSc Biosystems Engineering - MSc Biotechnology - MSc Biology - MSc Forest and Nature Conservation - MSc Organic Agriculture - MSc Plant Biotechnology.

MSc Water Technology

A joint programme offered by Wageningen University, the University of Twente and the University of Groningen.

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Student Gintaras Daubaras. The enthusiasm of my friend about the Water Technology programme, the town and people made me pack my luggage faster. Luckily I was accepted and the journey began. Wetsus offered me a great chance to do an internship in a field of my interest at one of the companies from their business network. There is wide choice of thesis projects, thus I found the one that fit my interest. For sure you can expect excellent supervision and support from fellow PhD students and professors. It is not always easy and it takes hard work and dedication to succeed in this programme. Nevertheless, there is a plenty of time left for the fun part of studying in Leeuwarden.

Programme summary

Solutions are required for existing and new global problems related to the availability and quality of water for personal, agricultural, and industrial use in a sustainable manner with a minimal impact on the environment. Water technology has unfortunately not been a focal point of most academic research and education programmes, despite its enormous importance to society. Instead, the expertise of various research groups is usually concentrated on other processes and in some cases only later dedicated to water treatment in spin-off projects. New technologies will be necessary to develop new concepts for the treatment of waste water and the production of clean water from alternative sources like salt (sea) water, waste water or humid air in order to minimise the use of precious groundwater. These challenges require academically trained experts who can think out-of-the-box and help to find practical solutions in the near future. A dedicated joint Master Water Technology programme has been created to train and educate these experts.

The MSc Water Technology is situated in Leeuwarden, the capital of water technology, and is offered jointly by three Dutch universities: Wageningen University, the University of Twente and the University of Groningen. A combined technological approach, based on state-of-the-art universities in science and technology, will search for solutions to several developments within business and society; with a worldwide impact on the demand for and use of water. One dedicated Master programme with joint degree allows for flexibility and can be adapted to the changing needs of the labour market. Wageningen University offers a strong focus on environmental sciences, the University of Twente on science and technology, and the University of Groningen on fundamental sciences. Students will be educated in the multidisciplinary laboratory of the technological top institute for water technology called Wetsus.

The MSc Water Technology programme specifically targets students interested in beta science and technology. The programme offers a unique combination of scientific insights and technological applications from the field of Biotechnology and Chemical Engineering. This combined approach for problem solving within the global framework of water problems is an asset to the programme. The programme is a valuable addition for postgraduate students with a completed bachelor degree in Environmental Engineering, Chemical Engineering and Biotechnology; or in related fields with a strong knowledge of mathematics, physics, chemistry and/or biology, and with affinity of water processes. Students are challenged with examples and case studies of real (research) problems that they might encounter as water professionals.

Students apply for the MSc Water Technology programme at Wageningen University, but will be registered at the other two universities as well. They will have access to the facilities of all three universities. Upon the successful completion of the programme, students receive one joint degree MSc Water Technology issued by all participating universities.

Your future career

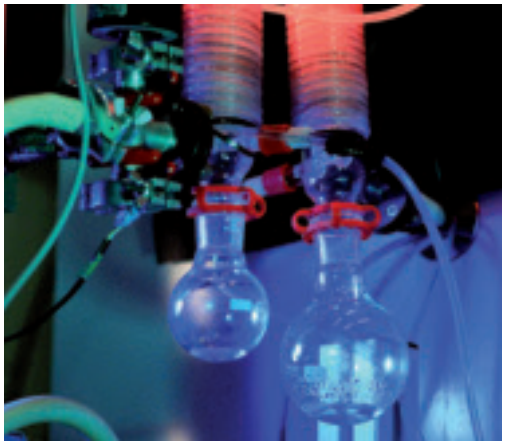
This study domain is becoming more and more relevant due to the urgent need for new technologies to meet global water problems. Water technology for public drinking water production and sewage water treatment is a very large market. Furthermore, the largest use of fresh water is for irrigation purposes. The industrial water supply and industrial waste water treatment also represent a significant market. There is no question that businesses involved in water technology will grow tremendously. Besides this, human capital is a basic condition to guarantee the success and continuity of the development of sustainable technologies. In many EU countries, the lack of talented technological professionals is becoming an increasingly limiting factor. The programme prepares students for a professional position in the broad area of water technology. Graduates have good national and international career prospects in business and research.

ADMISSION REQUIREMENTS

see page 40. For more information about the programme outline visit www.wetsusacademy.nl.

Related programmes

MSc Biotechnology - MSc Environmental Sciences



New - Online Master

Nutritional Epidemiology and Public Health

Online Master specialisation within the MSc Nutrition and Health.
Rolf Marteijn MSc | Programme Director | mnh.msc@wur.nl | www.wageningenuniversity.eu/omnh

Alumnus Santiago Rodas. Santiago always wanted to work with nutrition in developing countries. He worked for UNICEF and was the chair of a national nutrition programme. But then he felt the need to obtain a master's degree in public health nutrition: "This master taught me how to use the up-to-date scientific evidence for programme design and implementation. From the courses, I acquired the technical skills to do research and from my thesis and internship at the World Food Programme (WFP) I learned how to put research into practice. Now I work as an international consultant of the Policy, Programme and Innovation Division of the WFP at its headquarters in Rome."

Programme Summary

Do you think it is interesting to study the role that nutrition and lifestyle play in the development of diseases? Epidemiologists try to determine such relationships in large groups of people. Epidemiology is the basic science of public health. Research results are the starting points for health advice and lead to a greater understanding of cause and effect. If it is known that certain behaviour leads to a disease, then you can quantify the impact of that behaviour and establish effective measures for disease prevention. The acquired knowledge can be used in health policymaking and intervention programmes in both developing and developed countries. You will be helping to improve the overall health of people and may be able to prevent food-related diseases from developing.

The master specialisation Nutritional Epidemiology and Public Health addresses the design, implementation, analysis and interpretation of epidemiological research, both interventional and observational. It focuses on the aetiology and prevention of diseases, with specific reference to dietary patterns, nutritional factors and lifestyle. Central issues are assessment of exposure, risk factors of disease, biomarkers for health status and analysis and interpretation of major study designs. Since you need expertise and competences in both nutritional epidemiology àn public health to be able to fully understand this domain, the study programme consists of different courses and trainings combining these two fields.

Nutritional epidemiology courses focus on the design, conduct, analysis and interpretation of epidemiological research, both in the clinical domain and in free living population groups. Concerning health outcomes, the emphasis is on diet-related diseases and conditions, such as obesity, cardiovascular diseases, cancer and certain infectious diseases. Nutritional epidemiology is closely related to clinical research and causal inference in the biomedical domain, relevant to underpinning public health interventions in dietary patterns and lifestyle.
The acquired evidence from epidemiological research has to be translated into public health policies and health promotion programmes, both at the local, national and international level. Public health courses address the design, organisation, implementation and evaluation of intervention programs that address the lifestyles of individuals (e.g., behaviour, food choice, physical activity, well-being) and/or societal context (e.g. work, school, media, policies). Public health has close relationships with methods and theories from psychological, social, economic, agriculture and political research.

Online Master

The online master specialisation is designed for part-time study (approx. 20 hrs/week) to combine work and study or in the context of Life-Long-Learning. A course-programme of 2 years will be followed by a tailor-made internship and Master thesis. The internship and thesis will together take up either 1 year full-time or 2 years part-time. During the courses, you will closely collaborate with lecturers, tutors and fellow distance learning students using a virtual learning platform. The course programme includes a short stay of one week on Wageningen Campus together with the other students in this programme. There are options to organise the academic internship and Master thesis in your own professional context, either part-time or full-time.

Your future career

Graduates of the Master Nutrition and Health greatly value the research skills they acquired in the programme. After graduation, many of them begin working as researchers or PhD students. Another group becomes advisors, trainers or take up other jobs in the private sector. The majority of graduates finds employment at universities (including university medical centres), research institutes, in the public sector (WHO, NGO's, national health services) and some find employment in companies involved with nutrition and health. Graduates work in both developing and developed countries.

ADMISSION REQUIREMENTS
For information on admission visit www.wageningenuniversity.eu/omnh

Related on-campus programmes
MSc Food Safety - MSc Food Technology - MSc Nutrition and Health - Health and Society (specialisation)

Plant Breeding

Online Master specialisation within the MSc Plant Sciences.
Dr. Anja Kuipers | Programme Director | mps.msc@wur.nl | www.wageningenuniversity.eu/omps

Student Timo Petter. After 10 years of practical experience in Allium breeding, Timo subscribed to follow courses of the master Plant Breeding and Genetic Resources. His job at Bejo Zaden brought him to many countries where the breeding company has her trial fields, breeding stations and sales representatives. But as a crop research manager he started to feel the need to improve his knowledge of the theoretical side of his profession: "Although I have not finished my masters yet, I use the knowledge that I have gained from the various courses every day! For a plant breeder, I believe that this master is the best educational programme available in the Netherlands."

Programme Summary

Plant Breeding plays an important role in the development of plant varieties for food, feed and industrial uses. New varieties have to meet current demands regarding yield, disease resistance, quality characteristics, salt or drought tolerance and suitability for sustainable plant production systems. Plant Breeding involves a variety of aspects, ranging from the molecular level to the population level and requires knowledge of the physiology, ecology and genetics of cultivated plants. The use of various molecular techniques contributes enormously to the rapid identification of genes for natural resistance and is essential for accelerating the selection process by marker-assisted breeding.

Online Master

The online master specialisation is designed for part-time study (approx. 20 hrs/week) to combine work and study or in the context of Life-Long-Learning. A course-programme of 2 years will be followed by a tailor-made internship and Master thesis. During the courses, you will closely collaborate with lecturers, tutors and fellow distance learning students on a virtual learning platform. The course programme includes two short stays of two weeks, each in Wageningen, for essential practicals that relate to the theory. There may be options to organise the academic internship and Master thesis in your own professional context, either part-time or full-time.

Your future career

Graduates of the Master Plant Sciences have excellent career prospects and most of them receive job offers before graduation. They are university-trained professionals who are able to contribute to the sustainable development of plant production at various integration levels based on their knowledge of fundamental and applied plant sciences and their interdisciplinary approach. Graduates with a research focus are employed at universities, research institutes and plant breeding or agribusiness companies. Other job opportunities are in management, policy, consultancy and communication in agribusiness and (non-) governmental organisations.

ADMISSION REQUIREMENTS
For information on admission visit www.wageningenuniversity.eu/omps

Related on-campus programmes
MSc Biosystems Engineering - MSc Biotechnology - MSc Biology - MSc Forest and Nature Conservation - MSc Organic Agriculture - MSc Plant Biotechnology

New - Online Master

MSc Climate Studies

Dr. Rudi Roijackers | Study Advisor | +31 (0)317 48 44 19 | mcl.msc@wur.nl | www.wageningenuniversity.eu/mcl

Student Lennart Pompe. "Climate Studies and the specialisation Integrated Water Management are the perfect combination for me where science and society come together to tackle the challenges the water sector faces. I took the opportunity to enrich my master with the label of the Climate-KIC, a European knowledge and innovation community. I joined several Climate-KIC activities, among others, the inspiring 5-week summer school 'the Journey' aimed at developing your own business plan. My thesis focussed on climate change and human development in the Bengal delta and the related salinisation issues. I am excited to enter the Dutch-leading water sector."

Programme summary

The MSc Climate Studies programme focuses on an improved understanding of climate change across the earth and its impact on ecosystems and society.

The debate in science no longer revolves around whether our climate will change, but how it will change, how we can cope with the impact (adaptation), and how we can limit climate change in the long term (mitigation). These issues are important for the entire world and fuel a range of new challenges to natural and social sciences. Society needs answers to questions such as: How will climate change affect ecosystems and how will these in turn affect the climate system? What will the effect be on the availability of water and food? How will climate change issues set national and international political agendas? How will citizens, consumers, companies and other social actors respond to climate change? What will the economic costs be of the impact and measures related to climate change, and how will these costs be distributed globally? Will new social and economic opportunities emerge in the process of adaptation?

As these changes and challenges become ever more apparent, the demand for scientists who are able to understand and investigate them will rise. Wageningen University has therefore bundled expertise from several disciplines in a Master study programme specifically designed for students who wish to focus on the scientific insights into climate change and its implications for nature and society. Climate Studies does not only cover the most important geophysical and biogeochemical processes involved in climate change (the mechanisms), but it also covers the socio-economic aspects of causes and effects; as well as adaptation and mitigation as the main categories of societal response.

Climate Studies gives you a broad overview of climate-change related issues. You can specialise in a topic of your choice during your thesis research. We offer of wide range of thesis tracks:

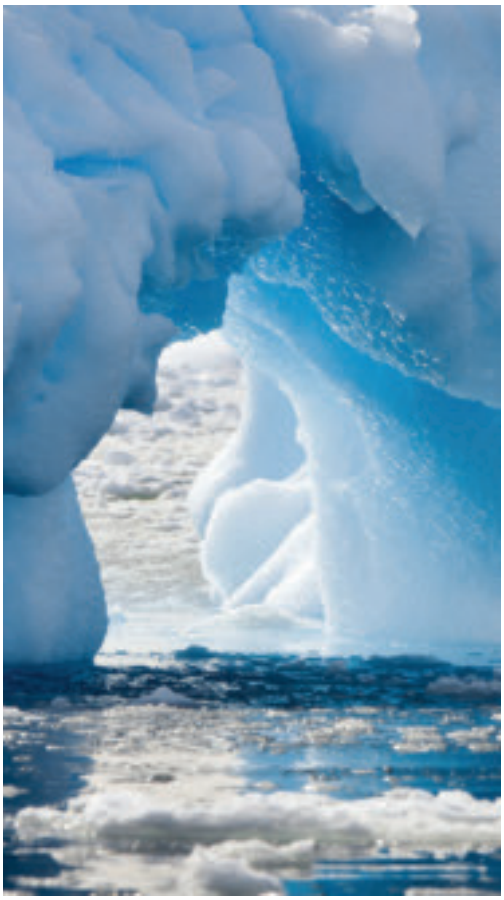
- Meteorology
- Air Quality and Atmospheric Chemistry
- Hydrology and Quantitative Water Management
- Crop and Weed Ecology
- Nature Conservation and Plant Ecology
- Soil Biology and Biological Soil Quality
- Earth System Science
- Environmental System Analysis
- Integrated Water Management
- Environmental Economics and Natural Resources
- Environmental Policy

Your future career

Graduates from this programme are well-equipped with the knowledge and skills to continue their academic training as a PhD student or to start a career as a scientific professional at universities, research institutes, and environmental and governmental organisations. Applied climate change researchers and experts are sought after by banks, insurance companies, construction, power companies and government.

ADMISSION REQUIREMENTS
see page 40.

Related programmes
MSc Environmental Sciences - MSc Earth and Environment - MSc Management, Economics and Consumer Studies



MSc Earth and Environment

Dr. Gerrit Epema | Programme Director | +31 (0)317 48 00 63 | mee.msc@wur.nl | www.wageningenuniversity.eu/mee

Alumnus Nick Gorski. He came from Canada to Wageningen because of the excellent reputation the Netherlands has in the field of water. He conducted two thesis research projects during his time here. The first dealt with the fluxes of sediment-bound contaminants in a river basin in southwestern Turkey. The second involved the development of a new modelling methodology for heterogeneous flow and solute transport in unsaturated soils. "I had the opportunity to take classes, do field work and research in other countries. It was an excellent way to put theory into practice." After graduating Nick went on to work for the KWR Watercycle Research Institute in Nieuwegein, the Netherlands.

Thesis tracks

The MSc Earth and Environment is a comprehensive programme offering students a wide choice of thesis subjects and preparatory courses; we call this the thesis track. There are ten thesis tracks grouped in four clusters.

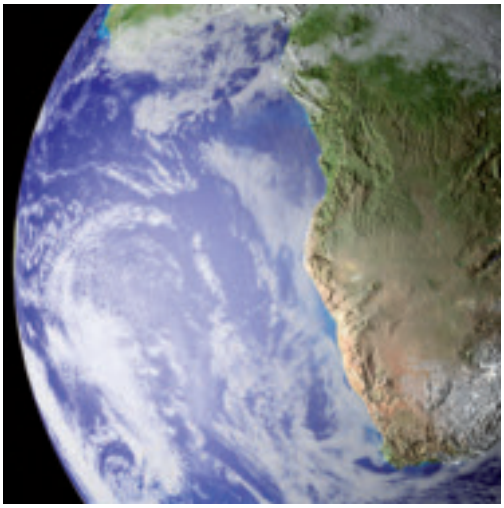
Hydrology and Water Resources
- Hydrology and Water Resources
- Soil Physics and Land Management

Meteorology and Atmospheric Chemistry
- Meteorology
- Atmospheric Chemistry and Air Quality

Biology and Chemistry of Soil and Water
- Soil Chemistry and Chemical Soil Quality
- Soil Biology and Biological Soil Quality
- Aquatic Ecology and Water Quality Management
- Nature Conservation and Plant Ecology

Soil, Landscape, Earth
- Earth System Science
- Soil Geography and Landscape

The combination of specific discipline training and the Earth System approach prepares you for working on the scientific and societal questions of the future. You can also choose from a selection of elective courses, and we also offer a special variant in preparation for a PhD.



Programme summary

Planet Earth is a complex, interactive and fascinating system. Protected by a thin layer of atmosphere, it provides all the essentials needed to sustain life and support living organisms. Natural processes and human needs often clash, leading to a wide range of environmental issues. Water scarcity and quality, soil degradation , food supply , loss of biodiversity, vulnerability to severe weather, and climate change are just a few examples of key issues that need to be addressed urgently.

As a Wageningen University geoscientist, you study Planet Earth and its ability to sustain life. Using tools from physics, chemistry, biology and mathematics, you build a quantitative understanding of the composition, structures and processes of the Earth and its atmosphere; as well as its resources and the influence of human activity. Thus, you have an important role to play in improving natural resource management and in removing obstacles to sustainable development.

Your study of the Earth system largely focuses on gaining an understanding of the interdependent physical, chemical and biological processes, and developing models that describe these processes on relevant scales. You develop scenarios that describe expected local, regional and/or global changes and the time scale on which they will occur. The Wageningen MEE focuses on the Earth's 'Critical Zone' -including the atmospheric boundary layer, where flows of energy and matter determine the conditions for sustaining life; hence its name: Earth and Environment.

Your future career

The MEE programme offers our graduate scientists excellent opportunities to develop their career in research or as a science professional at universities, research institutes and consultancies. Our graduates can be found all over the world, working as meteorologists, hydrologists, water quality scientists or soil scientists, to name but a few disciplines.

Are you interested in working on solutions for these and other environmental issues? The MEE programme was born from the necessity of helping the next generations of scientists find solutions for the issues confronting the way we look after our planet, now and in the future.

ADMISSION REQUIREMENTS
see page 40.

Related programmes
MSc Biology - MSc Climate Studies - MSc Environmental Sciences - MSc International Land and Water Management - MSc Plant Sciences.

MSc Environmental Sciences

Alet Leemans MSc | Study advisor | +31 (0)317 48 21 71 | mes.msc@wur.nl | www.wageningenuniversity.eu/mes

Alumna Charlotte Van Erp Taalman Kip. Upon graduation, Charlotte started working as environmental consultant at MWH Global. Two years later, she continued her career at the water board Hollandse Delta as innovation engineer. She works together with different parties for implementing innovative and sustainable ideas. One project she is involved in is an initiative of all water boards that focuses on the recovery of valuable compounds in sewage. "It's time to see our sewage not as a dirty waste stream, but as a valuable resource. We should not destroy this potential of sewage. On the contrary, it is our duty to recover and reuse all its valuable components."

Thesis tracks

The ten thesis tracks are clustered in 4 groups.

Environmental Quality

Investigates the physical, chemical and biological processes that influence the quality of the environmental compartments: Soil, Water and Air; and the effects of pollutants on humans and ecosystems. Students can choose the thesis tracks Aquatic Ecology and Water Quality Management, Air Quality and Atmospheric Chemistry, Soil Biology and Biological Soil Quality, Soil Chemistry and Chemical Soil Quality, or Environmental Toxicology.

Environmental Systems Analysis

Studies the natural and social processes involved in environmental issues. It aims to develop integrative tools and methodologies and to apply these in strategic research. Students can choose to develop such an integrated approach via the thesis track Environmental Systems Analysis.

Environmental Policy and Economics

Covers the contribution of the social sciences to environmental research. The focus is on the social, political, legal and economic aspects of environmental issues and the goal is to provide students with the skills for studying, formulating and designing innovative forms of national and international environmental governance. You can choose a thesis track in the disciplines of Environmental Policy, Environmental Economics and Natural Resources, or Integrated Water Management.

Environmental Technology

Concentrates on biological, chemical and physical processes for water reuse and the recovery of nutrients, minerals and energy. The aim is to fully understand these processes in order to design and optimise innovative technologies for renewable energy, closing nutrient cycles and solving environmental issues. You can choose any of these topics via the thesis track Environmental Technology.

Programme summary

We are facing a future with an increased demand for food, water, energy and other resources, which will have an enormous impact on our already heavily burdened environment. Environmental challenges for the future include using our resources efficiently, minimising our impact on nature, and creating and changing people's awareness and behaviour towards their environment.

The MSc Environmental Sciences programme is designed for students who want to take up this challenge in finding innovative and sustainable approaches to secure and improve the state of the environment. This programme provides insight into the socioeconomic causes, the characteristics of pollution and degradation of the natural environment, and their effects on human beings and ecosystems. By taking an interdisciplinary approach, students learn to develop analytical tools and models, environmental technologies, socio-political arrangements and economic instruments to prevent and control environmental problems.

To allow you maximum flexibility in your individual course of study, there are no formal specialisations and compulsory elements are kept at a minimum. This allows you to tailor the programme to your individual needs. Major thesis research can be conducted in one of the ten thesis tracks (major) and each major can be combined with a minor in Environmental Communication or Education.

Your future career

Graduates from this programme are well-equipped to continue their scientific training in a PhD programme or to begin - or continue - a professional career requiring independent scientific performance. Students are taught the knowledge and skills needed to communicate with experts from different disciplines allowing them to play a key role in complex environmental and sustainability issues. Most graduates enter careers in environmental consultancy, research and management, while others are involved in policy development and higher education.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Climate Studies - MSc Urban Environmental Management - MSc Earth and Environment - MSc Forest and Nature Conservation - MSc Aquaculture and Marine Resource Management.

MSc Forest and Nature Conservation

Gijs Elkhuizen MSc | Study Advisor | +31 (0)317 48 21 76 | mfn.msc@wur.nl | www.wageningenuniversity.eu/mfn

Alumnus Wouter Wubben. He works for the municipality Westland and is responsible for matters concerning ecology, landscape and water quality. "When I just started working I could directly apply the ecological knowledge from my master, and I was able to pick up missing knowledge very quickly". Wouter went to the USA to work on forestry for his internship. "During my internship I worked in the field with a lot of different teams, this experience now helps me to communicate with people involved with the implementation of municipality plans. I have a constantly changing job, I started with executive work but I am now responsible for the development of issues in ecology, landscape and water."

Specialisations

Policy and society

The central study object is the dynamics between people, organisations and institutions within policymaking and policy innovation processes, referred to as `governance'; relative to forest and nature conservation issues, including spatio-temporal aspects. Issues in the field of economics, public administration, communication and strategic planning are addressed in order to conserve and manage forests and natural areas in a sustainable way. Examples are: recreation, communities and natural resources, deforestation, forest governance, sustainable forestry and certification schemes.

Management

This specialisation aims to design and assess realistic and feasible management options for forests and natural areas. The approach is based on specific knowledge and understanding of wildlife management, management of forests and other terrestrial vegetation. Special attention is given to the following questions: What is the best option for wildlife conservation? Do populations need to be managed or not? How does one determine an optimal population level? How should the effects of various management activities, at different spatial and temporal scales, be evaluated? How should the perceptions of different people be dealt with? What are the best options in forest management for a specific area? How to manage nature? How to deal with abiotic, biotic and social bottlenecks in restoration ecology? What is the role of N and P pollution? How to restore shallow lakes? How to restore tropical forests? It is also possible to focus on specific aspects of natural resource management.

Ecology

The emphasis is on understanding the ecological processes that form the basis for the structure, composition and functioning of forests and natural areas. You can specialise in tropical forestry, landscape ecology, animal ecology, forest resource management, plant ecology, biodiversity conservation or tropical nature conservation.

Programme summary

This programme focuses on policy, sustainable management and conservation of forest and nature; i.e. understanding and predicting the effect of phenomena such as global climate change, deforestation, biodiversity loss, ecotourism, timber production, hunting and animal reintroduction. Insights into all aspects of forest and nature conservation are required to address these issues with emphasis on both ecological and social aspects. The MSc Forest and Nature Conservation programme represents an integrated approach to natural resource management that can be applied at different scales, to diverse ecosystems and in varying political and social contexts. A tailor-made structure, an outstanding research environment and three comprehensive specialisations contribute to making the programme challenging for undergraduates from both the natural and social sciences.

Your future career

The programme provides excellent preparation for Dutch as well as European and non-European jobs. Career possibilities include positions at research institutes and universities, government ministries and local authorities. Positions are also available at state and private forestry, nature conservation services, and environmental assessment agencies. Examples include the European Forest Institute, Birdlife International, and landscape and animal protection organisations such as RAVON or WWF. In the private sector, graduates find jobs at engineering and consultancy bodies, such as Royal Haskoning, the National Fund for Rural Areas or forestry companies. Graduates often begin their career by carrying out research, computer analysis and modelling of ecological systems, working in knowledge transfer or preparing policy documents. Eventually, their careers usually shift towards advisory work, consultancies, research coordination and project management.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Animal Sciences - MSc Biology - MSc Development and Rural Innovation - MSc Landscape Architecture and Planning - MSc Geoinformation Science - MSc International Development Studies.

MSc Geographical Information Management and Applications

Dr. Corné van Elzakker | Programme Director | +31 (0)53 487 44 78 | c.vanelzakker@utwente.nl | www.msc-gima.nl

Alumna Gineke Snoeren. Business consultant at ESRI Nederland. "GIS offers many opportunities and will become more important in future. That is why I decided to enrol in this programme. The course has 2 advantages. First, it does not focus solely on GIS techniques, but also at management. Second, the blended learning system is great because it combines contact teaching with distance learning. You can study in your own time with less contact hours but still contact with teachers and students at set times. Not only Dutch and foreign students take the course, but also people who are already employed in the field of GIS. You learn a lot from each other".

Programme summary

The MSc Geographical Information Management and Applications (GIMA) offers a challenging programme in the domain of Geographical Information Sciences (GIS). It will help you to develop your knowledge and skills in the field of geo-information management and geo-information applications. As a future geo-information specialist, you have to address a wide number of fundamental issues in today's society such as: Why is geographical information needed and how can it be used to solve problems in the broadest variety of application fields (in flood risk management, spatial planning, location-based services, orientation and navigation, location of sales outlets, spatial aspects of crime, dealing with natural hazards and humanitarian disasters)? How can proof-of-concept geo-information and geo-information technology based solutions for societal problems be designed and implemented and how can the quality and usabiliy be evaluated? What are appropriate concepts, methods and techniques for the management of geo-information and geo-information processes, which may involve multi-disciplinary teamwork?

The GIMA programme deals with all of these issues and, teaches, among other things, how to apply and manage geo-information in organisations and projects by critically understanding and using state-of-the-art geo-information theories and technology.

Particularities of the programme

This Master programme is offered by four renowned universities in the Netherlands: Utrecht University, Delft University of Technology, University of Twente and Wageningen University. As a student, you have access to the large pool of experts from all four universities. You can choose between a full-time (two years) or part-time (four years) programme. Exemptions are possible for students who have relevant working experience, making it possible to complete a part-time programme in approximately three years. GIMA is a blended learning programme. It consists of distance learning (85%) with contact weeks at the four universities (15%).

Your future career

Graduates have excellent career prospects. The demand for managers and application specialists in geo-information in the professional market is constantly increasing. Our alumni are employed in both the private and public sector (by companies, consultancies, government organizations and research institutes) as managers, specialists and researchers.

APPLICATION AND ADMISSION

This programme is registered in CROHO as MSc Geographical Sciences at Utrecht University, code 60732. Application for GIMA proceeds through Utrecht University. The application deadline is 1 June 2015 for the programme that starts in September 2015. All information about application and admission requirements can be found at the GIMA website www.msc-gima.nl.

Related programmes

MSc Geo-information Science.

MSc Geo-information Science

Ing. Willy ten Haaf | Study Advisor | +31 (317) 48 18 65 | mgi.msc@wur.nl | www.wageningenuniversity.eu/mgi

Alumnus David Marcelis. He obtained a BSc Forest and Nature Conservation and a MSc Geo-information Science degree. He works as a Radar and Remote Sensing specialist for eLEAF, an advisory company that operates worldwide in the transition area of remote sensing science and operational applications. As an employee at eLEAF, David participates in projects involving radar remote sensing and works on his PhD on radar applications in crop growth monitoring. David is very positive about the connection between his degree and his current job: "The MGI programme provided me with a good basis of remote sensing and GIS knowledge and the necessary research skills to start my professional and scientific career."

Specialisations

The Geo-Information Science programme is an intensive programme offering students opportunities to specialise by taking advanced courses in GIS and/or Remote Sensing, and by selecting courses in a range of application fields or geo-information technology. Furthermore, you develop your GIS profile by completing a Master's research thesis in one of the following research fields:

- sensing and measuring
- modelling and visualization
- integrated land monitoring
- human-space interactions

Your choice of internship location is another factor in developing your profile and specialisation.

Programme summary

Geo-information has become increasingly important to society as the number of environmental issues continue to rise: Geo-information provides the data we need to manage both the natural and social environment. It is indispensable for a broad range of domains like spatial planning, water management, nature conservation, environment management, agriculture, energy supply, disaster management and traffic and safety.

The MSc GIS programme at Wageningen University offers you a blend of geo-information science methods, technologies and applications. The combined use of earth observation techniques (Remote Sensing) and Geographic Information Systems for problem-solving within the environmental and social disciplines is a unique feature of the Wageningen Approach.

During your study, you take courses on the acquisition, storage, analysis and visualisation of spatial data. You learn to recognise, describe and analyse problems in relevant environmental application fields; this includes training in the development of prototypes. You also learn about the technical and organisational role of geo-information in institutes and companies: how to communicate well, keep abreast of GI scientific and technical developments, and how to apply these developments in specific fields. Depending on your background, research topics and previous education, you can also choose relevant courses in application domains or ICT.

Your future career

Graduates in Geo-Information Science have excellent career prospects; most have job offers before they graduate. Many of our graduates work in research, either in PhD programmes or for research institutes all over the world; Wageningen UR, including Alterra, has the largest group of GI-scientists in the Netherlands. Many others are employed as technical specialists, consultants or project leaders for global companies like Royal Haskoning, Arcadis and Grontmij. And lastly, others work for local or central government agencies and NGOs, including environmental assessment programmes.

Would you like to generate and use geo-information to solve global problems like flooding, planning, or the migration of wild animals? Or do you want to provide geo-information to the public or government? Then join the two-year Geo-information Science Master programme at Wageningen University. You have a Bachelor degree in the field of environmental sciences, geography and planning, landscape architecture, food and agricultural sciences, (geo)-information sciences or even social sciences.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Geographical Information Management and Applications - MSc Forest and Nature Conservation - MSc Landscape Architecture and Planning - MSc Environmental Sciences - MSc Biosystems Engineering.

MSc International Land and Water Management

Nynke Post Uiterweer MSc | Study Advisor | mil.msc@wur.nl | www.wageningenuniversity.eu/mil

Alumna Cecilia Borgia. "After completing my degree, I worked in Mauretania for the Instituto de Agricultura Sostenible (CSIC-IAS) promoting both crop diversification and evaluating the performance of irrigation systems in the Senegal Valley. This has also been the subject of my PhD at the University of Cordoba in Spain. Recently, I returned to Wageningen and joined the consultancy firm MetaMeta where I look at water-food-energy linkages and water governance in Yemen. Water access and management, as well as the interactions between local water governance and new forms of organisation, have been central aspects of my work."

Specialisations

Sustainable Land Management

This specialisation deals with the processes, drivers and consequences of land degradation; as well as with interventions and conservation practices for sustainable land management. By providing in-depth knowledge and developing skills in physical and socio-economic aspects, this specialisation prepares students for both research and development jobs. Topics covered range from erosion processes and modelling to impact assessment and strategies, from field scale to watershed and beyond.

Irrigation and Water Management

Students in this specialisation obtain extensive knowledge on water usage in agriculture. Irrigation -from the farm level to the watershed level- is the main focus. Topics include irrigation of agricultural land, design of irrigation systems, water justice, distribution issues, equity and gender discussion, improving the social and technical performance of existing farm irrigation systems and practices, and irrigation in its wider water management context.

Adaptive Water Management

Increasing human induced pressures on water cycles together with growing demands on water resources ask for careful management of water systems. Students in this specialisation acquire the knowledge, skills and capacity to analyse future- oriented issues in water management and to propose and critically assess management strategies and innovations.

Related programmes

MSc Earth and Environment - MSc International Development Studies - MSc Development and Rural Innovation - MSc Geo-information Science - MSc Landscape Architecture and Planning - MSc Forest and Nature Conservation.

Programme summary

The MSc International Land and Water Management focuses on the scientific analysis of the physical, environmental, technical and socio-economic aspects of land and water management and their mutual interactions. Students develop comparative insights into the development of land and water management, take a scientific approach to various research paradigms and acquire a problem-oriented, interdisciplinary attitude towards land and water management and rural development issues. Graduates will not only be able to study these issues, but also design and propose sustainable solutions to land and water management problems.

Your future career

Graduates find jobs in a wide range of fields including design and implementation, policy making, project management and research and education. Many find a PhD position at universities worldwide. They are employed by international organisations such as the Food and Agricultural Organisation of the UN (FAO), the International Water Management Institute (IWMI), or NGOs involved in international or national development. Some graduates also work for ministries, water boards and other governmental organisations in the field of international cooperation, such as the Dutch DGIS and the German GIZ, while others find jobs in private or public institutes in their home countries. For graduates interested in design and implementation, there are also job opportunities at international consultancies. In the Netherlands this includes firms such as Arcadis, Grontmij, Antea Group, Euroconsult Mott MacDonald and Royal Haskoning DHV.

ADMISSION REQUIREMENTS
see page 40.

MSc Landscape Architecture and Planning

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Students Ruud Tak and Jesper Borsje. In their major thesis Landscape Architecture, Jesper and Ruud have focused on sustainable tourism development in coastal landscapes. They have visited the Dubrovnik Rivièra in Croatia for their case study and explored and elaborated an integrated design strategy for tourism development. The designs on regional and local scale level show how site-specific landscape identities can function as a base for future sustainable tourism development. "We visited our study area twice. Through workshops and interviews with local people and by exploring the area ourselves, we gained a unique experience of working in a different culture and landscape."

Specialisations

Landscape Architecture

Landscape Architecture is concerned with the design and construction of metropolitan landscapes mainly in estuaries and deltas worldwide. The goal of landscape architecture is to create sustainable designs that are substantiated by proper academic knowledge from both ecological and behavioural fields of study.
At the same time, landscape architecture is envisaged as a creative process that is focused on the generation of pleasant and exciting aesthetic experiences. An exploration of the creative arts offers inspiration to do this.

Socio-spatial Analysis

Socio-spatial Analysis focuses on the interaction between people and space. It looks at both the multi-dimensional practices of creating spaces and the everyday experience, and usage of space. Socio-Spatial Analysis is committed to social theory in all its spatial articulations and has a strong international focus on the field of human geography. The relationship between people and space is approached from a multidisciplinary perspective, incorporating theories and methodologies from sociology, anthropology, geography and architecture.

Spatial Planning

Spatial Planning is concerned with the organisation of both planning processes as well as the theoretical and practical knowledge needed for spatial interventions. The goal of planning is to find sustainable solutions for important landscape challenges, such as climate change, energy needs, health, food security and urbanisation. Knowledge from both the social and natural sciences is applied to reflect on planning processes against the background of social, economic, cultural, political and environmental needs of society.

Related programmes
MSc Earth and Environment - MSc International Development Studies - MSc Development and Rural Innovation - MSc Geo-information Science - MSc Forest and Nature Conservation

Programme summary

The MSc Landscape Architecture and Planning programme focuses on the human activities that shape and govern landscapes on various scales and how these landscapes are experienced and used by people.
It centres on the process of intervention in landscapes to create new or revitalised places by means of planning and design, and on sound academic reflection on this process. Landscape architects and spatial planners also contribute to the improvement of the quality of decision making on landscape transitions. The relationships between citizens, governments and private institutions are continuously redefined. Landscape architects and spatial planners are finding new roles as facilitators who navigate between the various actors, and as managers and coordinators of spatial interventions.

Your future career

Graduates of Landscape Architecture and Planning work in various fields and positions related to landscape, land use and the environment. The programme prepares students for five major career paths: landscape architects, spatial planning consultants, project managers, policy advisers and researchers. Most graduates are employed by consultancy and engineering companies, planning and design bureaus, district water boards, government agencies and universities. A number of graduates work for large, multinational firms (such as Oranjewoud, Arcadis or Grontmij), while others are employed by small and medium sized companies.

ADMISSION REQUIREMENTS
see page 40. In addition to these admission requirements, a design portfolio is requested if you want to apply for the specialisation Landscape Architecture.

MSc Leisure, Tourism and Environment

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Alumna Ana Raguz. "My Master in Leisure, Tourism and Environment brought me a diversity of perspectives, cultures, experiences, sources of both theoretical and practical knowledge as well as the critical way of thinking, inspiring me for creative action. It constantly triggered my personal and professional development and I adored and enjoyed it! For me, many things started to fall into the place so suddenly and with such ease. It was a period of spreading ideas, trusting in them and working hard and thoroughly to realise them. At some point, the right people started appearing and I was able to develop both the project of harvesThink and IMPACT HUB. (www.harvesthink.com, zagreb.impacthub.net)

Programme summary

The Leisure, Tourism and Environment programme is characterised by a worldwide, trans-disciplinary, critical and innovative approach. The focus is on the relationship between leisure and environment with special attention for tourism. The programme primarily uses social and cultural theory to analyse the world of tourism; one of the largest industries in the world.

More and more people throughout the world are spending a growing proportion of their leisure time and money on tourism. This means that the economic and social importance of leisure and tourism services is growing tremendously. There is increasing awareness that leisure in all its manifestations has major consequences for cultural, political, technological, economic and geographical transformations throughout the world. In this respect, leisure has become a powerful agent of both cultural globalisation and regionalisation. Leisure and tourism can provide a major contribution to quality of life and social well-being. They have long been recognised for their role in community and regional development but also for their impact on the environment.

The aim of the MSc Leisure, Tourism and Environment programme is to analyse the development behind the fast growing leisure and tourism industry. It involves the study of leisure and tourism from a historical and philosophical perspective in a global, multicultural context. The study integrates the role of governmental, business and 'third sector' organisations in the innovation process towards sustainable (tourism) development. Debates about globalisation processes as well as the experience of leisure and tourism within the spatial, natural and social environment comprise a large part of the programme. Besides this theoretical approach to leisure and tourism, the study also focuses on advanced quantitative and qualitative research methods, and techniques commonly used in research concerning leisure and tourism.

The programme is international and multicultural. Faculty members from many parts of the world come to Wageningen and give lectures during the programme, bringing together an extraordinarily wide range of academic experience. The classroom itself is also very international with students from various educational and professional backgrounds coming together to critically discuss contemporary issues.

Your future career

The Master Leisure, Tourism and Environment programme is designed for students who seek a career as an academic professional or as a scientist. The programme prepares students for work in three major areas: policy and planning, research or consultancy, and development.
A large proportion of our graduates find employment with government agencies or non-governmental organisations in the areas of policy development and implementation. This is achieved at local, regional or international levels. Many graduates are employed by consultancy agencies, research institutes or network organisations that link different interest groups, such as leisure and tourism organisations with conservation institutions or private business with government organisations and communities. Others continue their academic careers by entering a PhD programme.

ADMISSION REQUIREMENTS
see page 40.

Related programmes
- MSc International Development Studies
- MSc Management, Economics and Consumer Studies
- MSc Development and Rural Innovation
- MSc Applied Communication Studies
- MSc Landscape Architecture and Planning

MSc Urban Environmental Management

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Alumnus Indra Firmansyah. "The MSc Urban Environmental Management helped me a lot in acquiring knowledge of both environmental technology and management. After my graduation in 2011, I returned to my home country Indonesia where I worked for the firm Royal HaskoningDHV on a project that focused on urban sanitation development. Recently, I started a PhD at Wageningen UR on the topic of closing nutrient cycles by reusing treated domestic waste (water) in agriculture and aquaculture, taking the Caribbean island St. Eustatius as a case study. This research is interdisciplinary and requires combining the expertise of spatial planning, new sanitation, agriculture and aquaculture."

Programme summary

The world we live in is an increasingly urban one. Over the past century, a great population shift has occurred from rural to urban areas. Cities now hold half of the world's population and it is estimated that three out of every five people will live in an urban environment by 2030. This development calls for measures to control the environmental impacts of urbanisation, such as growing traffic, increasing waste emissions, deteriorating air and water quality, and rising energy and resource consumption. Of particular concern are the speed and scale of urbanisation in the developing world as many Asian, African and Latin-American cities are incapable of providing adequate housing and basic urban services. Inadequate water supply, sanitation, waste collection and waste management systems are the cause of serious urban pollution and health hazards. Sustainable management of the urban environment has become one of the major challenges for the future.

The MSc Urban Environmental Management programme aims at equipping its students with the outlook, concepts and tools to manage the urban environment. The programme unites four essential perspectives on the urban environment: environmental quality and health, environmental infrastructure and technology, spatial planning, and governance. Besides integrated theories and views from several disciplines, urban environmental management requires technical and managerial competencies and skills for its implementation. Consequently, the programme provides a balanced curriculum of theory, tools and application. It emphasises the development of an interdisciplinary outlook, critical-thinking, analytical problem solving and practical decision making skills through a combination of teamwork, practical simulation exercises, field trips and an individual research project.

The internship programme offers a valuable opportunity to gain practical experience in a country and organisation as desired. Students can conduct their major thesis research within seven thesis tracks:

- Environmental Economics
- Environmental Policy
- Environmental Systems Analysis
- Geo-information Science
- Management Studies
- Land Use Planning
- Urban Environmental Technology and Management

Experimental thesis research will usually be part of ongoing research programmes of chair groups or research institutes of Wageningen UR. Otherwise, thesis topics originate from the student's own research interests or from discussions with potential supervisors.

Your future career

Graduates from the MSc Urban Environmental Management are well-equipped with the skills and knowledge to continue their academic training as a PhD student or to begin careers as researcher, adviser or consultant in for example the utilities companies, the services or manufacturing industries, or in governmental organisations.

ADMISSION REQUIREMENTS
see page 40.

Related programmes
MSc Environmental Sciences - MSc International Development Studies - MSc Landscape Architecture and Planning.

MSc Applied Communication Science

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Alumna Bette Harms. "At 'International Union for Conservation of Nature' (IUCN) I am part of a booming platform called 'Leaders for Nature' where over twenty multinationals meet and learn to incorporate natural capital into their core business processes. I am the coordinator of the Leaders for Nature Academy where I develop and deliver training models to our network members. In my daily job I actively seek to develop cooperation between Non Governmental Organisations (NGO's), the government and private sector. The Master Applied Communication Science has given me the capacity to translate ecology into valuable and understandable knowledge for a range of professionals working in the private sector."

Specialisations

Strategic Communication in Innovation

Students learn to analyse and strategically apply communication to deal with current societal issues, problems and challenges in life science domains such as nature conservation, nutrition and health, water management, environment and food production. Our students are trained to adopt an integrative approach that involves social science and technical innovations, fulfilling an intermediary role to enhance multidisciplinarity and interactive cooperation. Communication is a basic element of change. Complex processes of change involve different perspectives and perceptions of the various people involved. Societal processes like climate change, poverty, disease or ecological degradation require appropriate solutions that integrate insights from all kinds of disciplines and stakeholders. Opportunities for enhancing mutual understanding and collaboration between science disciplines and society are explored. Special attention is paid to everyday life situations and how people actively deal with common issues related to the domains of the life sciences.

There are no pre-defined thesis tracks. Students compile their own thesis tracks by choosing, besides the compulsory communication science courses, a combination of closely linked courses; including a minor in a life sciences domain. An internship introduces students to professional practice. The major thesis allows them to become experts in a specific area within communication that is closely linked to their personal interests and future career.

In the thesis track of their choice, students link Communication Science to, for example, Nature Conservation, Nutrition and Health, Animal Production Systems, Ecology and Environment, Forestry and Rural Development, Land Use Planning, Organic Agriculture, Product Design and Quality Management, Food Technology or Water Management.

Health and Society

More information on this specialisation is available on page 39.

Programme summary

In this programme students learn to analyse and critically reflect on the role of communication in complex dynamic processes and to design communication strategies and programmes that are relevant to societal problem solving and innovation.

Your future career

Graduates are specialised in building bridges between various stakeholders, such as governments and citizens or laymen and experts. They work for communication consultancy organisations, government departments, hospitals, development agencies, commercial organisations, media and institutes of knowledge. Career prospects are: communication consultant (advising organisations on how to improve their communication processes); policymaker (formulating policy in cooperation with groups in society); process facilitator (managing conflict, negotiation and change); communication manager (organising internal and external communication processes of an organisation); project manager (managing the communication and collaboration between parties throughout the entire project lifespan); journalist (making scientific knowledge accessible to a broader public); communication researcher (making a systematic analysis of a communication issue).

ADMISSION REQUIREMENTS
see page 40.

Related programmes
MSc International Development Studies -
MSc Development and Rural Innovation -
MSc Management, Economics and Consumer Studies

MSc Development and Rural Innovation

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Alumnus Alessandro Baruzzi. After studying agriculture in Italy, Alessandro joined the social science Master Development and Rural Innovation. “During the programme, I learned that there is not a single solution to a problem. I learned to look at the issues from a broader perspective and to think critically. I now know how to apply technical knowledge to a social context.” He works for 'Cooperazione Internazionale' in a project sponsored by the World Bank on Improving Food Security in the Republic of Central Africa. "My position is agronomist, however, my work is more that of a sociologist. If I were to choose a study again, I would definitely go for the programme Development and Rural Innovation.”

Thesis tracks

Communication and Innovation Studies

In this track, you examine communication among stakeholders and disciplines in the context of societal problem solving and change. Special attention is given to the role of communication, knowledge, interpretation and innovation support strategies in bringing about organisational, policy or technological change in societal domains such as sustainable agriculture, health, environment, multifunctional land use and international development.

Technology and Development

The goal of this track is to understand how science and technology interact with international development problems, such as food security, adaptation to climate change and social justice. The approach involves analysis of how technology both mediates and is constituted through social relations and institutional arrangements between various actors including farmers, scientists and policymakers. Every social problem that we face today involves science and technology, either as a cause or as a cure.

Sociology of Development and Change

This track focuses on the understanding of rural development problems worldwide from sociological and anthropological perspectives. Particular attention is paid to how local people themselves solve problems. Field-based studies are the basis for critical reflection on theories of development and social change. Themes addressed include food security, livelihoods in the context of globalisation, poverty and environmental degradation, property rights, conflict, and policy.

Programme summary

This programme aims to develop professionals who understand the role of knowledge in societal change processes and are able to link human and technological dimensions of innovation in dynamic contexts across the globe. It is a social science programme tailored for students with a technical, life science or relevant management background with an interest in international development problems. Innovations in the field of agriculture, food and natural resource management have a dual nature. They consist of new technological practices as well as new socio-organisational arrangements between different societal actors. Dealing with the links between technological developments and societies in which these are introduced and used, requires a fundamental understanding of socio-technical innovation and change processes. In other words, you will be challenged to combine your previously acquired competencies with new social science competencies in order to make innovations work.

Offering a variety of disciplinary and problem-oriented courses, the programme is taught in an interactive style where learning from each other is emphasised. Working in small international groups contributes significantly to this mutual learning process. The programme is highly thesis-oriented. The subject matter and methodology courses serve primarily as preparation for an empirical research project. This entails writing a research proposal, conducting the research and completing a thesis, thereby offering you the opportunity to apply your newly acquired insights in a field situation. International students often apply this knowledge in their home country on a topic relevant to their professional interests and preferences. Others choose a relevant topic in their field of interest in various countries around the world, including the Netherlands.

Your future career

The programme lays the foundations for a variety of career opportunities, usually oriented towards societal problem solving and innovation. You can become a researcher or a knowledge broker who ensures a good fit between client demands and research formulation. You might take on the role of process facilitator or communication specialist in a non-governmental organisation, the public sector or the private industry. A career as a policymaker or consultant in various (inter)national organisations is another option. Organisations where graduates work are for example: UNDP, Tropenbos International, Women for Water, UTZ Certified, George Washington University, UNICEF.

ADMISSION REQUIREMENTS

see page 40. If you have a social sciences background, read more about the MSc International Development Studies on page 37.

Related programmes

MSc International Development Studies - MSc Applied Communication Science - MSc Management, Economics and Consumer Studies - MSc International Land and Water Management - MSc Environmental Sciences.

MSc International Development Studies

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Alumnus Luckmore Jalisi. "I have really benefitted from what I learnt during my studies. This master has opened doors for me." Luckmore did the specialisation Sociology of Development and conducted both his internship and thesis research in a refugee camp in Uganda. These experiences were important in getting him his job as Youth and Governance Advisor at ActionAid in Liberia. "I support post-conflict youth development programmes based on a human rights approach, and develop monitoring & evaluation tools for governance and youth development work. I draw on the knowledge and skills acquired during my studies and my classmates from Wageningen remain valuable contacts in my network."

Specialisations

Sociology of Development

This specialisation focuses on social transformation processes, especially the local consequences of globalisation and environmental change, and the way people cope with uncertain circumstances. Themes studied include natural resource degradation, refugees, migration, post-disaster reconstruction, social unrest, poverty, and lack of access to resources crucial to the livelihoods of people. This specialisation applies sociological and anthropological perspectives to development problems with special attention given to understanding the differing interests and views of numerous actors. You can choose a major in Disaster Studies, Environmental Policy, Sociology of Development and Change, or Rural Sociology.

Economics of Development

The central themes in this specialisation are the role of agriculture in development, food security and the global food crisis, regional economic issues, sustainable use of natural resources, rural-urban income disparities, and issues related to poverty and the role of institutions. These themes are examined from a microeconomic perspective to gain insight into the behaviour of individuals and institutions, as well as from a macroeconomic perspective to obtain insight into development processes at regional and national levels. You can major in Agricultural Economics and Rural Policy, Development Economics, Environmental Economics and Natural Resources, or Regional Economics.

Communication, Technology and Policy

In this specialisation, social transformation and sustainable development are examined with a specific focus on communication, technological innovations, and policy processes. An important theme is how technologies and policies are developed in the interaction between various parties (e.g. governments, social organisations, and citizens) and the role of communication in these processes. Another theme is the relationship between technological change (in the agricultural and food sectors), institutional processes and social transformation. You can choose a major in Knowledge, Technology and Innovation, Law and Governance, or Strategic Communication.

Related programmes

MSc Development and Rural Innovation - Health and Society (specialisation) - MSc Applied Communication Science - MSc International Land and Water Management - MSc Leisure, Tourism and Environment - MSc Management, Economics and Consumer Studies.

Programme summary

This programme deals with worldwide processes of development and change related to livelihoods, agro-food networks and the environment in a dynamic international context. Special attention is given to exclusion processes, equity, unequal access to resources and sustainability. Social, economic, political, technological, and environmental change is studied from various perspectives and at different levels. You will develop a critical understanding of recent development theories, learn to plan and conduct research, and acquire skills to translate research findings into recommendations for policies and intervention strategies. You will learn to include the diverging views of various stakeholders and to work in multidisciplinary teams. Depending on your previous education, you can follow one of the specialisations.

Your future career

Graduates are employed in various (inter-) national organisations as a programme/ project coordinator, trainer, consultant, advisor, policymaker or researcher. You could work, for example, as policymaker in a government or semi-governmental institute, as programme coordinator or advisor in an international (non-)governmentalorganisation or (consultancy) company, or as researcher and/or teacher at a university or research institute. Examples of organisations include: FAO, World Bank, European Union, UTZ Certified, Oxfam Novib, Rabobank Foundation, CARE, Sustainalytics and UNICEF.

ADMISSION REQUIREMENTS

see page 40. If you have a background in a technical or life sciences field and an interest in development studies, read more about the MSc Development and Rural Innovation on page 36.

MSc Management, Economics and Consumer Studies

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Alumnus Bart Zwartjes. Innovate a new chip flavour, assist in expanding an encyclopedia made by consumers (Wikipedia), or write a review of a purchased product. These are just a few examples of co-creating as a consumer. Co-creation is a joint effort by company and consumer and companies have a lot to gain by this. Namely, 50-70% of all product innovations fail at market entry. Co-creation allows companies to offer products and services that meet consumer needs better. But why would consumers spend their free time helping out companies? Currently Bart works as a consultant for Cap-Gemini advising businesses on how to make successful use of co-creation.

Specialisations

Management Studies

This specialisation includes several options. Students can investigate and analyse the strategies and operations of companies in production and distribution networks as well as the dynamic decision-making processes involved in production. Alternatively, you may choose to focus on the various aspects of marketing and consumer behaviour in business, agribusiness and the food industry. It is also possible to acquire expertise in facility management, information systems, operations research (logistics), information management or quantitative decision modelling.

Consumer Studies

This specialisation allows you to study the behaviour, lifestyles and consumption patterns of consumers and households. Students will acquire insight into the economic and sociological aspects of consumers and households, and the factors determining consumption behaviour and patterns. Alternatively, the role of communication between the various actors in the food chain or consumer technology can be studied.

Economics, Environment and Governance

Analyse the economic behaviour of various participants in the agricultural sector and rural areas in developed countries or study the pivotal role of agricultural and rural development in low-income countries. You can also specialise in Public Administration and Policy if you are interested in the governance of complex problems in domains of sustainable agriculture, climate change or water management. If students are more interested in environmental issues, they can focus on the economic or policy aspects of national and international environmental problems or the processes of environmentally-induced social change in modern industrial and developing societies.

Management, Innovation and Life Sciences

The goal of this specialisation, especially designed for students with a life science background, is to integrate technical and managerial knowledge. Examples of how this interaction can be of optimal use are complex innovation processes in production, logistics or market development. These processes have a high technological character in which innovation plays a central role and for which good communication and managerial skills are necessary. Three different profiles can be studied within this specialisation: innovation management, innovation in decision support and economics, and innovation in operations management.

Programme summary

Management, Economics and Consumer Studies deals with the inter-relationships between producers, consumers and society-at-large. During the programme, students will study the dynamics in the agro-food chain involving suppliers, producers, retailers and consumers; focusing on how they affect each other and how they affect, and are affected by, the economy and society.

The domain of this programme is business and all the components of industry including production, distribution and final use or consumption. It covers managerial, economic, sociological and environmental aspects – internal and external – of households and businesses in the Netherlands, Europe and the rest of the world, in both developed and developing countries.

Your future career

Graduates have career prospects as managers, consultants, researchers and teachers in the public or private sector. Career opportunities are found within financial institutions, marketing agencies or in the field of consumer affairs. Also, alumni work as policy makers in government agencies or non-profit organisations, in development and innovation in life science related businesses or organisations.

ADMISSION REQUIREMENTS
see page 40.

Related programmes

MSc International Development Studies - MSc Food Quality Management - MSc Applied Communication Science - Health and Society (specialisation) - MSc Development and Rural Innovation.

Health and Society

A specialisation within the MSc Applied Communication Science.

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Student Sofia Sutherland Borja. Sofia comes from Chile where she finished her BSc in Nutrition and Dietetics. In her MSc internship at the Standing Committee on Nutrition at the United Nations in Geneva, she worked on policies related to Public Health Nutrition. "For me, this has been a great opportunity to experience at first-hand how nutrition promotion policies are developed, and also meet influential people in the field I'm passionate about. Health and Society was the perfect complement to my background in Nutrition and Dietetics, because I can now approach nutrition problems from both a medical and social perspective."

Programme summary

Health is a resource that enables people to lead an individually, socially and economically productive life. For many centuries, the care for individual and population health has been the domain of medical sciences. However, it is widely acknowledged that contemporary health problems are complex and cannot be solved by simply extending existing health services. Chronic illnesses such as cardiovascular disease, cancer and diabetes are important contributors to the burden of disease; as are communicable diseases such as HIV/AIDS and other sexually transmittable diseases.

There is no single cause to such health problems. Biological factors aside, lifestyle and the social and physical environment are major contributors in both a positive and negative way. Many diseases are related to the way in which people behave and take care of their own health, for example, substance abuse (smoking, alcohol, drugs), nutrition, physical exercise, and sexual behaviour. Lifestyles are often rooted in the social environment of family and friends, the neighbourhood, and the school and working environment. Aspects of the physical environment also affect individual and population health including housing conditions, environmental pollution, the availability of green space, and the availability and accessibility of health services. Moreover, societal changes, such as demography (e.g. aging populations, single parent families), consumption patterns, communication technology developments, globalisation and commercialisation influence the health status of individuals and populations.

Since health is influenced by such a diversity of interconnected factors, the development of cross border public health policies is essential. Within the health care system, organisations and professionals have to increasingly work together in the provision of care, prevention and health promotion.

The set-up of the programme reflects its focus on societal issues in the domain of health, health promotion and health care systems. The programme covers a niche in the Netherlands by primarily taking a sociological approach to this domain, centralising the link between health and human relationships. Here, human relationships are interaction patterns and dependencies both differing in nature, scope and intensity. In conjunction with this sociological approach, anthropological and social psychological approaches are key to the social scientific analysis of health within the program.

The study programme takes a comparative perspective with respect to the empowerment of individuals, communities and populations. In other words, to what degree do people have the (financial) means to arrange their lives and are they able to use facilities for health protection and health improvement. This way, emphasis is on the societal embedding of health and activities of health promotion in relation to social processes, structures and institutions. Together with sociology, the programme combines the domains communication science and health promotion but also includes perspectives from economics, management and public policy.

Your future career

The Health and Society study domain is becoming more and more relevant as a consequence of changing patterns in health problems and the factors influencing health. Policymakers are becoming more aware of the impact of health policy; and recent national and international policy documents have emphasised the importance of health promotion. The improvement and sustainability of acceptable levels of health remains a major challenge. This specialisation prepares you for careers as researchers, health promoters, health policy advisors or managers of health-oriented organisations.

ADMISSION REQUIREMENTS

see page 40.

Related programmes

MSc Management, Economics and Consumer Studies - MSc International Development Studies - MSc Applied Communication Science - MSc Development and Rural Innovation.

Admission

English Language Proficiency

	Standard	Exceptions*
havo**	7.0	8.0
vwo**	6.0	7.0
Oxford Online Placement Test**	60	70
IELTS	6.0 (with a minimum sub score of 6.0 for speaking)	6.5 (with a minimum sub score of 6.0 for speaking)
TOEFL	80 internet (with a minimum sub score of 20 for speaking)	92 internet (with a minimum sub score of 23 for speaking)
Cambridge CAE	Pass at grade C or above	Pass at grade B or above
Cambridge FCE	Pass at grade B or above	Pass at grade A or above
Cambridge CPE	Pass at grade C or above	Pass at grade B or above

* MSc Applied Communication Science / MSc International Development Studies / MSc Management, Economics and Consumer Studies / MSc Development and Rural Innovation / Water Technology.

** Dutch applicants who do not meet the havo or vwo level requirements can use the Oxford Online Placement Test (OOPT) as evidence of proficiency in English for admission to the MSc programme. The Oxford Online Placement Test can be taken at Wageningen in'to Languages.

Note: IELTS and TOEFL tests should have been taken no longer than two years prior to the application.

General admission requirements

All MSc study programmes at Wageningen University have the following general admission requirements:

> A bachelor degree (or equivalent) in a field of science relevant to the selected programme;

> A cumulative grade point average (GPA) - or cumulative average mark - for the Bachelor's study, which is at least 70% of the highest grade, or mark achievable; (visit www.wageningenuniversity.eu/admission for specific requirements)

> Good working knowledge of mathematics and/or statistics;

> Fluency in English, both written and spoken (see schedule).

The Dutch Government is implementing a new immigration policy. A part of this policy is that all international students who require a residence permit will be subject to a yearly study progress check. Students must obtain at least 50% of the credits per year (or part of a year). The immigration office will cancel the residence visa of students who do not meet this criteria.

In addition to these general requirements, specific requirements may apply to individual programmes. See the website of the specific MSc programmes for more information.

Minors

Do you want to improve your chances of enrolling at Wageningen for a Master's programme? Are you interested in a specific topic that you cannot find at your own university? Or, do you want to know what it is like to study at Wageningen University? Choose one of the 59 minors at Wageningen University. Minors consist of a cluster of courses based on a specific theme that you can take during the third year of your Bachelor programme. Read more about minors at www.wageningenuniversity.nl/minors.

Study Expenses

Study expenses consist of tuition fees, research fees, living expenses (housing, foods, drinks) and other expenses (insurance, residence permit, handling fee, books, study materials).

	EU/EFTA students 2015/2016	Non-EU/EFTA students 2015/2016
Tuition Fee	€ 1,900* / year	€ 16,000* / year
Research Fee		€ 1,400** / year
Living Expenses	€ 10,000* / year	€ 10,000* / year
Other Expenses	€ 500* / year	€ 1500* / year

* Indication only, see the website www.wageningenuniversity.eu/tuitionfee for up-to-date information.

** A one-time fee to cover research expenses during internship and/or thesis in the second year.

Application

Application Deadlines

	February 2015	September 2015	February 2016
Dutch students	January 1, 2015	August 1, 2015	January 1, 2015
EU/EFTA students	December 1, 2014	July 1, 2015	December 1, 2015
Non-EU/EFTA students	October 1, 2014	May 1, 2015	October 1, 2015
Study programme	Bioinformatics	All programmes	Bioinformatics
	Biotechnology		Biotechnology
	Biology		Biology
	Environmental Sciences		Environmental Sciences
	Molecular Life Sciences		Molecular Life Sciences
	Organic Agriculture		Organic Agriculture
	Plant Biotechnology		Plant Biotechnology
	Plant Sciences		Plant Sciences

Application procedure

STEP 1: APPLICATION

> **A completed MSc application form**
www.wageningenuniversity.eu/applicationform

> **BSc Degree.** A copy of your Bachelor degree (or equivalent as recognized by Nuffic) in Dutch or English (or a certified English translation). Students in the final year of their Bachelor may also apply for admission prior to graduation. The Academic Committee on Admissions can tentatively admit students based on a transcript of their academic record and the expected date of graduation. Students must submit the official degree before September 1st. Students who require an entry visa for the Netherlands must submit proof of graduation before July 1.

> **Transcript of your academic records.** A copy in Dutch or English (or a certified English translation) including a list of marks or grades obtained during your Bachelor and your Grade Point Average (GPA).

> **Sufficient English language proficiency test results.**

> **A statement of motivation.**

> **Curriculum Vitae.**

Only complete applications will be forwarded to the Academic Committee on Admissions. You will receive a registration letter by email containing a username and password with which you can check your application status in our Student Tracking Admissions Registration System (STARS).

STEP 2: RESULT AND CONFIRMATION

Your application for admission will be evaluated by the Academic Committee on Admissions of Wageningen University. The decision will be communicated through an official letter, sent by email. The Committee will also inform candidates if the application is not accepted. The letter of admission is required before you can apply for most fellowships. International students should confirm their participation in the programme. When you have been admitted to the programme log on to STARS and complete the confirmation form.

STEP 3: PAYMENT

Upon receipt of your confirmation form, an invoice will be sent to you or to your sponsor. The invoice includes important information about the payment. The required amount should be paid into our bank account before the deadline (see www.wageningenuniversity.eu/tuitionfee). Do not make any payments before receiving the invoice.

STEP 4: VISA (NON-EU/EFTA NATIONALS ONLY)

Nationals of Australia, Canada, Japan, Monaco, New-Zealand, South Korea, U.S.A or Vatican City need a residence permit to study in the Netherlands.
If you are a national of any other non-EU country you need both a MVV entry visa and a residence permit.
It is not possible to apply for a MVV entry visa and a residence permit yourself. International Office of Wageningen University will start this procedure upon receipt of your payment.

STEP 5: HOUSING AND INSURANCE

Wageningen University will arrange housing for all international Master students. Housing will be arranged for you after you have paid the required amount and completed the arrival/housing application form. Dutch students can subscribe for a room at www.idealis.nl. In the Netherlands, everyone is required by law to have health and liability insurance. If required, Wageningen University can assist international students in arranging a comprehensive insurance upon arrival in Wageningen.

Meet us

On campus

Master open day

During these orientation days you will visit the university's campus, meet students and speak with advisors from each study programme. These Open Days will take place on:

> 11 December 2014
> 24 April 2015

Be a student for a day

Would you like to know more about a particular Master programme? Experience the study programme yourself and walk along with a current student of the programme of your interest.

In your country

Contact a representative

Wageningen University has representatives all over the world to answer your questions. They speak your language and know the university and the Netherlands well. Visit our tab Contact in Facebook, select your country and contact the representative now.

Education fairs

Representatives of Wageningen University give presentations and attend many education fairs and universities worldwide.

For a complete overview of where you can meet us on campus and in your country, please visit www.wageningenuniversity.eu/meetus.

In Dutch

Would you rather read more about our Master of Science programmes and Wageningen University in Dutch? Please visit www.wageningenuniversity.nl/master.

Online

Skype chat session

During a chat session on Skype you can ask all your personal questions to one of our recruitment officers. Please fill out the form on www.wageningenuniversity.eu/meetus to register for an online meeting.

Student coaches

Student coaches know from personal experience how difficult it can be to choose a Master programme, as they are students themselves. They can help you with all your questions about the possibilities after your Bachelor studies. You can find the student coaches at www.wageningenuniversity.eu/studentcoach.

Worldwide webinars

Online presentations about some of our Master programmes are organised, completely free of charge and accessible from all around the world on mobile devices and computers with internet access. Find out more about our webinars by visiting www.wageningenuniversity.eu/webinars.

Social media

For more information about studying at Wageningen University, news and student activities you can follow us on social media.

facebook.com/wageningenuniversity
twitter.com/uniwageningen
pinterest.com/uniwageningen
instagram.com/uniwageningen
youtube.com/wageningenuniversity


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Brussels
Belgium
Germany
Berlin
France
Paris
Switzerland
Russia
3 hour flight
Spain
2 hour flight
India
9 hour flight
Colombia
12 hour flight
South Africa
16 hour flight

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This information applies to college year 2015-2016. Publication date July 2014. Although this brochure had been compiled with the greatest care, no rights may be derived from any of the contents. For the most up-to-date information, please visit:
www.wageningenuniversity.eu/master

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