Master programmes
Wageningen University

www.wageningenuniversity.eu | 2016-2017

To explore the potential of nature to improve the quality of life
Wageningen University

Master students

- 4,605 students
- 62% Dutch students
- 38% international students
- 105 nationalities

Rankings

1. Agricultural university in the world. National Taiwan University Ranking 2014.
2. 3 of the 200 best universities in the world in the field of Agriculture and Forestry. QS World University Rankings 2015.

Alumni

- 40,178 graduates
- 31,668 Dutch
- 8,510 international

7% of the Dutch alumni live and/or work abroad
53% of the international alumni

Living in Wageningen

- 12min by bus to train station
- 24min by train to Utrecht
- 54min by train to Amsterdam
- >60 different sports for only €11,50 a month
- 16% of the residents is student

Wageningen UR

- 20 BSc programmes
- 29 MSc programmes
- 1 aircraft
- 87 chairgroups
- 8 partnerships
- New: 10 MOOCs on edX
- 2 Online Masters
- 11 research institutes
- 7 test locations and innovation centres
- 2 libraries
- >15 laboratories

Indication only, source www.nuffic.nl

living expenses:
- USA
- Norway
- Netherlands
- Spain
- UK
- India
- China

500
1000
1500
2000

'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', our scientists and students work around the globe conducting research for non-governmental organisations, government agencies and the business community. Contributing to the improvement of the quality of life is our goal. Wageningen University is the number 1 university when it comes to the agricultural life sciences and among the top 10 when it comes to environmental sciences. Our education programmes focus on complex issues in food production, the relation between food and health, environmental issues and biodiversity. These issues are subject to increasing worldwide concern.

At Wageningen, we first take a broad picture into account before zooming in on the finer details and subjects. 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.

A lot of the solutions seem to come from a technological approach, like creating better crops or smarter technology, but an approach from a merely biological, chemical or physical angle does not do the job. 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. Solving government issues and dealing with socio-economic and cultural constraints are as important as coming up with technical solutions. This approach 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.

On our wonderful campus students and scientists from around the world gather to form a large international community that bridges cultures in a natural way. This not only enriches the dynamic climate of our university, but it stresses the necessity to work together on a global scale and in international teams. Global challenges have no boundaries and co-operation is of utmost importance. In Wageningen, the ability to work in intercultural international teams comes naturally.

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. Arthur P.J. Mol
Rector Magnificus
Master of Science programmes

Life Sciences:

6 Animal Sciences
- Animal Breeding and Genetics
- Animal Nutrition
- Applied Zoology
- Animal Health and Behaviour
- Animal Health Management
- Animal Production Systems

7 Aquaculture and Marine Resource Management
- Aquaculture
- Marine Resources and Ecology
- Marine Governance

8 Bioinformatics
- Bioinformatics
- Systems Biology

9 Biology
- Animal Adaptation and Behavioural Biology
- Bio-interactions
- Molecular Ecology
- Conservation and Systems Ecology
- Evolution and Biodiversity
- Health and Disease
- Marine Biology
- Molecular Development and Gene Regulation
- Plant Adaptation

10 Biosystems Engineering
- Farm Technology
- Systems and Control
- Information Technology
- Environmental Technology
- AgroLogistics
- Biobased Technology

11 Biotechnology
- Cellular and Molecular Biotechnology
- Process Technology
- Marine Biotechnology
- Medical Biotechnology
- Food Biotechnology
- Environmental and Biobased Technology

12 Food Quality Management

13 Food Safety
- Applied Food Safety
- Food Safety Law
- Supply Chain Safety

14 Food Technology
- Ingredient Functionality
- Product Design
- Food Innovation and Management
- Food Biotechnology and Biorefining
- Dairy Science and Technology
- Sustainable Food Process Engineering
- European Masters Degree in Food Studies
- Gastronomy
- Sensory Science

15 Molecular Life Sciences
- Biological Chemistry
- Physical Chemistry
- Biomedical Research
- Physical Biology

16 Nutrition and Health
- Epidemiology and Public Health
- Nutritional Physiology and Health Status
- Molecular Nutrition and Toxicology
- Sensory Science

17 Organic Agriculture
- Agroecology
- Consumer and Market
- Double Degree Agroecology

18 Plant Biotechnology
- Functional Plant Genomics
- Plants for Human and Animal Health
- Molecular Plant Breeding and Pathology

19 Plant Sciences
- Crop Science
- Greenhouse Horticulture
- Natural Resource Management
- Plant Breeding and Genetic Resources
- Plant Pathology and Entomology

20 Water Technology

21 Nutritional Epidemiology and Public Health
- (Online Master specialisation)

22 Plant Breeding
- (Online Master specialisation)
Environmental Sciences:

23 Climate Studies
- 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

24 Earth and Environment
- Hydrology and Water Resources
- Meteorology and Air Quality
- Biology and Chemistry of Soil and Water
- Soil Geography and Earth Surface Dynamics

25 Environmental Sciences
- Environmental Quality
- Environmental Systems Analysis
- Environmental Policy and Economics
- Environmental Technology

26 Forest and Nature Conservation
- Policy and Society
- Management
- Ecology

27 Geographical Information Management and Applications

28 Geo-information Science

29 International Land and Water Management
- Sustainable Land Management
- Irrigation and Water Management
- Adaptive Water Management

30 Landscape Architecture and Planning
- Landscape Architecture
- Spatial Planning

31 Leisure, Tourism and Environment

32 Urban Environmental Management
- Environmental Economics
- Environmental Policy
- Environmental Systems Analysis
- Geo-information Science
- Management Studies
- Land Use Planning
- Urban Systems Engineering

Social Sciences:

33 Applied Communication Science
- Communication and Innovation
- Health and Society

34 Development and Rural Innovation
- Communication and Innovation Studies
- Technology and Development
- Sociology of Development and Change

35 International Development Studies
- Sociology of Development
- Economics of Development
- Communication, Technology and Policy

36 Management, Economics and Consumer Studies
- Management Studies
- Consumer Studies
- Economics, Environment and Governance
- Management, Innovation and Life Sciences

37 Health and Society
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Programme summary

Humans interact with animals in many different ways, ranging from raising livestock for food to keeping pets for companion. Animal husbandry and livestock development are not only constrained 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. Our individually tailored programme trains students to become expert animal scientists, well-equipped to tackle relevant issues of livestock and animal management.

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.
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 or 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

See page 40.
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. They 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 alteration. In these examples, 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
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Related programmes
MSc Biotechnology - MSc Molecular Life Sciences - MSc Plant Biotechnology.
**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 to other Dutch universities, many biology graduates from Wageningen University find a position abroad.

**ADMISSION REQUIREMENTS**

See page 40.

**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.

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**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, 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.

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**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 parasite 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."
**Thesis tracks**

**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.

**Systems and Control**
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 improve the quality in production. 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.

**Biobased Technology**
The importance of biobased economy is increasing. Energy savings and the use of renewable energy are directions for achieving an environmentally sustainable industrial society. Biomass of plants, organisms and biomass available can be turned into a spectrum of marketable products and energy. In this track, you learn more about process engineering, biological recycling technology, biorefinery and how to abstract a real system into a physical model and analyse the physical model using dedicated software.
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 and 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 obtain 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 MSD, 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

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Related programmes

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

Gradsutes 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

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Related programmes

MSc Management, Economics and Consumer Studies - MSc Food Technology - MSc Food Safety.
MSc Food Safety
Dr. Ralf Hartemink | Programme Director | +31 (0)317 48 35 58 | food.science@wur.nl | www.wageningenuniversity.eu/mfs

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. 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
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Related programmes
MSc Food Quality Management - MSc Food Technology - MSc Nutrition and Health.
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 through 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 or Food Process Engineering.

**Dairy Science and Technology**
This specialisation focuses on the dairy production chain. Its core programme consists of dairy-related courses combined with a cluster in chemistry and physics, fermentation or processing. 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; Biobased Chemistry and Technology; or Food Quality and Design.

**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 group 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 obtain management positions.

**ADMISSION REQUIREMENTS**
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**Related programmes**
MSc Food Quality Management - MSc Food Safety - MSc Biotechnology - MSc Nutrition and Health.
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.

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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. This can be the starting point for a whole new line of medicines.
MSc Nutrition and Health

Rolf Marteijn MSc | Programme Director | mnh.msc@wur.nl | www.wageningenuniversity.eu/mnh

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
In September 2015, Wageningen University started the specialisation "Nutritional Epidemiology and Public Health" as the first complete online Master of Science. For more information, read the programme description in this brochure, or go to www.wageningenuniversity.eu/omnh

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 molecular and cellular techniques 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, such as 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 studied 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 multi-disciplinary 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).
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 ecoeonomy, 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.

Specialisations

Agroecology

Due to concerns on conventional farming practices, food safety issues and pollution, consumers increasingly demand wholesome agricultural products that are produced in a sustainable way. In addition to the demand for organic products by consumers in industrialised countries, there is a need for scientific agroecological farming practices in developing countries and countries in economic distress. In these regions, farmers cannot afford external inputs like pesticides, fertilisers or expensive seeds. Courses focus on: the analysis and design of sustainable organic farming systems; studying the relationship between plant and animal production; soil and landscape; analysing factors affecting plant and animal health; organic product quality. Students learn a systems approach to conduct research projects involving integrated agroecological systems.

Consumer and Market

Socio-economic constraints affect the demand for organic products, and are major bottlenecks to expand organic production. Improved understanding of consumer preferences is essential to stimulate sustainable production of healthy food and renewable resources. Production, processing and marketing of organic products is increasingly affected by (inter-) national policy and legislation. Insight into these aspects is crucial to expand organic production systems. Courses focus on: analysis of consumer perception; insight into relations between government policy and consumer behaviour; development of strategies for certification and trademarks for organic products; globalisation of food production and consumption; environmental education; global versus local production. Students acquire skills to analyse complex problems at the intersection of organic agriculture and society.

Double Degree Agroecology

The double degree programme combines the strengths of the two co-operating institutes, adding the specialist knowledge in agroecosystems management of FESIA with the expertise in designing and evaluating organic food production chains in Wageningen. Students get the opportunity to understand structure and function of complex agroecosystems. They learn to apply systems approaches in studying, designing and evaluating agricultural systems and food production chains, and to develop creative solutions for sustainable farming and marketing of organic products. Action learning and action research through cooperation with farmers, food system professionals and consumers will shorten the distance between practice and theory.

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.
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 in 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.

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.

Alumnus Behzad Rashidi. “I obtained my bachelor degree in the field of agricultural engineering, agronomy and plant breeding, at Isfahan University of Technology, Iran. The curiosity and interest for studying plant biotechnology and great reputation of Wageningen University motivated me to follow the master programme Plant Biotechnology. I got a chance to do my internship at State University of New York at Buffalo, working on biofuel production from microalgae. Working with this small unicellular organism made me even more motivated to continue my research after my master. Now I am doing my PhD in the Plant Breeding department of Wageningen University, working on biorefinery of microalgae.”
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
In September 2015, Wageningen University started the specialisation "Plant Breeding" as the first complete online Master of Science. For more information, read the programme description in this brochure, or go to www.wageningenuniversity.eu/mps

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.
Your future career

This study domain is becoming more and more relevant due to the urgent need for new technologies to combat 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.

Programme summary

There are a lot of new and existing global problems related to the availability and quality of water for personal, agricultural and industrial use. And these problems require sustainable solutions 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 also for 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. This 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 supplement 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.
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. 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

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 detect these 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 and 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.

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

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.

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
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 a 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 and power companies and governments.

ADMISSION REQUIREMENTS
See page 40.

Related programmes

MSc Environmental Sciences - MSc Earth and Environment - MSc Management, Economics and Consumer Studies.
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 MSc Earth and Environment 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 MSc Earth and Environment 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 master 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.
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 obtain 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


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

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 and 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 Geo-information Science - MSc International Development Studies.
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 usability 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.
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 and social 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 consultants or project leaders for global consultancy companies like Royal Haskoning, Arcadis and Grontmij. And lastly, others start an IT career as a Geo-information engineer at all kinds of companies or NGOs. Would you like to generate and use geo-information to solve global problems like flooding, food security, climate change impact, renewable energy, urbanification, 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.
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.

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.

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

ADMISSION REQUIREMENTS
See page 40.
Students Ruud Tak and Jesper Borsje. For their thesis, Jesper and Ruud investigated sustainable tourism development in coastal landscapes. They visited the Dubrovnik Riviera in Croatia for their case study and explored and developed an integrated design strategy for tourism development. Their designs on a regional and local scale show how site-specific landscape identities can function as a base for future sustainable tourism development. “We visited our study area twice. We explored the area ourselves, participated in workshops, and held interviews with local people. This gave us unique insights in the issues that arise when working in a different culture and landscape.”

Programme Summary

Landscapes form our living environment. Natural landscapes are often beautiful in themselves; however most of those we now live in are the result of our complex interaction with the natural world. The new generation of landscape architects and spatial planners understand the challenges we face when shaping and creating the landscapes that form a key component of our living environment. Your goal is to study and design sustainable solutions for important landscape challenges, such as climate change, energy needs, health, food security and urbanisation. The programme offers two specialisations: landscape architecture and spatial planning.

Landscape Architecture
Your primary focus as a Wageningen landscape architect is the design and construction of metropolitan landscapes situated in estuaries and deltas worldwide. Your goal is to create sustainable designs based on a thorough investigation of the ecological, behavioural and aesthetical disciplines.

Spatial Planning
As a spatial planner you develop scenarios for future landscape transformation and evaluate the effectiveness of these scenarios for many different stakeholders. You study planning processes and generate and organise the theoretical and practical knowledge needed for spatial interventions.

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
As a master's student studying Landscape Architecture and Planning (MLP) at Wageningen, you learn to understand and generate the complex relationships between people, nature and landscape. You use your planning and design knowledge to manage interventions that lead to the creation of new or revitalized landscapes. You integrate innovative concepts and approaches derived from the creative arts and the natural and social sciences, using state-of-the-art technology.

In your role of landscape architect and spatial planner, you contribute to improving the quality of design and decision-making on landscape interventions and reflect on the effects of these interventions. You take a leading role manager and coordinator, navigating between the changing needs of the main actors: citizens, governments and private institutions.

Your future career
Once you graduate with an MSc in Landscape Architecture and Planning, you are well-prepared for a career as a landscape architect, spatial planning consultant, project manager, policy adviser and academic or applied researcher.

Many of our alumni hold senior positions at consultancy and engineering companies, planning and design bureaus, district water boards, government agencies and universities. A number work for large multinationals, while others have set up their own company or are employed by small and medium sized enterprises.

ADMISSION REQUIREMENTS
See page 40. In addition to these admission requirements, you need to present your design portfolio to apply for the Landscape Architecture specialisation.
Programme summary

Increasing numbers of people around the world are spending a growing proportion of their leisure time and money on leisure and tourism related activities. The economic and social impact of leisure and tourism services on the environment has grown dramatically in recent years, and this is expected to continue. What motivates tourists to visit remote destinations? How does this travel affect local cultures and economies? And how do issues on sustainability, authenticity, identity and commercialisation fit into the picture? During the two-year MSc programme Leisure, Tourism and Environment you learn the reasoning behind the transformation of certain locations into leisure and tourism environments. The programme pays special attention to concepts such as landscape, space, place, locality, authenticity and sustainability.

Fast growing and dynamic field
By joining the MSc Leisure, Tourism and Environment programme, you study the underlying issues of the fast growing leisure and tourism industry. You look at leisure and tourism from a historical and philosophical perspective, learning about social and cultural theory and how to apply these using advanced research methods and analysis techniques. The MSc integrates the role of governmental, business and ‘third sector’ organisations in the innovation process towards sustainable (tourism) development.

Leading edge learning
It’s an extremely international programme; faculty members from many parts of the world come to Wageningen and give lectures, bringing together an extraordinarily wide range of academic experience. You debate with them and others on globalisation processes as well as on the experience of leisure and tourism within the spatial, natural and social environment.

Challenging international internship
Your internship can take you all over the globe, as we have partner organisations located on every continent. We encourage you to take advantage of these, often, life-changing opportunities. The projects are incredibly diverse, ranging from studying sustainable tourism in Peru to gastronomic culture in Spain and many more. Whatever your internship may be and wherever it may take you, you will both personally and professionally benefit from it.

Develop an international perspective
Another great advantage of studying at Wageningen is that you work together with students and professionals from a wide range of international and cultural backgrounds. You critically discuss contemporary issues in the field of leisure, tourism and the environment, and develop your own international perspective.

Your future career
You are looking for a career which builds on the knowledge and experience gained in your MSc. This may be in the areas of policy and planning, research, or consultancy, and development, or as an entrepreneur. Many alumni can be found all over the world, working for government agencies and NGOs in the field of policy development and implementation. Others work for consultancy agencies, research institutes or network organisations that link leisure and tourism organisations with conservation institutes, or private business with government organisations and communities. Of course, if you want to continue in research, you can enter a PhD programme, either here at Wageningen or with colleague universities all over the world. We offer you an extensive and well-developed network to move your career forward.

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.
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 Systems Engineering

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.
Programme summary

In this programme, students learn to analyse and critically reflect on the role of communication in complex dynamic processes. They also learn 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.
Thesis tracks

**Communication and Innovation Studies**
In this track, you study 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. Most social problems that we face today involve 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 deal with 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 competences with new social science competences 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, thus 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 include: UNDP, Tropenbos International, Women for Water, UTZ Certified, George Washington University, UNICEF, Fairfood International.

**ADMISSION REQUIREMENTS**

See page 40. If you have a social sciences background, read more about the MSc International Development Studies on page 35.

**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.
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, consultant, advisor, policymaker, researcher or trainer. You could work, for example, as policymaker in a government or semi-governmental institute, as programme coordinator or advisor in an international (non-)governmental organisation 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 34.
Programme summary
Management, Economics and Consumer Studies deals with the interrelationships 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.

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
Students 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.

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.
Health and Society
A specialisation within the MSc Applied Communication Science.
Gerry van Nieuwenhoven MSc | Programme Director | + 31 (0)317 48 25 00 | mhs@wur.nl | www.wageningenuniversity.eu/mhs

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 transmissible 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, including housing conditions, environmental pollution, the availability of green space, and the availability and accessibility of health services, also affect individual and population health. 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 increasingly have to 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.
Studying in Wageningen

International character
Wageningen University has a very international character with its student body coming from 105 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 via 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 with basic furniture (optional) and a 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.
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.

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 9,000 students study at Wageningen University and they, accounting for more than 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.

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.

Academic Year 2016-2017

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<tr>
<th>Introduction</th>
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<tr>
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**Admission**

**English Language Proficiency**

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<td>vwo**</td>
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<tr>
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<td>Cambridge CPE</td>
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<td>Pass at grade B or above</td>
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* MSc Applied Communication Science / MSc International Development Studies / MSc Management, Economics and Consumer Studies / MSc Development and Rural Innovation / MSc Organic Agriculture / MSc Food Quality Management.

** 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;

> Sufficient quality of the BSc degree as shown by an average mark of at least 7 (Dutch system), a Grade Point Average (GPA) of at least B/B+ (US system) or a classification as 2nd upper (UK system); (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 60 minors at Wageningen University. Minors consist of a cluster of courses based on a specific theme. 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).

<table>
<thead>
<tr>
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<th>EU/EFTA students 2016/2017</th>
<th>Non-EU/EFTA students 2016/2017</th>
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* 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 procedure

**STEP 1: APPLICATION**

- A completed MSc application form. [www.wageningenuniversity.eu/applicationform](http://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 as mentioned on the invoice ([www.wageningenuniversity.eu/tuitionfee](http://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. Dutch students can subscribe for a room at [www.idealis.nl](http://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.

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Application Deadlines

<table>
<thead>
<tr>
<th>Study programme</th>
<th>February 2016</th>
<th>September 2016</th>
<th>February 2017</th>
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<tbody>
<tr>
<td>Dutch students</td>
<td>January 1, 2016</td>
<td>July 15, 2016</td>
<td>December 1, 2016</td>
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<tr>
<td>EU/EFTA students</td>
<td>December 1, 2015</td>
<td>July 15, 2016</td>
<td>December 1, 2016</td>
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<td>Non-EU/EFTA students</td>
<td>October 1, 2015</td>
<td>May 1, 2016</td>
<td>October 1, 2016</td>
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<td>Organic Agriculture</td>
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<td>Plant Biotechnology</td>
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<td></td>
<td>Plant Sciences*</td>
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<td>Plant Sciences*</td>
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* Except Online Master specialisation Plant Breeding.
Online

Online Open Days
Would you like to know more about our Master programmes and get a feeling of what it’s like to study at Wageningen University? Join the Online Open Day and meet our students, watch our videos and ask all your questions to the study advisors: all online! Visit www.wageningenuniversity.eu/masteronlineopenday for more information. The Online Open Days will take place on:
> 5 November 2015
> 17 March 2016

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

On campus

Master Open Days
During the orientation days you will visit the university’s campus, meet students and speak with study advisors from each programme. These Open Days will take place on:
> 10 December 2015
> 15 April 2016

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 or go to www.wageningenuniversity.eu/representatives 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.
Location of Wageningen
Wageningen University Education now also online

Besides offering online Master of Science programmes, Wageningen University is offering many interesting free online courses (MOOCs) on education platform edX.org. Start your journey to Wageningen online by following an online course. For more information, go to www.wageningenuniversity.eu/MOOCs.