



WAGENINGEN
UNIVERSITY & RESEARCH

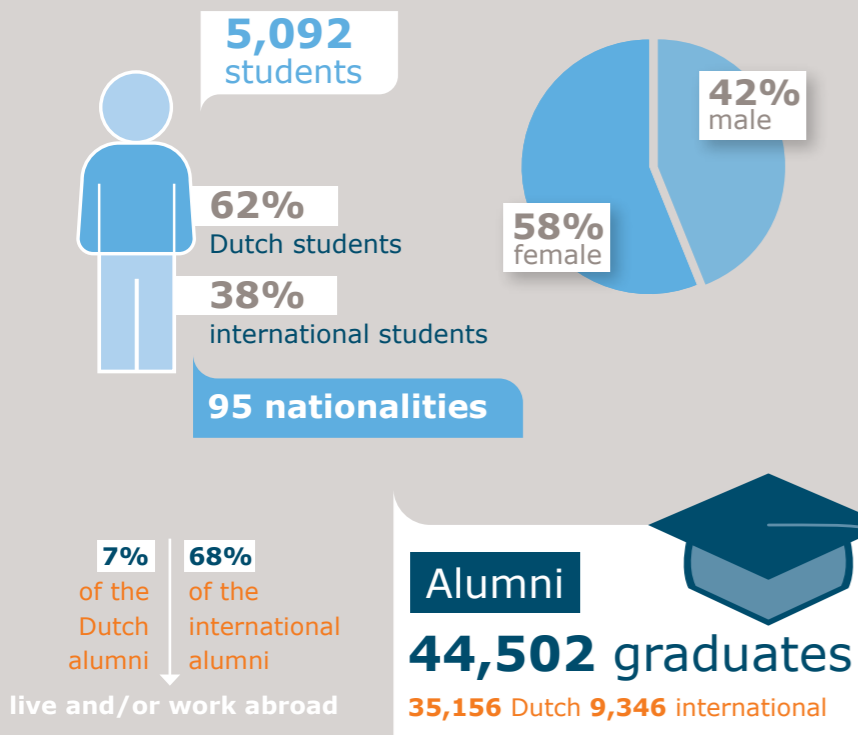
Master programmes Wageningen University & Research

www.wur.eu/university | 2017-2018

To explore
the potential
of nature to
improve the
quality of **life**



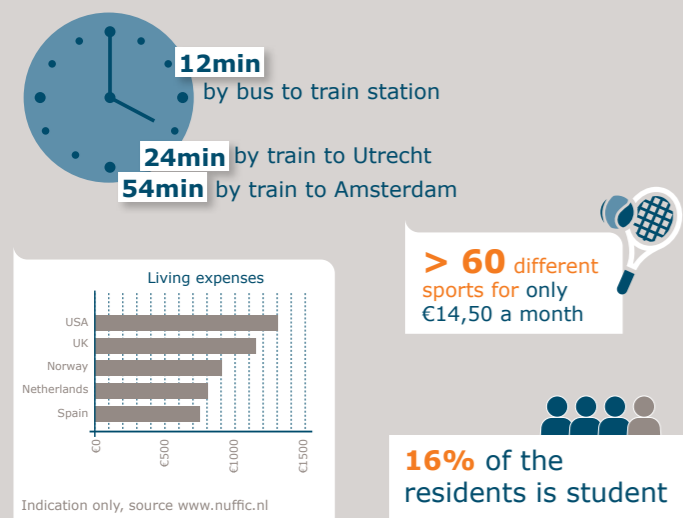
Master students



Rankings



Living in Wageningen



Wageningen UR



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

That is the mission of Wageningen University & Research. 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 & Research 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 & Research's international academic community.



Prof. dr. Arthur P.J. Mol
Rector Magnificus

Master of Science programmes

Life Sciences:

6 Animal Sciences

Genetics and Biodiversity
Nutrition and Metabolism
Global and Sustainable Production
Adaptation, Health and Welfare
Molecule, Cell and Organ Functioning
Animal Ecology

7 Aquaculture and Marine Resource Management

Aquaculture
Marine Resources and Ecology
Marine Governance

8 Biobased Sciences

Biomass Production and Carbon Capture
Biorefinery and Conversion
Biobased Transition

9 Bioinformatics

Bioinformatics
Systems Biology

10 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

11 Biosystems Engineering

AgroLogistics
Biobased Technology
Environmental Technology
Farm Technology
Information Technology
Systems and Control

12 Biotechnology

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

13 Food Quality Management

14 Food Safety

Applied Food Safety
Food Safety Law
Supply Chain Safety

15 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

16 Molecular Life Sciences

Biological Chemistry
Physical Chemistry
Biomedical Research
Physical Biology

17 Nutritional Epidemiology and Public Health

(Online Master specialisation)

18 Nutrition and Health

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

19 Organic Agriculture

Agroecology
Sustainable Food Systems
Double Degree Agroecology

20 Plant Biotechnology

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

21 Plant Breeding

(Online Master specialisation)

22 Plant Sciences

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

23 Water Technology

Environmental Sciences:

24 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

25 Earth and Environment

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

26 Environmental Sciences

Environmental Quality
Environmental Systems Analysis
Environmental Policy and Economics
Environmental Technology

27 Forest and Nature Conservation

Policy and Society
Management
Ecology

28 Geographical Information Management and Applications

29 Geo-information Science

30 International Land and Water Management

Sustainable Land Management
Irrigation and Water Management
Adaptive Water Management

31 Landscape Architecture and Planning

Landscape Architecture
Spatial Planning

32 Leisure, Tourism and Environment

33 Metropolitan Analysis, Design & Engineering

34 Urban Environmental Management

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

Social Sciences:

35 Applied Communication Science

Communication and Innovation
Health and Society

36 Development and Rural Innovation

Communication and Innovation Studies
Technology and Development
Sociology of Development and Change

37 Health and Society

(specialisation)

38 International Development Studies

Sociology of Development
Economics of Development
Inclusive Innovation, Communication and Development
Politics and Governance of Development

39 Management, Economics and Consumer Studies

Business Studies
Consumer Studies
Economics & Governance
Management in Life Sciences

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MSc Animal Sciences

Dr. René P. Kwakkel | Programme Director | education.animalsciences@wur.nl | www.wur.eu/mas



Alumnus Bram Bronsvort. "My work as a Geneticist for Hypor combines scientific research with practical implementation of a breeding program. Hypor is a business unit of Hendrix Genetics, a leading breeding company with primary activities in layer, turkey, pig, aquaculture and traditional poultry breeding. I am involved in pig research and responsible for making genetic progress, by selecting and combining superior individual animals to be the parents for the next generation. The MSc programme provided me with multidisciplinary knowledge on animal production and resonated well with the desired skills for my job. It gave me the opportunity to learn the scientific background and to apply my passion about animal breeding."

Specialisations

Genetics and Biodiversity

Biodiversity is shaped by evolutionary and ecological forces. Genetic variation is crucial for fitness of individuals and for biodiversity. In this specialisation, quantitative, population and molecular genetic approaches are integrated to protect and use sources of genetic variation in captive populations of animals and livestock species.

Nutrition and Metabolism

The aim of this specialisation is to understand the relation between nutritional demands, diet formulation, digestion and metabolism in animals, and their responses in terms of performance, health and waste emission. Feeds for animals should be formulated to provide safe and healthy food for humans and to prevent negative effects of nutrition on emissions to the environment.

Global and Sustainable Production

This specialisation studies the development of sustainable animal systems across the world. Knowledge from different disciplines, such as animal sciences, economics and social sciences, are combined. The aim is to provide sufficient food supply for mankind in a responsible way, without compromising culture and environment.

Adaptation, Health and Welfare

This specialisation focuses on the adaptive capacity of individual or groups of animals to a changing direct environment, such as dietary or housing interventions. Responses in terms of immunological status, energy metabolism, thermoregulation, reproduction and behaviour are studied in various animal species.

Molecule, Cell and Organ Functioning

This fundamental specialisation focuses on mechanisms and processes at all levels of physiology: from molecules, to organs, to the individual animal. With this knowledge, animal or computer models can be acquired to study health, disease resistance, growth and aging in various animal species.

Animal Ecology

This specialisation studies the interaction between animal populations and their wider environment, the ecosystem. This environment can be natural or affected by human intervention. Mechanisms that underlie the impact of animals on their environment, such as food intake behaviour or interaction with other animals, are studied to understand animal and aquatic ecosystems.

Professional tracks and international programmes

In addition to a specialisation, students can choose a professional track that leads to a specific type of career. You can focus on Research, Education, Communication & Policy or Business & Management. We also offer three international programmes which lead to a double master degree. These programmes focus on Animal Breeding & Genetics, Sustainable Animal Nutrition & Feeding or European Animal Management.

Programme summary

Animals are an integral part of our society: they provide us with food and companionship. Sustainable animal husbandry and livestock development is influenced by technical factors, such as feed supply, animal health, management and genetics, and also by infrastructural and socio-economic factors. Today's animal scientists need in-depth scientific training combined with a critical attitude towards all these factors. Our tailor-made and thesis-oriented programme trains students to become skilled professional animal scientists, well equipped to develop modern, efficient and humane ways to care for and make the best use of the animals who share our lives.

Your future career

Our graduates often start as scientific researchers, advisors, trainers, nutrition or breeding specialists or policymakers. Common employers are companies involved in animal nutrition or breeding, research institutes and universities, but also regional and (inter)national governmental and non-governmental organisations. Graduates usually advance to a managerial level as their careers progress.

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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



MSc Aquaculture and Marine Resource Management

Vera van Berlo MSc | Study Advisor | +31 317 483 529 | mam@wur.nl | www.wur.eu/mam



Alumna Momo Kochen. "I currently work at MDPI, an Indonesian grassroots organization that works with small scale fishermen and their associated supply chains to 'do the right thing' with regards to sustainability, community development and transparency. We are implementing Fisheries Improvement Projects aiming for MSC certification, building and testing traceability technology and implementing the world's first Fair Trade project for wild caught seafood. My job is very versatile: One day I am in Jakarta working with the national government on fisheries management development, the next I am measuring fish and drinking coffee with the fishermen in a rural community in Eastern Indonesia."

Specialisations

Aquaculture

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

Marine Resources and Ecology

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

Marine Governance

This specialisation provides you with the skills and tools to understand sustainable governance and economics of marine and coastal systems. The goals and strategies of national and international commercial enterprises, non-governmental and governmental organisations and international institutions are analysed, and their effects are evaluated in relation to both organisations and ecosystems involved. You will become proficient in the function of new private governance instruments, such as eco-certification and environmental credits.

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 Master programme Aquaculture and Marine Resource Management, you can choose one of three specialisations: Aquaculture; Marine Resources and Ecology; Marine Governance. Graduates are skilled in techniques and methods for analysing and solving biological environmental problems in aquatic systems by looking at the organisms and the communities including ecological, social and management 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. Check our website for our career booklet with examples of jobs our alumni currently have.

ADMISSION REQUIREMENTS

See page 44.

Related programmes

MSc Animal Sciences - MSc Biology - MSc Forest and Nature Conservation - MSc Environmental Sciences.



Biobased Sciences

Specialisation Biomass Production and Carbon Capture within MSc Plant Sciences | Dr. Anja Kuipers | +31 (0)317 48 28 39 | mps.msc@wur.nl
Specialisation Biorefinery and Conversion within MSc Biotechnology | Dr. Sonja Isken | +31 (0)317 48 2241 | mbt.msc@wur.nl | www.wur.eu/mbs



Alumna Ellen Slegers. "After my Master I started my PhD research during which I developed simulation models for micro-algae production. During my PhD research I got intrigued by the ongoing innovations for the biobased economy. Now I am a post-doc researcher at Wageningen University & Research. The university offers a unique combination between biological and technological research and is very strong in applying systematic approaches to complex and interrelated research areas. My research focusses on sustainable biorefinery designs, and in particular how we can include sustainability assessment during early stages of biobased process development. "

Programme summary

Many challenges, current and future, lie ahead in a transition to a sustainable biobased economy. The number of people in the world is growing, as are the levels of well-being and prosperity. It is possible for all nine billion humans to have a relatively high level of prosperity and welfare in 2050. For this to happen, however, major changes in the way we deal with food, animal feed, materials and energy are required. Right now, materials and energy are often produced from fossil fuels, and this should increasingly be replaced by biomass in the future. The main challenge for the current generation of students is to work on improving resource efficiency and the use of land in order to meet all these needs, while not forgetting climate, biodiversity, multiple land use, recreation and social issues.

Wageningen University & Research covers the transition from a petrochemical to a biobased society from the different disciplines in a multidisciplinary, holistic approach. The programme includes multidisciplinary design of production chains including biomass production, bioconversion, biorefinery and social, logistic and economic transition processes. New products will be designed in multi-disciplinary teams, taking into account the socio-economic, ethical and environmental aspects related to biomass production and carbon capture in an international context; Wageningen offers many pilot facilities, such as AlgaePARC, Acres and CAT AgroFood, as well as production facilities for products such as bioplastics, chemicals and packaging materials.

New MSc programme coming up. At this moment the specialisations are offered within the Biosystems Engineering, MSc Biotechnology and the MSc Plant Science. As from September 2018 the specialisations will be included in the upcoming MSc Biobased Sciences. The MSc Biobased Sciences will start in September 2018 on condition of approval by the Dutch Ministry of Education, Culture and Sciences and accreditation by the Dutch Flemish Accreditation Organisation (NVAO).

Your future career

Students with this specialization are well trained to work in a multi- and interdisciplinary team in a biobased research and development environment as scientist, process engineer or manager. Graduates will have careers in the agri-food business, water companies, energy producers, logistics, governmental and non governmental organisations. They will work in an innovative and emerging market.

ADMISSION REQUIREMENTS

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Related programmes

MSc Biotechnology, MSc Plant Sciences, MSc Biosystems Engineering, MSc Plant Biotechnology, MSc Environmental Sciences

Specialisations

Biomass Production and Carbon Capture

The specialisation Biomass Production and Carbon Capture within Plant Sciences focuses on the knowledge of plant physiology and development, genetics and breeding, and plant biotechnology for biomass production. Biomass can be produced in the field, in greenhouses, in the sea as well as in forests.

In 2017/2018 courses of this specialisation can already be followed within the MSc Plant Sciences as specialisation Biomass Production and Carbon Capture.

Biorefinery and Conversion

The specialization Biorefinery and Conversion focuses on the processing steps, starting from biomass refinery up to the production of chemicals, biopolymers or renewable energy. Engineering is fully integrated with physical and organic chemistry, biochemistry and biology and product quality- and process requirements from the interested party/customer.

In 2017/2018 courses of this specialisation can already be followed within the MSc Biotechnology as specialisation Environmental and Biobased Technology.

Biobased Transition

The specialisation Biobased Transition focusses on knowledge of economic and logistic aspects to enable the transition from a petrochemical to a biobased society.

In 2017/2018 courses of this specialisations can already be followed within the Msc Biosystems Engineering.



MSc Bioinformatics

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



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

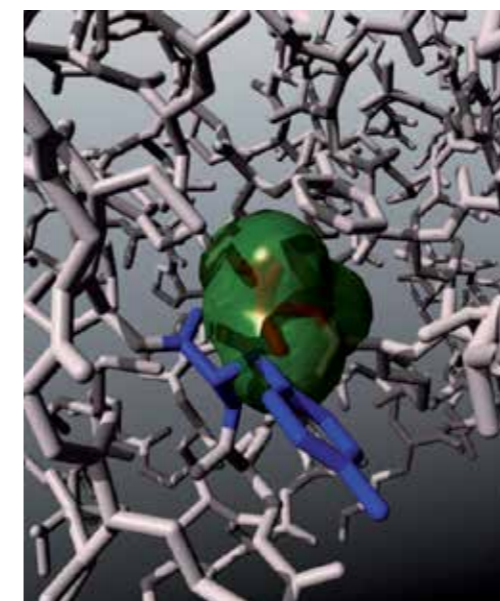
Thesis tracks

Bioinformatics

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

Systems Biology

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



Programme summary

DNA contains information about life, but how is this information used? Biological data, such as DNA and RNA sequence information produced by next-generation sequencing techniques, is accumulating at an unprecedented rate. Life scientists increasingly use bioinformatics resources to address their specific research questions. 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

See page 44.

Related programmes

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

MSc Biology

Vera van Berlo MSc | Study Advisor | +31 317 483 529 | mbi.msc@wur.nl | www.wur.eu/mbi



Alumna Renske Onstein. "After my master Biology I started my PhD at the University of Zurich on flowering plants. Why are there so many species of flowering plants? Where do they come from, who is related to who, and what has triggered some groups to evolve many species, whereas other groups are species-poor? I want to find out what drives speciation and try to answer this within a phylogenetic context, using DNA, distribution data, morphological/physiological data and fossils. I'm now halfway through my research and I'm enjoying the challenge, the philosophy and the opportunities PhD research brings: conferences in Brazil, fieldwork in South Africa and inspiring discussions."

Specialisations

Animal Adaptation and Behavioural Biology

This specialisation focuses mainly on adaptation of animals that have occurred in the course of time, 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, and apply this knowledge on for example natural pest control.

Molecular Ecology

In this specialisation, you learn to use molecular techniques to solve ecological questions. Think of interactions between plants and viruses, microbial diversity in an ecosystem or the influence of the environmental factors on a population.

Conservation and Systems Ecology

This specialisation focuses on fundamental ecological processes. You learn to analyse ecosystems and interpret relations between chemical/physical processes and bioprocesses. You can use this knowledge to manage and conserve ecosystems.

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

You focus on the mechanisms that play a role in maintaining the health of humans, animals and other organisms. You learn to look at the regulation of the immune system at the molecular and cellular level. You also observe the role of organs in immune responses against pathogens.

Marine Biology

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

Molecular Development and Gene Regulation

This specialisation focuses on gene regulations and developmental mechanisms of organisms. You gain knowledge on microscopic and molecular techniques and use this to explore for example enzymatic regulation or embryonic development.

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.



MSc Biosystems Engineering

Gerard Straver MSc | Study Advisor | mab.msc@wur.nl | www.wur.eu/mab



Alumnus Patrick Honcoop. "I am working as a product manager at 365 FarmNet in Germany. 365FarmNet supports farmers to manage their whole agrarian holding with just one software application. I am responsible for the content of the software. I am the link between the farmers, the agrarian holdings and the software developers. I really enjoy these dynamics and variety within my function. Just like during my studies, when we visited farmers, companies and fairs during courses and excursions organised by the study association."

Thesis tracks

Farm Technology

This track 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 society. Biomass of plants and other organisms 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

Biological issues are at the forefront of the technological progress of modern society. They are central to global concerns about how we affect the environment and are affected by it. 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, 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 by for example becoming a communication officer. Compared to other Dutch universities, many biology graduates from Wageningen University & Research find a position abroad. See our career booklet online for current jobs of our alumni.

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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

Programme summary

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

Your future career

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

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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

MSc Biotechnology

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



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

Specialisations

Cellular and Molecular Biotechnology

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

Process Technology

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

Marine Biotechnology

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

Medical Biotechnology

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

Food Biotechnology

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

Environmental and Biobased Technology

This specialisation focuses on the design and development of biotechnological processes for solving environmental problems by removing waste products or by producing renewable energy. Possible majors: environmental technology, bioprocess engineering, microbiology and biobased chemical technology. For more information on the specialisation Biorefinery and Conversion see the next page.



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

See page 44.

Related programmes

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

MSc Food Quality Management

Dr. Ralf Hartemink | Programme Director | +31 (0)317 48 35 58 | food.science@wur.nl | www.wur.eu/mfq



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

Specialisations

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



Programme summary

Food quality management assures the health and safety of food and other perishable products (e.g. flowers) and has become increasingly important in today's society. This is due to changing consumer requirements, increasing competition, environmental issues and governmental interests. 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

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

Typical positions include:

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

ADMISSION REQUIREMENTS

See page 44.

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.wur.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. Students can combine this with Food Safety Economics. 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. These 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 & Research 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 & Research is one of the most modern and innovative in the world. Started in 2000 as the first of its kind, it is still the only two-year, full-time Master Food Safety programme offered in Europe and the only programme offering Food Safety Law. The programme prepares graduates for careers in the food industry, government or consumer organisations; the three key players in international food safety management.

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

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

Your future career

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

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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

MSc Food Technology

Dr. Ralf Hartemink | Programme Director | +31 (0)317 48 35 58 | food.science@wur.nl | www.wur.eu/mft



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

Specialisations

Ingredient Functionality

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

Product Design

While many new products are launched, not all succeed. This specialisation deals with the design and development of new or improved products. The focus is on the processes used in Food Technology, the design of new products from a consumer perspective and on modelling new product concepts/processes 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 & Research 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 & Research 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 multi-nationals), at Wageningen University & Research 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

See page 44.

Related programmes

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

MSc Molecular Life Sciences

Dr. Wilko van Loon | Programme Director | +31 (0)317 48 52 16 | mml.msc@wur.nl | www.wur.eu/mml



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.

Specialisations

Biological Chemistry

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

Physical Chemistry

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

Biomedical Research

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

Physical Biology

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



Programme summary

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

Your future career

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

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

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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

Nutritional Epidemiology and Public Health

Online Master specialisation within the MSc Nutrition and Health.

Rolf Martejn MSc | Programme Director | mnh.msc@wur.nl | www.wur.eu/omnh



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

Programme Summary

Do you think it is interesting to study the role that nutrition and lifestyle play in the development of diseases? Epidemiologists try to 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.



Online Master

The online master specialisation is designed for part-time study (20 hrs/week!) to combine work and study or in the context of Lifelong 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.wur.eu/omnh

Related on-campus programmes

MSc Nutrition and Health.

MSc Nutrition and Health

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



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

Specialisations

Epidemiology and Public Health

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



Complete Online Master

In September 2015, Wageningen University & Research 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.wur.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 44.

Related programmes

MSc Food Safety - Health and Society (specialisation).

MSc Organic Agriculture

Cor Langeveld MSc | Study Advisor | +31 (0)317 48 47 67 | moa.msc@wur.nl | www.wur.eu/moa



Alumna Natasja Poot. "I have chosen the MSc Organic Agriculture because I was looking for a programme in which all aspects of agriculture are discussed. Courses addressed topics on soils, plants, animals and their interactions. I did not want to limit myself to just organic agriculture, but I can apply the knowledge to all conventional integrated farming systems as well. After graduating, I started at BLGG as a product manager Soil Health. BLGG is a laboratory in the agricultural sector that offers innovative analyses and advices that help farmers in their everyday management. In my position, I am focusing on developing tools for soil-borne diseases, nematodes and soil suppressiveness."

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.

Sustainable Food Systems

Improved understanding of global and local agro-food networks is essential to stimulate sustainable production of healthy food and renewable resources. This specialisation focuses on the social sciences perspective of sustainable systems of food provisioning. In addition, globalisation and sustainability of food production and consumption are addressed. Production, processing and marketing of organic products is increasingly affected by (inter-) national policy and legislation. Insight into these aspects is crucial to expand and develop organic food production networks. Courses focus on: globalisation of food production and consumption; global versus local production; consumer behaviour and marketing; sustainable food networks and value chain analysis; environmental education. Students learn 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 sustainable food systems and value 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.



Programme summary

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

Your future career

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

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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

MSc Plant Biotechnology

Dr. Anja Kuipers | Programme Director | +31 (0)317 48 28 39 | mpb.msc@wur.nl | www.wur.eu/mpb



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 & Research 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 & Research, working on biorefinery of microalgae."

Specialisations

Functional Plant Genomics

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

Plants for Human and Animal Health

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

Molecular Plant Breeding and Pathology

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

Programme summary

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

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

Your future career

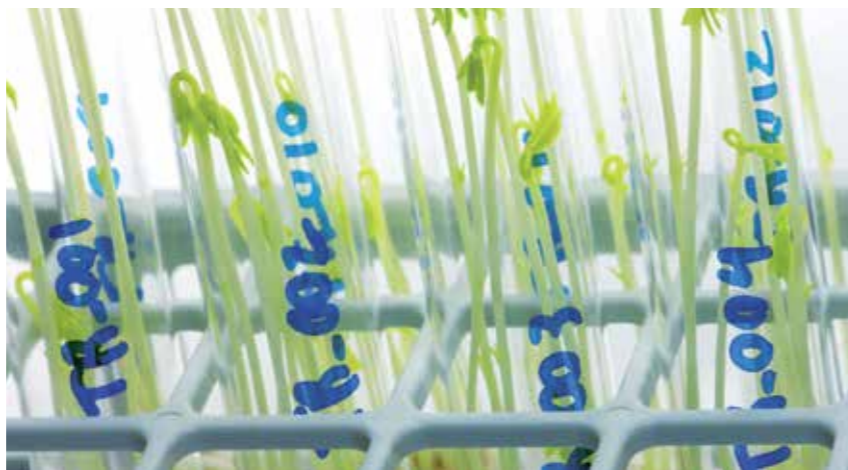
The main career focus of graduates in Plant Biotechnology is in research and development positions at universities, research institutes, and biotech- or plant breeding companies. Other job opportunities can be found in the fields of policy, consultancy and communication in agribusiness and both governmental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

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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



Plant Breeding

Online Master specialisation within the MSc Plant Sciences.

Dr. Anja Kuipers | Programme Director | mps.msc@wur.nl | www.wur.eu/omps



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

Programme Summary

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



Online Master

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

Your future career

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

ADMISSION REQUIREMENTS

For information on admission visit www.wur.eu/omps

Related on-campus programmes

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

MSc Plant Sciences

Dr. Anja Kuipers | Programme Director | +31 (0)317 48 28 39 | mps.msc@wur.nl | www.wur.eu/mps



Alumnus Maarten Rouwet. "I was born in Germany and raised in the East of the Netherlands. After high school I applied for the Bèta-gamma bachelor at the University of Amsterdam where I majored in biology. After visiting the master open day at Wageningen University & Research I knew that the master Plant Sciences had something unique to offer. In my master, I specialised in plant breeding, an ever so interesting field of research. I just started my first job as junior biotech breeder of leafy vegetables at Enza Zaden, a breeding company in Enkhuizen. One of my responsibilities is to identify resistances in wild species of lettuce and to implement these in breeding programmes of cultivated lettuce."

Specialisations

Crop Science

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

Greenhouse Horticulture

Greenhouse horticulture is a unique agro-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 quality of production with post-harvest physiology and focuses on production, quality and chain management of vegetables and ornamentals.

Natural Resource Management

The development of sustainable agro-ecosystems requires understanding of the complex relationships between soil health, cultivation practices and nutrient kinetics. Other aspects include the interaction between agriculture and nature, and competing claims on productive land worldwide and climate change. This specialisation provides knowledge and tools to understand the interactions between biotic and abiotic factors in agro-ecosystems to facilitate diverse agricultural demands.

Plant Breeding and Genetic Resources

Plant Breeding is crucial in the development of varieties that meet current demands regarding yield, disease resistance, quality and sustainable production. This specialisation ranges from molecular genetics to the production level and provides knowledge of the physiology and genetics of cultivated plants. Molecular techniques add to the rapid identification of relevant genes and are essential for accelerating selection by marker-assisted breeding.

Complete Online Master

In September 2015, Wageningen University & Research started the online master specialisation "Plant Breeding". Read the description in this brochure, or go to www.wur.eu/omps



Plant Pathology and Entomology

Investments made in crop production need to be protected from losses caused by biotic stress. Integrated pest management provides protection by combining genetic resistance, cultivation practices and biological control. This specialisation focuses on transmission mechanisms, ecology of insects, nematodes and weeds, and epidemiology of fungi and viruses. Knowledge of molecular and ecological bio-interactions establishes the basis for integrated pest management and resistance breeding.

Biomass Production and Carbon Capture

The specialisation Biomass Production and Carbon Capture within Plant Sciences focuses on the knowledge of plant physiology and development, genetics and breeding, and plant biotechnology for biomass production. Biomass can be produced in the field, in greenhouses, in the sea as well as in forests.

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 44.

Related programmes

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

MSc Water Technology

A joint programme offered by Wageningen University & Research, the University of Twente and the University of Groningen.
ir. Nelleke van Dorenmalen | Programme Director | +31 (0)58 284 30 00 | nelleke.vandorenmalen@wetsus.nl | www.wetsusacademy.nl



Student Stefanie Stubbé. "Wetsus gave me the opportunity to get personalized education: teachers that take the time for you and fellow students that challenge and collaborate with you at the same time. Water technology is going to be huge in the future; I already experienced that at several companies when I searched for an internship. Although it is sometimes hard work and far away from the "city-life" in the Netherlands; I've never regretted my choice to start this Master!"

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 & Research, 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 & Research 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.

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 44. For more information about the programme outline visit www.wetsusacademy.nl.

Related programmes

MSc Biotechnology - MSc Environmental Sciences.



MSc Climate Studies

Marjo Lexmond MSc | Study Advisor | +31(0)317482023 | mcl.msc@wur.nl | www.wur.eu/mcl



Student Fen-Yu Lin. "The multidisciplinary focus of MSc Climate Studies has broadened my vision on climate change. Also, by taking the opportunity to complement my master with the Climate-KIC (Knowledge and Innovation Community) programme I could combine my thesis track Integrated Water Management with my interest in design and entrepreneurship. Thanks to the variety of courses from the Msc Climate Studies and Climate-KIC activities, I am able to meet many water enthusiasts, experts and green-minded people with multinational and multidisciplinary backgrounds. I look forward to synergizing together with more of you towards tackling climate change issues!"

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 & Research has therefore bundled expertise from several disciplines in a Master study programme specifically designed for students who wish to focus on the scientific insights into climate change and its implications for nature and society. Climate Studies does not only cover the most important geophysical and biogeochemical processes involved in climate change (the mechanisms), but it also covers the socio-economic aspects of causes and effects; as well as adaptation and mitigation as the main categories of societal response.

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

- Meteorology
- Air Quality and Atmospheric Chemistry
- Hydrology and Quantitative Water Management
- Crop and Weed Ecology
- Nature Conservation and Plant Ecology
- Soil Biology and Biological Soil Quality
- Soil Chemistry and Chemical Soil Quality
- Environmental System Analysis
- 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 44.

Related programmes

MSc Environmental Sciences - MSc Earth and Environment.



MSc Earth and Environment

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



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

Specialisations

Hydrology and Water Resources

The focus of this specialisation is to study the effects of climate change and other influences on the water balance of catchments to support optimal land management when dealing with hydrological extremes.

Meteorology and Air Quality

Would you like to contribute to further understanding of atmospheric processes and their relevance for weather and climate? In this specialisation you learn about physical-chemical processes, the composition of the atmosphere and the exchange between the atmosphere and earth's surface and meteorology.

Biology and Chemistry of Soil and Water

This specialisation allows you to develop an in-depth understanding of chemical and biological processes and their interactions in soils and natural waters, and their role in the functioning of terrestrial and aquatic ecosystems in a world that faces increasing anthropogenic pressures. You learn how these insights can contribute to develop effective strategies for the preservation and restoration of soil and water quality, biodiversity, and the functioning of natural ecosystems and the services they provide.

Soil Geography and Earth Surface Dynamics

This specialisation allows you to explore the spatial and temporal processes that are active in soils, landscapes and the wider earth system. It uses an integrative approach that combines biophysical and human elements to gain insight in past, present and future system dynamics.

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

Programme summary

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

As a Wageningen University & Research 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 44.

Related programmes

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

MSc Environmental Sciences

Suzane Tuju | Study advisor | +31 (0)317 48 20 98 | mes.msc@wur.nl | www.wur.eu/mes



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

Thesis tracks

The ten thesis tracks are clustered in 4 groups.

Environmental Quality

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

Environmental Systems Analysis

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

Environmental Policy and Economics

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

Environmental Technology

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

Programme summary

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

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

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

Your future career

Graduates from this programme are well-equipped to continue their scientific training in a PhD programme or to begin - or continue - a professional career requiring independent scientific performance. Students 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 44.

Related programmes

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



MSc Forest and Nature Conservation

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



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

Specialisations

Policy and Society

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

Management

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

Ecology

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

Programme summary

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

Your future career

The programme provides excellent preparation for Dutch as well as European and non-European jobs. Career possibilities include positions at research institutes and universities, government ministries and local authorities. Positions are also available at state and private forestry 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 44.

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.



MSc Geographical Information Management and Applications

A joint programme offered by Utrecht University, Delft University of Technology, University of Twente and Wageningen University & Research. Dr. ir. Marjolein Spaans | Programme Director | +31 (0)15 278 29 87 | m.spaans@tudelft.nl | www.msc-gima.nl



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

Programme summary

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



Features of the programme

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

Your future career

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

APPLICATION AND ADMISSION

This programme is registered in CROHO as MSc Geographical Sciences at Utrecht University, code 60732. Application for GIMA proceeds through Utrecht University. For Dutch and EU/EFTA candidates the application deadline is 1 June 2017 for the programme that starts in September 2017. For non-EU/EFTA candidates the application deadline is 1 April 2017. All information about application and admission requirements can be found at the GIMA website www.msc-gima.nl.

Related programmes
MSc Geo-information Science.

MSc Geo-information Science

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



Alumnus Frank Salet. During his career, Frank worked within fields where the use of GIS is unique, challenging or still developing. After a few GIS positions at mostly commercial companies, he is now working at an NGO in Nigeria on the eradication of polio. For the project he has temporarily moved to Nigeria to set up the GIS work, together with a team of 20 Nigerian GIS specialists. He is now working in a multicultural environment just like during his master in Wageningen. Frank is very positive about the connection between the master and his professional career: "All courses within the master programme have formed the tools that I still use for each job I take on."

Specialisations

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

- sensing and measuring
 - modelling and visualization
 - integrated land monitoring
 - human-space interactions
 - empowering and engaging communities
- Your choice of internship location is another factor in developing your profile and specialisation.



Programme summary

Geo-information has become increasingly important to society as the number of environmental issues continue to rise. Geo-information provides the data we need to manage both the natural and social environment. It is indispensable for a broad range of domains like spatial planning, water management, nature conservation, environment management, agriculture, energy supply, disaster management and traffic and safety. The MSc GIS programme at Wageningen University & Research 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 HaskoningDHV, Arcadis and SWECO. And lastly, others start an IT career as a Geo-information engineer at all kinds of companies or NGOs.

If you have a Bachelor degree in the field of environmental sciences, food and agricultural sciences, (geo)-information sciences or even social sciences; you like to generate and use geo-information to solve complex problems like flooding, food security, climate change impact, renewable energy, urbanization or the migration of wild animals or you want to provide geo-information to the public or government? Then join the two-year Geo-information Science Master programme at Wageningen University & Research.

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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

MSc International Land and Water Management

Didi Stoltenborg MSc | Study Advisor | mil.msc@wur.nl | www.wur.eu/mil



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

Specialisations

Sustainable Land Management

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

Irrigation and Water Management

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

Adaptive Water Management

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



Related programmes

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

MSc Landscape Architecture and Planning

Hanneke Schavemaker and Hetty van der Stoep MSc | Study Advisors | mlp.msc@wur.nl | www.wur.eu/mlp



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

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

Your future career

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

ADMISSION REQUIREMENTS

See page 44.

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 44. In addition to these admission requirements, you need to present your design portfolio to apply for the Landscape Architecture specialisation.

MSc Leisure, Tourism and Environment

Arjaan Pellis MSc | Study Advisor | +31 (0)317 48 43 84 | mle.msc@wur.nl | www.wur.eu/mle



Alumna Ana Raguz. "I adored and enjoyed working on my MSc! It has given me an amazing diversity of personal experiences, broadening my horizons by working in teams with people from many cultures and disciplines. The programme is well designed; I could immediately put the theory into practice, and I developed an ability to think critically, inspiring me for creative action. At some point, the right people started appearing, people I could really trust and get along with, and we worked hard together. I was able to take both my new start-ups HarvesThink and IMPACT HUB a major step forward – giving me the confidence to move myself forward."

Programme summary

Increasing numbers of people around the world are spending a growing proportion of their leisure time and money on tourism related activities. The economic and social impact of 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 complexities 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 a fast growing tourism industry. You look at 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 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 relationships between 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 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 44.

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.



Metropolitan Analysis, Design and Engineering

Ir Erik Heijmans | Educational Programme Manager | + 31 (0)317 482770 | erik.heijmans@wur.nl | www.wur.eu/mma



Students Mart Reiling and Thijs Dolders. "In our MSc thesis we tried to understand how people are using public space by analysing 110.000 running activities from mobile running applications Strava and Runkeeper. In combination with the results of a survey, we will define spatial requirements that runners have at different locations. These spatial requirements will be input for the spatial planning and design interventions that could make Amsterdam a healthy urban environment, starting by providing a more runner friendly city. Designing for runners is never beneficial for runners alone: it immediately shows errors for pedestrians and cyclists as well. These can be solved simultaneously."

A joint programme offered by the Amsterdam Institute for Advanced Metropolitan Solutions, a joint initiative of Wageningen University & Research, Delft University of Technology and the Massachusetts Institute of Technology in Boston. The MSc programme will start in September 2017 on condition of approval by the Dutch Ministry of Education, Culture and Sciences and accreditation by the Dutch Flemish Accreditation Organisation (NVAO).

Curriculum and specialisations

The MSc programme MADE seeks to educate students to be able to understand these complexities, propose an even better understanding, resulting in innovative socio-technical solutions and novel management strategies. Our research and education activities will interlink abstract theories and people's real lives in metropolitan areas, such as Amsterdam, using the latter as a living laboratory to implement and test socio-spatial-technical innovations. The city of Amsterdam and the Amsterdam Institute for Advanced Metropolitan Solutions are host to the core mandatory courses at the start and the end of the first year of the master programme. In between, students specialise in tailor-made, self-designed tracks in Wageningen or/and Delft. Thesis and graduation projects are carried out in the second year in the living laboratory of Amsterdam in cooperation with one of the private or public partners in the Amsterdam metropolitan region.

Related programmes

MSc Geo-information Science - MSc Landscape Architecture and Planning - MSc Urban Environmental Management - MSc Environmental Sciences - MSc Nutrition and Health - MSc Food Quality Management.

Programme summary

For most of humanity, our tomorrows will be in the city. A move away from old traditions and lifestyles. The emergence of the metropolitan landscape forces us to rethink, redesign and plan the environments we live and work in. We are in dire need of innovations: tomorrow's traditions. We will have to control energy use, develop new energy sources and new ways of saving for heating, cooling and electrifying our surroundings and for getting where we need or want to be. Mobility issues require new ways of thinking about moving. When we physically move matter - including ourselves - we need to do so with caution. We will also need to adapt the existing cities to climate change and extreme weather events, which are more and more frequent. While there seems to be a triumph of the city, this 'triumph' does not reach all: social and spatial segregation is increasing. Exposure to environmental pollution, noise and reliance on non-active modes of transportation is affecting our health. All of these processes are overlapping, paralleled and intertwined in chains, spheres and cycles: the metropolitan metabolism.

In this new MSc study programme, we will look primarily at how to optimize these urban metabolisms and developing integrated, circular, healthy and pleasant metropolitan areas. The cities of today and tomorrow are in need of technically trained academic professionals who can inter- and trans-disciplinarily develop and implement solutions for the challenges our cities are facing. Cities and urban regions increasingly face challenges of sustainability and quality of life, challenges that put at risk resource and food security, issues of mobility and logistics, water and waste management, food security, health and wellbeing. Such solutions are made possible by today's revolution of new technologies, design methods and management and governance arrangements. But no actor or stakeholder can do this alone; metropolitan solutions require cooperation between knowledge institutes, companies, governments, cities, citizens and civil society.

ADMISSION REQUIREMENTS

See page 44.



MSc Urban Environmental Management

Astrid Hendriksen MSc | Study advisor | +31317482984 | mue.msc@wur.nl | www.wur.eu/mue



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 becoming increasingly urbanised. 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 not yet equipped to providing adequate housing and basic urban services. Inadequate water supply, poor 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 of our global population. The MSc Urban Environmental Management programme aims to equip its students with the outlook, concepts and tools to manage this urban environment.

The programme brings together four essential perspectives on the urban environment:

- Environmental quality and health
- Environmental infrastructure and technology
- Spatial planning
- Governance

Besides understanding theories and views from several disciplines, urban environmental management requires technical and managerial competencies and skills for its implementation. Consequently, the programme offers 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 a researcher, adviser or consultant. They often work in areas like the utilities services, the manufacturing industries, or in governmental organisations.

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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



MSc Applied Communication Science

Heather Baker | Study advisor | + 31 (0)317 48 24 16 | msc.communication@wur.nl | www.wur.eu/mcs



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

Specialisations

Communication and Innovation

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

Students compile their own thesis tracks by supplementing compulsory communication science courses with a combination of closely linked courses; including a few courses in a life sciences domain. An internship introduces students to professional practice. The major thesis allows them to become experts in a specific area within communication that is closely linked to their personal interests and future career.

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

Health and Society

More information on this specialisation is available on page 37.



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 44.

Related programmes

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

MSc Development and Rural Innovation

Marleen van Maanen-Nooij MSc | Study Advisor | +31 (0)317 48 27 72 | mdr.msc@wur.nl | www.wur.eu/mdr



Alumnus Ben Corrigan. After studying physical geography, Ben joined the social science Master Development and Rural Innovation. In his job as Programme Manager for the German Red Cross in Haiti, he works on food security and providing basic services such as water and sanitation to remote communities. "One of my responsibilities is to ensure that technical staff integrate social dimensions into their work and build real partnerships with stakeholders in the field. As a Development and Rural Innovation graduate, I am well prepared for this kind of job and feel confident in it. This programme is a gateway to a great career if you like to work in the development sector or continue in academia."

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 44. 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.

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.wur.eu/mhs



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

Programme summary

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

There is no single cause to such health problems. Biological factors aside, lifestyle and the social and physical environment are major contributors in both a positive and negative way. Many diseases are related to the way in which people behave and take care of their own health, for example, substance abuse (smoking, alcohol, drugs), nutrition, physical exercise, and sexual behaviour. Lifestyles are often rooted in the social environment of family and friends, the neighbourhood, and the school and working environment. Aspects of the physical environment, 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.

Your future career

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

ADMISSION REQUIREMENTS

See page 44.

Related programmes

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



MSc International Development Studies

Mrs. Sudha Loman | Study Advisor | +31 (0)317 48 46 37 | mid.msc@wur.nl | www.wur.eu/mid



Alumnus Luckmore Jalisi. "I have really benefitted from what I learnt during my studies. This master has opened doors for me." Luckmore did the specialisation Sociology of Development and conducted both his internship and thesis research in a refugee camp in Uganda. These experiences were important in getting him a job as Youth and Governance Advisor at ActionAid to support post-conflict youth development work in Liberia. Now he is Programme Manager at Oxfam for the Tat Lan Programme in Myanmar, that aims to improve livelihoods and food security in cyclone affected communities. "I draw on the knowledge and skills acquired in Wageningen and my classmates remain valuable contacts in my network."

Specialisations

Sociology of Development

This specialisation addresses social transformation processes from sociological and anthropological perspectives, paying special attention to differential responses to change and the shifting dynamics of power relations at different socio-spatial levels. It focuses on the life worlds, ideologies and organisational strategies of a variety of social actors. You will explore themes such as social unrest, the way people cope with conflicts and disasters, migration, refugees, poverty, food security and sovereignty, property rights, and access to social and natural resources crucial to livelihoods in rural and urban settings.

Economics of Development

This specialisation approaches the domain of the programme with analytical frameworks primarily composed of several branches of applied economics, such as development economics, resource economics and new institutional economics. You will focus not only on behaviour of individuals, groups of individuals and institutions, but also on the consequences of this behaviour for development at regional, national and international levels. Themes studied include food security and the global food crisis, sustainable use of natural resources, the role of agriculture in development, rural-urban income disparities, poverty and the role of institutions.

Inclusive Innovation, Communication and Development

This specialisation examines the role of knowledge, expertise and communication in sustainable development. Science, technology and communication have a bright and a dark side. They can remedy poverty, disease and environmental degradation, but may also worsen underdevelopment, conflict and inequality. To understand such dynamics, you will apply ethnographic and interaction-oriented perspectives from Science, Technology and Innovation Studies and Communication Sciences. You will focus on how and why people, views and values become included or excluded in social and technical change, and on strategies for the democratisation of science, technology and communication for development.

Politics and Governance of Development

This specialisation focuses on the dynamics of political and governance processes in the domain of international development. The first major theme is about politics and reform of international arenas (UN, bilateral, private) addressing food insecurity, resource conflicts, climate change, human rights violations and their interrelations. The second major theme is about different powers of state and non-state actors in shaping property and access to natural resources. To address these themes, you will use and develop perspectives from international relations, public policy, governance studies, political anthropology and legal pluralism.

Related programmes

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

MSc Management, Economics and Consumer Studies

Ir. Sietse Sterrenburg | Study Advisor | mme.msc@wur.nl | www.wur.eu/mme



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

Specialisations

Business 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 & 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 in 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. Two different themes can be studied within this specialisation: Management of Innovations and Management of Business and Supply Chains.



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 44.

Related programmes

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

Also at Wageningen University & Research

MOOCs for credits

Students that are enrolled at Wageningen University & Research may choose to include the MOOC of Wageningen in their study programme. These are offered as free choice courses and can be found in the study handbook.



Future plans

We're continuously developing new online courses. Currently we are bundling more courses around topics such as nutrition and sustainability. We're planning to release a series around Biobased Economy in 2017-2018. For the most up-to-date information, please visit www.wur.eu/moocs

MOOCs

Did you know that Wageningen University & Research offers several free online courses? These Massive Open and Online Courses (MOOCs) are free of charge and anyone can participate. It is a great way to familiarize yourself with some of the teachers and courses of Wageningen University & Research.

Available MOOCs:

- > Introduction to Animal Behaviour
- > Sustainable Urban Development
- > Sustainable Soil Management
- > Biobased Economy
- > Technology-Based Entrepreneurship

Xseries are a number of bundled courses that provide you with a deeper understanding of a topic. All MOOCs that are included in a Xseries can also be taken as stand-alone courses.

XSERIES

Nutrition: Healthy Food for Better Living

You are what you eat! Learn how your diet impacts your health.

Includes:

- > Macronutrients and Overnutrition
- > Micronutrients and Malnutrition
- > Food Safety

XSERIES

Food Security and Sustainability

How can we sustainably feed an increasingly growing world population.

Includes :

- > Crop Production
- > Systems Thinking and Environmental Sustainability
- > Food Access

International Joint and Double Degree programmes

Wageningen University & Research offers, in collaboration with European Partner Universities, several possibilities to do your MSc programme partly in Wageningen and partly at a partner university. It is a great opportunity to gain international and intercultural experience.

At the moment we offer Joint Programmes in the field of:

- > Agricultural development
- > Agroecology
- > Animal management
- > Animal nutrition and feeding
- > Aquaculture
- > Food Studies
- > Consumer studies
- > Available programmes

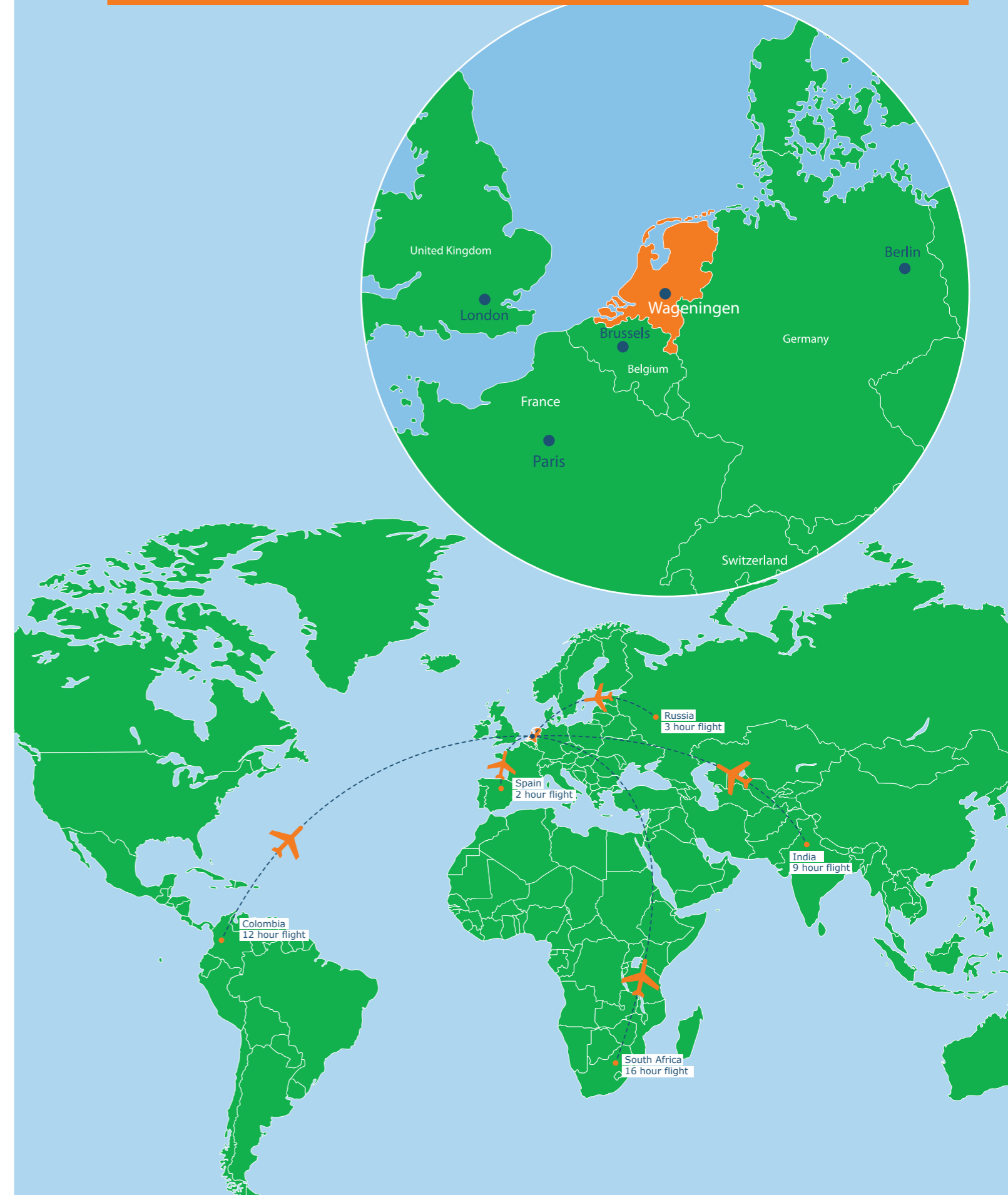
The list of international joint programmes is changing every now and then. For the most up-to-date information, please visit www.wur.eu/jointprogrammes



What's the difference?

The difference between a regular Master programme at Wageningen University & Research and a Joint/ Double Degree is that a part of the study programme is taken at a partner university abroad. When you study for a Double Degree you will even receive two diploma's when you graduate!

Location of Wageningen



Studying in Wageningen



International character

Wageningen University & Research has a very international character with students coming from over 110 different countries. Through partnerships with numerous Dutch and international companies and governments, Wageningen University & Research has become a major university in Europe and one of the best universities worldwide in the field of Life Sciences. As a result, students have no problems finding internships, challenging work experience posts and career opportunities around the world.

The University

Wageningen University & Research is one of the leading international universities in the field of healthy food and living environment. 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. Studying in Wageningen guarantees you premium quality education and an international quality benchmark on your curriculum vitae.

www.wur.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 & Research's largest education building. The main library is located in Forum and is open 14 hours per day. 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.

www.wageningencampus.com.



Housing

Most Dutch and international students of Wageningen University & Research also live in Wageningen. 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 suitable housing via HousingDesk Wageningen or via one of the national organisations mediating housing in the Netherlands. Idealis will provide prospective students with information about the application procedure for student housing in Wageningen. Idealis will contact you approximately two to three months before the start date of your programme in Wageningen. After receiving the information about the application procedure you can register with Idealis as a houseseeker and respond to the available housing offers on their website. If your current residential address is more than 130 kilometers away from Wageningen, you qualify for distance priority.

www.wur.eu/housing



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/site/en/.



Wageningen town

The 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 10,000 students study in Wageningen 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.

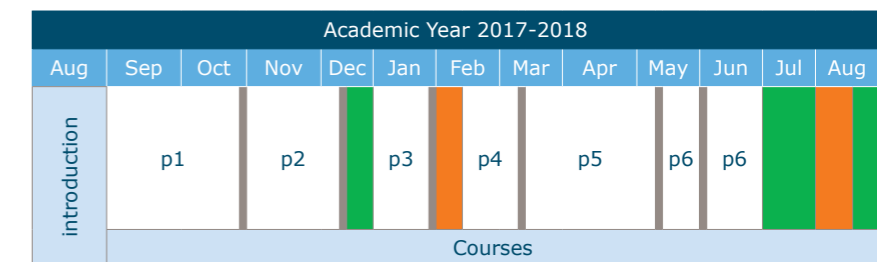
Structure of the programme

Wageningen University & Research offers 31 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.

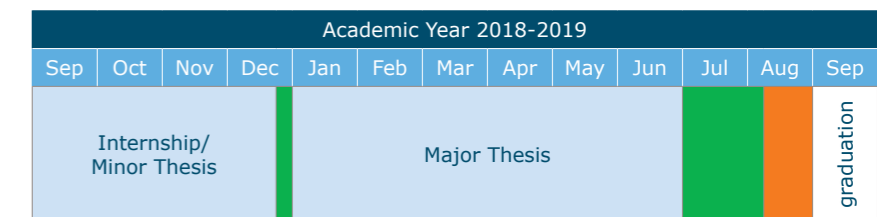
In Wageningen, the academic year is split up into six periods. During each period, you follow one or two courses that are completed with an exam. The first, second and third period, and the fourth, fifth and sixth period run parallel to the European semesters, which means you can combine your courses 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. Students usually propose their own thesis research topics while taking ongoing research into account.



■ Exams ■ Re-exams ■ Holidays



Admission & Application

General admission requirements

All MSc study programmes at Wageningen University & Research 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.wur.eu/admission for specific requirements)
- > Good working knowledge of mathematics and/or statistics;
- > Fluency in English, both written and spoken (see schedule).

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

English Language Proficiency

	Level 1	Level 2
havo	7.0	8.0
vwo	6.0	7.0
RATeR	60	70
IELTS	6.0 (Writing: borderline or pass)	6.5 (70, writing: pass)
TOEFL	80 internet (speaking: borderline or pass)	92 internet (70 speaking: borderline or pass)
Cambridge FCE	Pass at grade B or above	Pass at grade A
Cambridge CAE	Pass at grade C or above	Pass at grade B or above
Cambridge CPE	Pass at grade C or above	Pass at grade B or above
German Abitur	06 Punkte for English	09 Punkte for English
Belgium ASO or TSO	60 for English	70 for English
International Baccalauréat	3 for English	4 for English

Level 2: MSc Applied Communication Science - Metropolitan Analysis, Design & Engineering - MSc Development and Rural Innovation - MSc Food Quality Management - MSc Food Safety - MSc Health and Society (specialisation) - MSc International Development Studies - MSc Management, Economics and Consumer Studies - MSc Organic Agriculture. All other programmes require Level 1. **The RATeR** 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. www.wur.eu/into

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). These expenses are a indication only, see the website www.wur.eu/tuitionfee for up-to-date information.

	EU/EFTA students 2017/2018	Non-EU/EFTA students 2017/2018
Tuition Fee*	€ 2,100 / year	€ 17,600 / year
Research Fee**		€ 1,400 / year
Living Expenses	€ 10,680 / year	€ 10,680 / year
Other Expenses	€ 500 / year	€ 1,500 / year

*For online master programmes the study expenses are: EU Tuition Fee: €2,100 / non-EU tuition Fee: €9,680

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

Application Deadlines

	February 2017	September 2017	February 2018
Dutch, EU/EFTA students	December 1, 2016	July 1, 2017*	December 1, 2017
Non-EU/EFTA students	October 1, 2016	May 1, 2017	October 1, 2017
Study programme	Bioinformatics	All programmes	Bioinformatics
	Biotechnology		Biotechnology
	Biology		Biology
	Environmental Sciences		Environmental Sciences
	Forest & Nature Conservation		Forest & Nature Conservation
	Molecular Life Sciences		Molecular Life Sciences
	Organic Agriculture		Plant Biotechnology
	Plant Biotechnology		Plant Sciences
	Plant Sciences		

*Except online Master programmes, these have a staggered admission procedure. The deadline for applications is 1 May.

Staggered admission (only for online Master programmes)

The online Master specialisations 'Plant Breeding' and 'Nutritional Epidemiology and Public Health' have a staggered admission procedure. Applicants who wish to start in September 2017 must submit their application at the latest on 1 May 2017 in order to be included in this procedure. Should the number of academically admissible applicants exceed the number of places available, the study places will be allocated based on the following criteria: relevant pre-education, GPA, level of English, relevant work experience and motivation.

	More academically admissible applicants than study places	Not all study places are filled
Applied before May 1 and academically admissible	Study places will be allocated based on the qualities of the applicant. If you do not receive an offer, you will be put on the waiting list	Admitted
Applied after May 1 and academically admissible	You will be put on the waiting list, no guarantee of a study place	Admitted if there are still places (first come first serve)

Application procedure

STEP 1: APPLICATION

> **A completed MSc application form.**

www.wur.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 & Research. 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.wur.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 & Research will start this procedure upon receipt of your payment.

Part of the Dutch immigration policy is that all international students who require a resident 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.

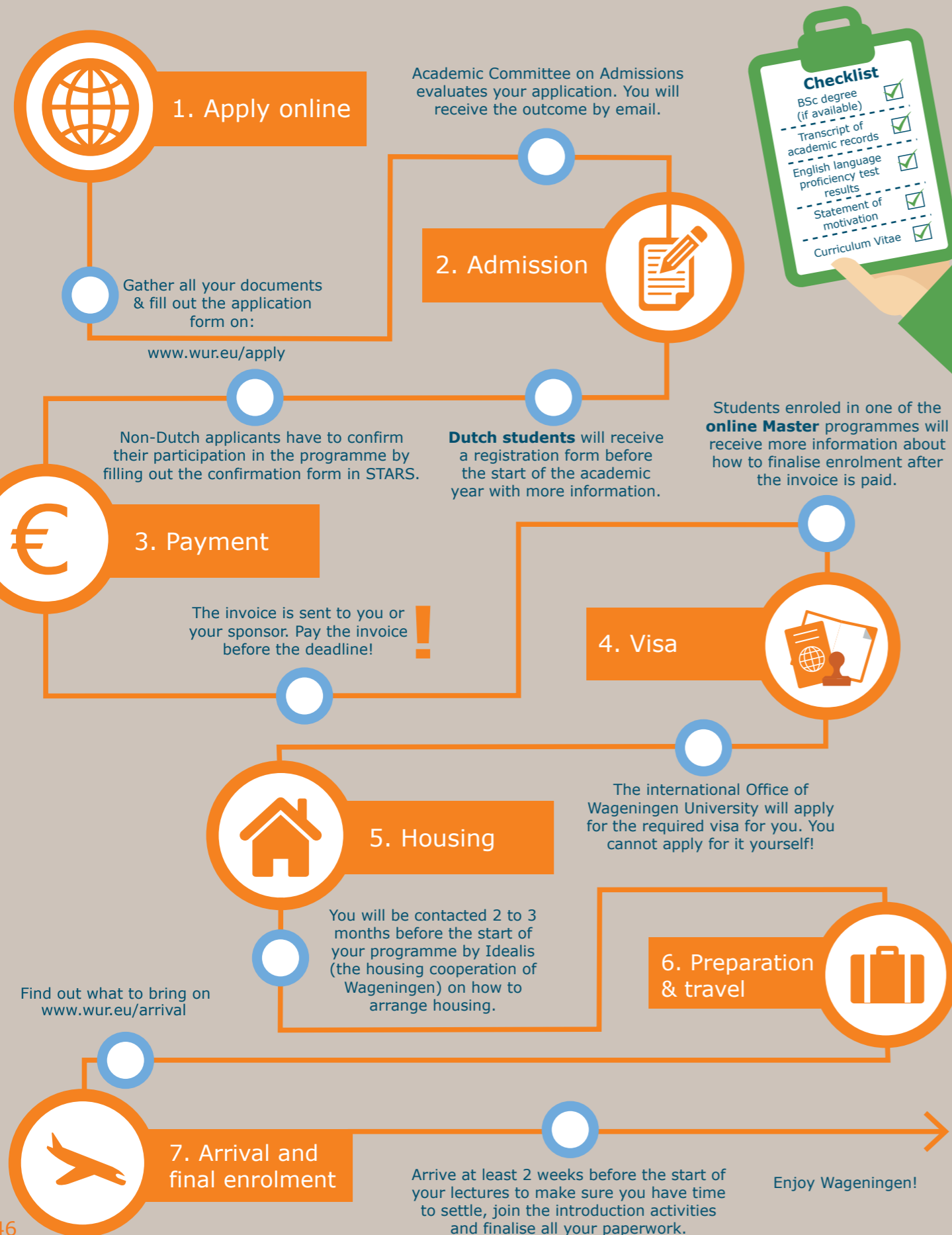
STEP 5: HOUSING AND INSURANCE

Idealis will contact you with about the housing application procedure if you have confirmed your application for your studies in STARS (EU students) or after you have settled your invoice with the university (Non-EU students). Idealis will contact you approximately two to three months before the start date of your programme in Wageningen. After receiving the information about the application procedure you can register with Idealis as a houseseeker and respond to the available housing offers on their website (www.idealis.nl).

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 in Wageningen? Choose one of the 60 minors at Wageningen University & Research. Minors consist of a cluster of courses based on a specific theme. Read more about minors at www.wur.eu/minors.

Steps to enrolment



Meet us

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:
> 15 December 2016
> 7 April 2017

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 & Research has representatives all over the world to answer your questions. They speak your language and know the university and the Netherlands well. Go to www.wur.eu/representatives and contact the representative now.

Education fairs

Representatives of Wageningen University & Research 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.wur.eu/meetus.

In Dutch

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

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 in Wageningen? Join the Online Open Day and meet our students, watch our videos and ask all your questions.
Visit www.wur.eu/masteronlineopenday for more information.
The Online Open Days will take place on:
> 17 November 2016
> 30 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.wur.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.wur.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.wur.eu/webinars.

Social Media

For more information about studying at Wageningen University & Research, 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



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



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www.wur.eu/master

Student Information Desk

+31 (0)317 48 48 48
study@wur.nl

Visiting address:

Wageningen Campus
Forum building
Droevendaalsesteeg 2
6708 PB Wageningen
The Netherlands

Postal address:

P.O. Box 414
6700 AK Wageningen
The Netherlands

Wageningen Online Education

Besides offering online Master of Science programmes, Wageningen University & Research 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.wur.eu/moocs.

