



## Bachelor's programmes | 2010 Faculty of Health, Medicine and Life Sciences

- Biomedical Sciences
- European Public Health
- Medicine
- Health Sciences



## In Maastricht...

...everything revolves around you, the student. You learn in small groups, receive special attention for your talents and academic attitude, and enjoy personal contact with the academic staff.

...you learn on the basis of challenging problems and objectives. You get to grips with scientific issues, allowing you to grasp the theory and apply your understanding of a subject to a wide range of topics. You are trained in skills such as presenting, debating, writing and leading discussions. This makes studying fun as well as effective.

...you become part of an international environment where you encounter diverse cultures and languages. Many courses focus on international and European-based topics and more than half of the programmes are taught in English. You can even carry out part of your studies abroad.

...you live in one of Europe's liveliest cities, with bars and restaurants in abundance, a wide variety of theatres and cinemas and a different café for every day of the year; Maastricht has it all. And to top it off, you will be within easy reach of cities such as Brussels, Paris and Amsterdam.

All programmes in this brochure are accredited by the Accreditation Organisation of the Netherlands and Flanders (NVAO). For more information on NVAO, please visit [www.nvao.nl](http://www.nvao.nl)

Maastricht University is a signatory of the "Code of conduct with respect to international students in Dutch Higher Education". More information about this code of conduct is available at [www.internationalstudy.nl](http://www.internationalstudy.nl)



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One single stem cell was all it took to create the amazingly complex system that you now refer to as 'I'. And ever since, you have been a privileged member of humankind. So how did you get here? And what enables you to stay here? What was needed for that one single stem cell and all its descendants, together with billions of bacteria, to form you? What makes it possible for you to remain here? Which processes keep you alive? Which processes keep you healthy? Which processes harm your system, and why are they so hostile? Why do you become ill? And if you do become ill, which processes help you to recover? Not only the processes taking place in your body, i.e. in your own system, but also in all the systems around you in the Netherlands and beyond, such as hospitals, healthcare institutions, insurance companies, the pharmaceutical industry, research bodies, environmental organisations and government.

## What is Health, Medicine and Life Sciences?

Life and health. These key terms are at the heart of the bachelor's programmes offered by the Faculty of Health, Medicine and Life Sciences (FHML):

- Biomedische Wetenschappen (Biomedical Sciences)
- European Public Health
- Geneeskunde (Medicine)
- Gezondheidswetenschappen (Health Sciences)

These are very diverse and important programmes! Ask anyone to name the three most important things in their life, and one of these will almost always be health. However, if we all find health so important, then why do so many of us indulge in things that everyone knows are unhealthy? Why are chocolate and cigarettes so tempting, and why is it so difficult to lose weight or stop smoking? How do you treat someone with blocked arteries, and how

do you tell someone that they have terminal lung cancer? What is the relationship between health and our upbringing, social status, living and working environment, nutrition, lifestyle, and behaviour? And what do we actually mean when we talk about health? Is this the same as not being ill? Why do so many influenza strains originate from Asia? Is the Netherlands prepared for new viruses brought into the country by unsuspecting tourists? How is it possible for a virus to infect a healthy young man or an elderly woman? And once we know all that, what can we do about it? Can our healthcare systems deal with the enormous challenges confronting us as a result of our aging populations? And how expensive does a pack of cigarettes need to be before people quit smoking? Will convergence ever develop in European healthcare system? These are typical questions that medicine, health sciences and life sciences try to answer. These sciences, which are developing at a tremendous rate, encompass a challenging, broad and highly complex discipline which links the very small (molecular processes) to the very large (transatlantic and European relations), and links theory to practice. The health and life sciences are also linked with chemistry and biology, medicine and pharmacology, psychology and sociology, business administration and economics, ethics and law, political science and international development cooperation. Health and life sciences, along with medicine, are catering to the fast-growing employment sectors in the Netherlands and beyond. Our graduates are in great demand. Some of them join the laboratories of research institutes and pharmaceutical companies. Others are appointed to management positions at hospitals, nursing organisations or healthcare organisations. Yet others find employment positions as government advisors in policy-making areas, and some work in clinical practices. Others earn a PhD and devote themselves to scientific research and teaching, but virtually all of our graduates find work in their own discipline.

Naturally is Maastricht an exceptionally beautiful, cosy and attractive city with a charming historical centre, that dates back to the Roman times, Maastricht breathes history. Moreover is Maastricht a genuine student city, and from a distance, one of the most international cities in the Netherlands. But students do not choose a university primarily because they really like the city. For anyone wishing to follow a study in Medicine, Health Sciences or Biomedical Sciences, there are few better than Maastricht. There are four important reasons for this.

## The broadest programmes

First, the FHML offers Europe's broadest programmes in the medicine, health and life sciences, comprising numerous specialisations and an equally extensive master's programme. The great advantage of these broad-based programmes lies in the opportunity to study the many issues of the health and life sciences and all their complex relationships. Students who, for example, follow the bachelor's programme in Health Sciences can also take subsidiary subjects in other bachelor's programmes. The multi-faceted range of studies available ensures that students really do have a choice. Strangely enough, this means that the choice of specialisations can be postponed until a later phase in the programme. After all, there is so much to discover.

## De best programmes

The second important reason for opting for Maastricht is the quality of the programmes. Moreover, outside the Netherlands, the faculty is also recognised as one of the best educational institutions of its kind.

One of the reasons for this awesome reputation is the teaching system itself. Maastricht University works according to a system of Problem-Based Learning (PBL). Under this system, you are presented with a realistic and challenging problem, which you then have to address both individually and as part of a team. In order to resolve the problem, you will have to get to grips with the subject matter, choose an approach and finally adopt a standpoint, which you will later be asked to present and defend. (The bachelor's programme in European Public Health uses a variant of PBL: Active and Self-Directed Learning. Refer to the relevant chapter for more information on this system). PBL is an active form of learning. You do not only learn a lot but you also acquire a high level of academic skills. You learn how to find and evaluate the relevant information, you learn how to compile an argument, how to prepare and give a presentation, and how to debate and chair a meeting. And most importantly of all: you learn how to work together with others.

Moreover, this system of education is small-scale and focuses on the students, their ambitions, interests and potential. Most of the groups are made up of about twelve students.

## International programmes

The third important reason for choosing Maastricht University to study medicine, health and life sciences is the nature of the university; Maastricht University is an international university. Although the city is in a remote corner of the Netherlands, it is nevertheless located at a central position in North-West Europe. One in three of the university's students are from outside the Netherlands, so anyone studying at Maastricht University will come into contact with many other cultures. Internationalisation is also an important aspect within the FHML, both in terms of the subject matter and the organisation of the education. For example, in the second year of the bachelor's programmes in Health Sciences and Medicine, students are offered a number of (internationally oriented) courses that are taught in English. For example the 'International Classroom' by the bachelor programme Health Sciences. Students from universities outside the Netherlands that cooperate with Maastricht University can also take part in these courses. The bachelor's programme in Medicine offers plenty of opportunities for an international experience, and the faculty stimulates this with subsidies. A lot of Medicine students (about 350 to 400 a year) choose for this opportunity, in spite of it being an option.

## Practical skills

The fourth important reasons to study in Maastricht: our studies are directed towards the practical side. This does not necessarily mean that we fall short on theory, quite the contrary! Each of the educational programmes works on the understanding that in the end, knowledge must be translated by doing: medicine and social interventions are based on stimulation, maintenance, and recovery of health. Early in the Medicine programme, you get confronted with patients and practice; from year one on, you practice your skills on simulated patients, models and fellow students. In the third year you examine real patients in the outpatient teaching clinic (in the academic hospital) and in a general practice. Also within the European Public Health studies, Health Sciences and Biomedical Sciences, much of the focus is directed towards practice. You learn academic and professional skills and participate in field studies at institutions where they are exposed to widespread situations, which will reoccur during and after your study.

## Quality

*"Every year the Faculty of Health, Medicine and Life Sciences welcomes more than 1,000 new students, making the faculty the largest of its kind in Europe. National and international experts, including our own professors and students, have judged our programmes to be the best in their field in the Netherlands and beyond. The "Maastricht Model" has won world-wide praise for its innovative approaches in teaching and learning. Several members of our academic staff have won awards for the high quality of teaching they provide, and have received honorary doctorates*

*from other universities. But we also listen closely to our students who play an integral role in the evaluation of our educational programmes, thereby ensuring that we can tailor the curriculum even closer to their needs and wishes. We hope that next year we can also welcome you to our faculty!"*

**Prof. dr. Martin Paul**  
**Dean, Faculty of Health, Medicine and Life Sciences**  
**hy in Maastricht**



## Problem-Based Learning

We remember:

- 10% of what we read,
- 20% of what we hear,
- 30% of what we see.

These are worryingly low yields, particularly if you consider that traditional academic education was primarily based on reading and listening! Can we improve on this? We certainly can; we remember:

- 50% of what we hear and see,
- 70% of what we discuss with others,
- 80% of what we experience,
- 95% of what we explain.

Problem-Based Learning (PBL) concentrates specifically on these last three forms of learning. Obviously you will also read, listen and watch, but not in a passive way as you will be asked to put the knowledge you acquire to practical use. You will have to argue your point of view and explain it to others. Take other information and angles into account when deliberating. Reject or accept criticism. Edge closer to a solution by means of discussion and debate. And last but not least, learn to understand the problem better. In short: you will be practising science. With the added advantage that the subject matter will sink in. That you will acquire a vision and skills as well as knowledge. And that you will learn what science really means. You learn by *doing* it.

## Faculty of Health, Medicine and Life Sciences

The FHML was established as the result of a merger between the Faculty of Health Sciences and the Faculty of Medicine at Maastricht University. The Faculty has 3900 registered students and 1475 employees. Alongside the four bachelor's programmes the faculty also offers a wide range of internationally renowned master's programmes.

### Study facilities

The FHML is located on the university campus in Randwyck in one of Maastricht University's most modern buildings. The building comprises excellent study facilities. For example, students have access to a large number of computers and audiovisual equipment. The faculty library has a huge collection of books, scientific publications and medical models. An Internet café has been set up next to the university library. There are also special teaching areas with built-in video, recording and playback equipment for skills training.

Consider yourself lucky; life sciences are widely seen as the science of the twenty-first century – a tough, but exhilarating and hugely important programme.

## European Public Health

The European Public Health (EPH) programme is taught entirely in English. Don't let this put you off: you soon get used to it. EPH is taught in English because it is a totally internationally oriented programme. Many of the students come from other countries. EPH is the study of the organisation of health promotion and healthcare in Europe. It goes without saying that you should be interested in health, care and welfare for this bachelor's programme. But you must also be interested in politics, administration and management, policy and strategy, information and media. You are interested in studying the common ground between health sciences, political sciences, public administration, economics, sociology, ethics and law. You feel socially involved from an international point of view. You enjoy meeting students and professors from other countries. And you are keen to travel in the course of your studies. If you can identify with this profile, then the EPH programme is well worth considering.



## Choosing your bachelor's

So which of the four bachelor's programmes should you choose? The following chapters take a closer look at the three different programmes. We would advise you to read these chapters carefully. To make things a little easier, we have included a list of the most important features of each of the three programmes at the end of this introductory chapter. Which programme is best suited to your ambitions?

### Biomedical Sciences

You are fascinated by natural science and biology, you want to know more about genetics, the formation of proteins and the way our immune system works. You probably already know that the AIDS virus confuses our immune system, but you are keen to find out how and why this happens. You wonder how such a complex and intricately balanced organism as a human being can possibly be made up of just a few elements (mainly hydrogen, nitrogen, oxygen and carbon), four sorts of nucleotides (the building blocks of DNA) and no more than twenty different amino acids. And when a new world record is broken, do you ask yourself, 'Where do our borders lie?' and 'How is it possible that we find the strength to build a staircase or play a musical instrument?' You are not put off by the thought of donning a lab coat, then Biomedical Sciences is the programme for you!

### Medicine

This is the FHML's most self-explanatory course: the three-year bachelor's and continuing master's programme train you to be a doctor, equipping you not only with a sound knowledge base, but also with the appropriate medical and interpersonal skills and professional attitude. Our PBL system fosters the independent and group study that will allow you to become a true problem solver, able to access not just existing but also new knowledge. In effect, this programme provides you with the necessary tools to embark upon your future as a fully fledged doctor with extensive medical knowledge.

### Health Sciences

As the name suggests, this is the broadest of the four programmes, and its four tracks make it the most diverse and multi-faceted. If your interest in health sciences is broad-based and general, if one of the tracks particularly appeals to you or if you are not quite sure which differentiation you should choose, Health Sciences (HS) is a sensible choice. You just have to be interested in humans and their health. And you must be prepared for the various other fields that affect humans and their health, as they are also part of this programme.

### Honours programme

They are few and far between, but they certainly leave an impression on their lecturers and all those around them. We call them top talents: highly gifted students with unbridled ambition and a willingness to work hard enough to reach the very top of their field. Maastricht University has devised a range of Honours programmes to cater for these students.

The FHML offers four Honours programmes:

- International health,
- Research (only for Medicine students),
- Education, and
- Governance of health care innovation.

Only very few students are admitted to the programme, after undergoing an intensive screening and selection process. The Honours programme is more extensive than the regular programme and gives an extra dimension to the knowledge and insight the student acquires. In other words, academic education at the highest possible level.

Please check our website [www.maastrichtuniversity.nl/fhml](http://www.maastrichtuniversity.nl/fhml) (> Education > Programmes and courses > Honours programmes) for more information.



## In brief

The bachelor's programme in Biomedical Sciences explores how the human body works in day-to-day life, during periods of illness, while ageing and when performing to the very best of its ability. The biological processes are studied at every level: at molecular level, cell and tissue level, organ level and at the level of the body as a whole. The body's response to environmental factors is also studied. When observed together, all these processes and reactions determine how a body performs and whether a person is healthy or ill.

Using this biological knowledge, interventions can be devised to help prevent, cure or curb the progress of disease. Interventions may include physical exercise or diets for elderly people, courses of treatment for cancer, AIDS, diabetes and cardiovascular disease, or techniques for enhancing performance at work or in sport.

<b>Average intake</b>	approx. 100 students per year
<b>Binding study advice</b>	no
<b>Language</b>	Dutch
<b>Duration</b>	three years, full-time
<b>Follow-up programme</b>	several English-taught master's programmes

## From cell to body

Cells want to multiply. It is their ultimate purpose in life. And we should be grateful because were this not the case, a single stem cell would never be able to develop into the amazingly complex system that we call *me*. The miracle of every living organism is its ability to unfold from within. To do this, cells must be able to divide. But they must also know when to stop dividing. These processes are regulated by genetic programmes from the cell nucleus, the DNA. It is an intriguing fact that DNA in the cells that join together to form the liver is actually no different from DNA found in brain or muscle cells. After all, organs with completely different functions all evolve from identical DNA. So how does this work? How does a liver cell know that it is a liver cell and how does it know what to do? Can we, with all our knowledge of the human genome and molecular biology, perhaps steer cells in their development?

## From cell to society



*"The field of molecular biology has been developing at an incredible pace in recent years and is having an unprecedented impact on industry, science and society. But when attending scientific conferences, I still notice that very little attention is being paid to the link between what goes on at the cellular level and the overall functioning of human beings. This is quite remarkable when you consider that society is in urgent need of people with a very specific training, who are able to apply what happens at cell level to society as a whole. This ability to transpose knowledge of cells onto society is essential for understanding the benefits of exercise, for example, and*

*for developing better drugs to combat diseases of modern civilisation like obesity, cancer and cardiovascular disease. Our programme in Biomedical Sciences remedies this flaw by integrating isolated specialisations into a single large framework of health and life sciences. The result: a broad-based programme, which explores life at all relevant levels, from molecules and genes to individuals, populations and systems. After all, a human being is more than just a collection of molecules and cells!"*

**Prof. dr. Ellen Blaak**  
Biomedical Sciences programme coordinator

## What is Biomedical Sciences?

As a graduate in Biomedical Sciences, you will have acquired a sound knowledge of the processes that control all life, from molecule to human being. You will be able to use this knowledge to develop, apply and evaluate interventions relating to movement, nutrition or pharmacology. The programme features a multidisciplinary approach that surpasses the traditional organisation into subjects. An initial understanding of how the body functions at molecular and cell level will gradually develop into insight into the physiology of tissues, organs and more complex organisms.

Important disciplines include cell biology, genetics, biochemistry, physiology, functional morphology, anatomy, neurosciences and biophysics. The Biomedical Sciences programme focuses on common illnesses such as cardiovascular disease, cancer, type 2 diabetes, obesity and chronic respiratory disorders. As previously mentioned, the programme not only aims to teach you about pathological processes, but also about devising tailor-made interventions that will halt the progress of these conditions.

- **Biological Health:** focuses on the complex regulation systems within the body that control the equilibrium (homeostasis) governing health and disease
- **Human Movement Sciences:** you learn about the processes and structures in the body that enable movement.

In the third year, the programme concludes with an internship and a bachelor's graduation project. You can do the internship in Maastricht, but there are also countless opportunities for students who would rather go abroad. The internationally oriented staff involved in teaching the Biomedical Sciences programme have an extensive network and will be happy to help you choose a subject and location for your internship, whether at home or abroad.

Obtaining a bachelor's degree will earn you the internationally recognised title *Bachelor of Science* (BSc), in which you are eligible for various master's programmes at Maastricht University and elsewhere. A bachelor's degree will also qualify you to find employment.

## Practical skills

You will obviously acquire practical skills during the course of your studies. Some of them are generic (which means that they can be applied in various fields), while others are specific to a particular subject. In addition to laboratory skills, you are also taught methods of taking measurement to obtain information about organ functions and the relationship between organs. Other measurement methods focus on the impact of environmental factors on active human beings. You learn how to process the data collected, make a statistical analysis, combine the findings with your newly acquired theoretical knowledge and finally interpret the information. This provides you a solid basis for learning to compile verbal and written scientific reports, and prepares you for the concluding phase of the programme – the bachelor's internship.

## Programme structure

The three-year bachelor's programme in Biomedical Sciences provides a broad scientific basis, and teaches you theoretical knowledge and practical skills. All students follow the same courses during the first year. The programme becomes more individual in the second and third years, when you are required to choose one of the following three tracks:

- **Molecular Life Sciences:** a specialisation with a strong focus on the molecular basis of health and disease



## Three tracks

### Molecular Life Sciences

The emphasis in Molecular Life Sciences is on studying the molecular mechanisms of health and disease. This is not as simple as it may sound. Although the vast majority of cells are too small to be seen with the naked eye, they all actually constitute tiny and incredibly complicated chemical factories that are managed from within by an unfathomable programme: the genetic code. So a molecular life scientist aiming to understand the essence of life and how organisms function at the most rudimentary level must be able to rely on a wealth of theoretical knowledge. You study genes, proteins and protein reactions, cells and cell interactions. You learn how molecular processes regulate or impair the functioning of an organism as a whole. The relationship between humans and their surroundings (nutrition and environment) is also studied at the molecular level. We focus on both social and ethical aspects. Take, for example, the international debate on the admissibility of stem cell research and genetic modification. Since it is not uncommon for scientists to start up their own business after graduation, the training also covers this aspect.

In the practical lessons, you are taught laboratory skills including how to carry out a gel electrophoresis to separate DNA according to size and electromotive force.

These practical lessons become progressively more intricate, covering modern and often new scientific fields. The most important are described below:

- *Genomica* is the study of the genome, which refers to the complete genetic material of a human being. Comparing the human genome with that of a mouse, for example, enables us to pinpoint the functions of various genes.
- The study of human proteins is part of the field of *proteomics*. Modern equipment enables us to compare the proteins of people following a specific diet, for example, with people who are not. This allows us to measure the possible impact of genes and environmental factors.
- *Bio-informatica* combines mathematics, statistics and information technology and applies the outcome to molecular biology, particularly in the development of computer programmes used to process research findings.
- *Imaging* allows scientists to study the processes taking place inside the body, at both the microscopic and macroscopic levels.

#### Liposuction generates stem cells

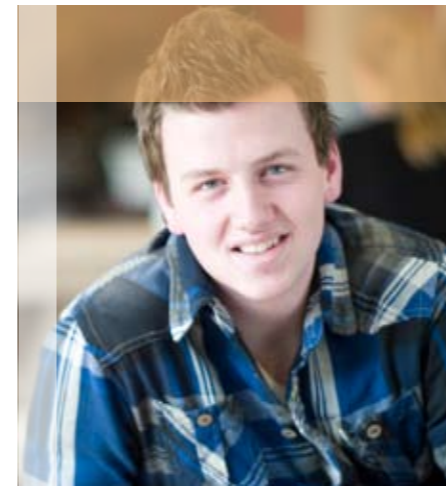
American scientists recently proved that liposuction provides more than just slim waistlines and firmer thighs. It appears that the fat extracted can be used to generate pluripotent stem cells. These are cells that have not yet diversified into a specific function and are still capable of developing into various types of tissue. Cells like this can evolve into a heart wall, for example, or an Achilles tendon or part of a liver. It is this versatility that makes stem cells so important to medical science. Until recently, stem cells of this type were only found in embryos. As this involves terminating a pregnancy, it is obviously a highly contentious method. Stem cells from liposuction may form a viable alternative.

### Biological Health

Our bodies are regulated by complex control systems. These systems ensure that our body temperature stays at 37 degrees, for example, and that our blood pressure remains steady, our blood sugar level stable and that excess fats are broken down. It is all about self-regulation, known in biological terms as *homeostasis*. If this equilibrium is disturbed (often as a result of external influences), we become ill. We might develop a high temperature, high blood pressure, diabetes or obesity.

Nutrition is an important external factor. If we do not eat enough carbohydrates, fats or vitamins, we become malnourished. But too much is also bad for us. Moderate amounts of alcohol, for example, are known to reduce the risk of cardiovascular disease, but too much alcohol can lead to breast cancer and liver damage.

Genetic factors also play an important role. What is good for one person is not necessarily good for another. We are not all equally healthy; some people are more able to adapt to changes in external factors than others.



### Own 'material'

*"I've always known that I wanted to study medicine in some shape or form. It didn't take me long to find the programme in Biomedical Sciences. In BMS, you explore the mechanisms that cause disease and the factors that affect these mechanisms. The best thing about the programme is that it allows you to put the theory into practice, whereby you often work with your own 'material', such as blood or urine. This really motivates you! Moreover, Problem-Based Learning has made me more aware of what I'm studying."*

*Every course revolves around a different theme, allowing you to work out which field really interests you. This is how I realised that I wanted to do a master's degree in Oncology after my bachelor's. My ambition is to work in a medical laboratory and use my knowledge to help devise better methods for treating tumours."*

Tom Wijnands  
Second-year Biomedical Sciences student

The Biological Health track teaches how a body functions in periods of good and poor health, and how organs and tissues work at the molecular level. You explore the role of environmental factors and genetic background. Principal fields include physiology, the study of metabolism and metabolic regulation, immunology, anatomy and to a lesser degree, cell biology and molecular biology. Attention is also focused on the causes of disease and ways of translating knowledge into clinical and pre-clinical interventions.

#### Leptin

The hormone *leptin* was first discovered in 1994. Leptin, which is produced by fat cells, travels to our brain where it tells our body to eat less and exercise more. Great things were expected after the discovery of leptin. It seemed as if the ultimate slimming pill was just around the corner. Unfortunately, heavy people turned out to be less sensitive to the hormone and, despite extra doses of leptin, did not lose weight.

Continued research into leptin turned up a lot more information about the regulation of body weight. Researchers discovered new substances secreted by fat tissue, which affect our metabolism. We now know that in people suffering from obesity and diabetes, the production of these substances is disturbed.

### Human Movement Sciences

Life means movement and for some people, movement means life! We only become aware of the fact that we can move if our ability to move becomes impaired.

Three things are needed to accomplish movement: energy, strength and information. Movement requires energy, energy that has to be available at exactly the right moment. Movement also requires muscle strength to get your body moving. And finally, smooth movement requires

coordination with the surroundings. When running upstairs, for example, you must be able to gauge the height of the steps, your muscles must be strong enough to take your body weight, and they must also have enough energy to supply the power needed. Everyday life involves accomplishing countless series of often highly complex actions, which all make their own demands on energy supply, power development and movement coordination. Movement can become a 'problem' in a range of situations, including rehabilitation, therapy, at work, or while ageing or suffering from a chronic condition. In cases like these, movement must be optimised by working on the weaker links in the process. The first step is to identify these weak links. Sport is actually nothing more than a radical ambition to achieve optimum movement. Movement scientists often make use of information obtained from the sports world, or data collected from sportsmen and women.

It is also interesting to note that a lack of movement can actually cause health problems. Movement scientists look into illnesses or disorders that cause restricted movement. On the other hand, they also encounter illnesses that are caused by a lack of movement. It is this dual approach that makes movement science such a dynamic field. The field covers extremes of movement interventions, from people suffering from paralysis to highly trained athletes. Human Movement Sciences teaches you to explore the biological principles that govern movement in general. Important disciplines include anatomy of the locomotor system and the major organ systems, physiology, psychology, biomechanics and biochemistry.

If you are interested in learning about how we move, how you can improve physical performance and how you can apply this knowledge to sport, rehabilitation, the work situation or health problems, then you will certainly enjoy this track of the bachelor's programme in Biomedical Sciences.



### Sprint prosthesis

Oscar Pistorius is a South African runner who has been without legs since birth. He walks with lower leg prostheses in day-to-day life, but when competing in athletics meetings, he uses special sprint prostheses. He can now sprint so fast that in 2008, he asked to compete in the regular Olympic Games. His ambition prompted a storm of protest from runners with lower legs made of flesh and bones. Pistorius's sprint prostheses were seen as a form of biomechanical doping. The international sports arbitration committee considered the problem. The question was: Do the prostheses give Pistorius an unfair advantage, and which muscles actually supply the power needed to sprint? A recent study has shown that Pistorius uses just as much energy running the 400 metres as his rivals, but that his running pattern is different. His 'feet' are in contact with the ground for longer. However, sprinting with lower leg prostheses is not always beneficial; the joints of many paralympic athletes wear out prematurely. Is this because of the design of the prostheses used for sport, and if so, how can they be improved? Controlling an artificial limb is not easy. Movement programmes in the central nervous system have to adapt to the new limbs.

## Teaching and assessment methods

The teaching methods used in the bachelor's programme in Biomedical Sciences are specifically designed to motivate students. The emphasis is on assignments that you tackle yourself as a student and the number of lectures is restricted. You become actively and independently involved with the teaching material from day one, with the support of a committed teaching team.

### Assignment-Based Learning

At the beginning of your programme, you mainly work according to a system of Assignment-Based Learning. For this teaching method, you are given meticulous instructions for self-study assignments. The details of each assignment per programme component are contained in a course schedule or course book, and you discuss the results of your assignments in small groups supervised by members of staff.

### Problem-Based Learning

You are then introduced to the system of Problem-Based Learning (PBL), for which Maastricht University is renowned. This teaching method involves working together with a group of approximately twelve students on a concrete problem, supervised by a staff member. You discuss the problem, think about what you already know and don't know about the issue, and then decide how to approach it as a team. At home and in the library, you will study the

(mainly) English-language literature relating to the subject and work out your personal standpoint. The next step is to meet again as a group to discuss what you have learned, and decide which answers seem plausible and which questions remain unanswered.

### Project-Based Learning

Teaching in the third year takes on a more project-based approach. You work on projects both independently and as part of a team, whereby the knowledge acquired in the previous two years will stand you in good stead. This year prepares you for a potential follow-up programme or a employment opportunity. Employers seek for competent, cooperative, autonomous professionals, who know how to deal with complicated problems in a complex working environment. Project-Based Learning equips you with the skills you need to satisfy this profile.

### Exams and assessments

Every course period concludes with an assessment. This might be a written exam, an essay, a portfolio or a presentation. Final grades for the course are based not only on this assessment, but also on mid-term reports and attendance during tutorials and practical lessons. In addition, you are required to complete two annual projects. In the first year, this annual project comprises an extensive report of your practical work; in the second year you are asked to compile a literature review on a subject of your own choice. Both annual projects must be graded as 'satisfactory' before being allowed to conclude the third year and internship by writing a bachelor's thesis.

## After the bachelor

### Master's programme

A bachelor's degree will qualify you for one of the various master's programmes in the Faculty of Health, Medicine and Life Sciences, but because the 'Bachelor of Science' (BSc) is an internationally recognised title, you may also opt to take a master's programme at another university, either in the Netherlands or abroad.

The Faculty of Health, Medicine and Life Sciences offers the following master's programmes to BMS students:

- Master of Science in Molecular Life Sciences (in association with Hasselt University in Belgium), with five specialisations:
  - Clinical Molecular Health Sciences (Maastricht)
  - Molecular Health Sciences (Maastricht)
  - Oncology and Developmental Biology (Maastricht)
  - Bio-electronics and Nanotechnology (Diepenbeek)
  - Environmental Health Sciences (Diepenbeek)
- Master of Science in Physical Activity and Health, with two specialisations:
  - Biology of Human Performance and Health
  - Sports and Physical Activity Interventions
- Research Master Nutrition and Metabolism (extra admission requirements apply)
- Health Food Innovation Management (extra admission requirements apply)
- Cardiovascular Biology and Medicine Research Master (extra admission requirements apply)
- Physician-Clinical Investigator (extra admission requirements apply)

## Career prospects

Biomedical Sciences is a tough but interesting and important science programme, which brings together areas of science that were previously dealt with separately, such as genetics, medicine, physiology, biology, nutrition,



environmental studies and movement sciences. Present-day society is in urgent need of people who can transpose knowledge about cells onto health or illness and the programme in Biomedical Sciences fulfils this need. Employment opportunities for our graduates are good. Upon the successful completion of graduates could opt to join the workforce straight away. However, most bachelor's graduates decide to enhance their undergraduate qualification with a master's degree, and not without reason. A master's degree will open even more doors for you. For example, it will qualify you to work as a researcher at home or abroad in universities, care and other institutions, and pharmaceutical or biotechnological organisations. Another area employing master's graduates includes government bodies and centres concerned with public health, the environment, genetics and information. These organisations are constantly on the lookout for highly qualified policy advisers and other staff. Teaching also provides good opportunities for biomedical science graduates. And of course with a master's degree you are eligible to carry out PhD research, in preparation for an academic career or a future as a researcher.



### Small-scale

"At school, biology and physics were my favourite subjects. The Biomedical Sciences programme teaches you about health and disease in humans at every level. We learn about organs, cells and genes and how they interact, but we also study particular aspects in much greater detail. We have courses that last four or eight weeks and revolve around a central theme. As part of each course, we attend lectures given by different lecturers who are carrying out research at the university. They are all highly enthusiastic about their subject and the lectures are always inspiring. I am also very happy with the PBL-system at this university. We have the same tutor for all PBL sessions within a specific course. They are usually young people studying for a PhD. I like the fact that the teaching is small scale. PBL never involves groups of more than ten students and

during practical lessons, there are three teachers supervising approximately twenty students. The theory is very interesting in this programme, but the best thing about it is that you can apply everything you learn to the practical situation. For example, I have tested my own kidney function, checked my blood and mutated bacteria. Alongside my studies, I am also a member of a student society, I play in the university orchestra, and I sit on a committee of the BMS study association. I can easily combine these activities with the programme. My future ambition is to obtain a PhD and then find a job at a university or in the business sector."

**Nicky Huskens**  
Second-year Biomedical Sciences student

## In brief

Increasing collaboration between European governments and organisations is having a huge impact on the citizens of the European Union. In the coming years, the EU is set to take on a more prominent role. This will affect the way we approach issues concerning public health and healthcare. The new English language programme in European Public Health (EPH) explores health and healthcare from an international and European perspective, so that future health scientists can be trained to bridge the gap between health sciences and national and international European policy.

Average intake	340 students per year (numerus fixus)
Binding Study Advice	no
Language	Dutch
Duration of the programme	three-year bachelor's and three-year master's programme, full-time

## Cross-border care

Citizens of the European Union seeking medical assistance increasingly disregard national borders. And who can blame them? Is the fact that the closest or best hospital happens to be across the border a reason for staying away? And if an accident occurs near a national border, should we accept the fact that the nearest ambulance will not be sent simply

because it has a foreign registration? The consequences of this development include the need for international collaboration between healthcare providers and insurance companies. This is only possible when the national authorities, who specify the fees and regulations and supervise appropriate levels of quality, harmonise their policies with one another. The individual motives of members of the public on the micro level – ‘The waiting lists are shorter in Belgium, I’ll get my treatment there’ – inevitably have an effect at a macro level, and create a need for a single European policy for health and healthcare. International harmony is also needed because illnesses, pathogens (viruses, bacteria) and other factors that are harmful to health also show very little respect for borders. Suppose Europe is afflicted by a fatal epidemic (SARS, avian flu, or a descendant of the Spanish flu that once caused so many deaths); will we be prepared? Will we know who is assigned priority for vaccination? And who will decide: the ministers, the doctors, the courts, or the European Public Health experts?

## What is European Public Health?

The new European Public Health (EPH) programme, taught entirely in English, covers health and healthcare from an international and European perspective. Consequently, as a student of European Public Health, your interests are not restricted to health sciences, healthcare and well-being; you are also interested in national and international politics, administration and management, policy and strategy, the provision of information, and the media. You wish to operate at the interfaces of health sciences, political science, public administration, economics, sociology, ethics and law. You are enterprising and socially involved in an international context. You are interested in European public health policy. You wish to meet and collaborate with students and professors from other countries, study in English, and carry out much of your study abroad. Your ambition, for example, is to find an international job in which you interpret your knowledge of health sciences in terms of policy and strategy. Do you recognise yourself in this profile?

You will focus in the EPH programme on the main issues:

- prolonging life
- preventing disease,
- protecting health and
- promoting healthy living
- ... for all Europeans

If so, then the European Public Health programme is the ideal programme for you!

## Challenge



“Good health is essential to a full life for people and communities! A better understanding of how health and disease are influenced by external factors is of vital importance in managing all aspects of health, both nationally and internationally. Health scientists must extend the scope of their research, not only to include biological factors such as heredity and nutrition, but also to explore cultural and social issues, including healthcare systems, lifestyle, environment, policy and state organisation. Bringing about this understanding is the biggest challenge currently facing the growing number of students and researchers. This bachelor's programme is

the first in Europe to extend beyond national borders and look at every aspect of European health and healthcare. The EPH graduate knows when, where and how to intervene on a European scale. European Public Health after all is about prolonging life, preventing disease, protect health and promoting healthy living, through the organized efforts of society, for all Europeans.”

Dr. Peter Schröder-Bäck  
Programme coordinator Bachelor's and Master's programme European Public Health

## Why European Public Health?

‘Thinking blue and seeing stars’ is the programme’s theme. Blue and stars symbolise European unification, and the European component is a strong element of the study. Why? The European Union’s role will grow in importance during the coming years. This will affect the international approach to public health and healthcare issues, such as European decision making on the use of stimulants such as alcohol, tobacco, and soft drugs. The member states will increasingly need to adapt national policies to EU policy. The public health problems and challenges are relevant to all EU member states, and call for increasing collaboration and coordination within Europe. According to former EU Commissioner Mr David Byrne, “We need to ensure a European Union where politics, money and modern technology are geared towards the creation and maintenance of good health”. These words further emphasise the great demand for health sciences graduates who are capable of creating links between national, international and European policies.

## Why in Maastricht?

There are many factors that make Maastricht an excellent location for a programme in European Public Health. We have already mentioned the good international reputation enjoyed by the Health Sciences programmes at Maastricht University. The programmes in Medicine, Economics and Law at Maastricht University, subjects that play a major role in the European Public Health programme, are equally renowned. Maastricht University is becoming more internationalised and attracting larger numbers of students from abroad. Moreover, compared to its size, the city houses a strikingly large number of scientific research institutes working in the areas of Europe, the unification of Europe and international relations. Although Maastricht is not central within the Netherlands, it does lie in the centre of North-

West Europe. Maastricht is by no means a large city, but the Maastricht Treaty is famous throughout Europe as the agreement that effectuated European unification (including European policy on health and healthcare). Europe’s future began in Maastricht. So why shouldn’t yours?

## An innovative study

The bachelor’s programme in European Public Health is an innovative study that began in 2006. This programme is the only one of its kind to be offered anywhere in Europe. The programme is entirely in English, and has an exclusively international orientation. English is the most widely used International language and will be very useful in your prospective career. Being part of an International student group you will improve your proficiency in English. In the first year the programme pays close attention to further enhancing students’ skills in the English language. Part of the programme takes place abroad. In addition, an innovative teaching approach has been developed for the programme: Active and Self-Directed Learning (ASDL). This method, which evolved from the Problem-Based Learning system that has made Maastricht University famous, is designed to stimulate students’ own initiative and nourish their personal growth and development. We will return to this subject later.

## Programme structure

During this three-year bachelor’s programme, you will study many different elements of European Public Health. Each year is comprised of two semesters, each of which focuses on a specific theme. All themes are approached from a number of angles; for example, the study of current European health problems during the first semester not only



reviews the actual health issues but also incorporates institutional, ethical, socio-psychological, policy and legal issues. The six semesters address the following themes.

### 1 European public health topics today

Which problems and challenges are actually confronting Europe? You study the European public health agenda and the associated disciplines. Your studies not only involve a number of practical cases (about issues such as tuberculosis, work-related stress and burn-out), but also extend to skills training. You will train yourself to work with others, explore study strategies, learn to find and evaluate information, learn to compile a scientific argument, give a presentation, etc.

### 2 The shape of public health in Europe today

How is European healthcare actually organised? What are the national differences between, for example, healthcare for mothers, children and the elderly, and how do these relate to European policy? Which institutions are active in the EU member states, and how do they relate to one another? Skills training will also take up a significant part of this semester.

### 3 European public health objectives

In the first semester of the second year the focus is on the most important objectives that form the basis of the European health policy: The relevance of EU programmes that promote “Health for all” and “Equal access to care”, “Free movement of goods, services and persons” and principles of “Good Governance” play a role in the public health agenda. These objectives will be explored according to the most recent policy and the policy developments with respect to alcohol and drugs use, as well to the developments in nutritional patterns and the current European regulations for our food safety. Recent developments in the European pharmaceutical market are also investigated in accordance to the previously mentioned objectives.

### 4 Minor period

During the second semester of the second year, you focus on the specialisation of your choice. Student advisers will assist you in making the appropriate choice. Preference is given to studies abroad, at a university or institution elsewhere in Europe or at another faculty of Maastricht University.

### 5 Making public health work in Europe

The healthcare systems throughout Europa are developing at a rapid pace, as is European policy. This is required for the achievement of the ambitious objectives (see semester 3) as well because of demographic changes that are resulting from the ageing of the global population.

The first semester of the last year reviews the European agenda and devotes attention to changes in European policy: The European Health Strategy and common measures for the stimulation of a better health care for all Europeans. Such questions, theories and models as when, where, why and how to best intervene to meet the objectives are widely discussed; also discussed are the success of these European programmes. Practical cases will be used to explore topics such as the policy on tobacco and cross-border medical care. The health policies of the 27 member countries of the European Union are not forgotten since the national systems for health care are in transition and experiencing a strong development.

During this semester you focus on writing a proposal for a practical- or research internship or a research assignment that will take place in the sixth semester.

### 6 Europe's future of Public Health, The final phase

In the last semester you conduct the actual internship or research project, and write your bachelor's thesis. Your thesis should be based on a realistic problem that currently exists. Part of your research may also be conducted abroad during this final semester.

## Curriculum overview: EPH themes and topics

Year	Semester	Theme	Module
1	1	<b>European Public Health topics today</b>	Active and Self-Directed Learning Tuberculosis Work-related stress and burn-out Ambient particulate matter
		<b>The shape of Public Health in Europe today</b>	European (Public Health) institutions Mother and child care Aging in Europe
2	3	<b>European Public Health Objectives</b>	Excursion to Brussels Alcohol and Drugs Use Food, Novel Food, Food Safety Lifestyles as a common denominator? The European Pharmaceutical Market
		<b>Minor period</b>	
3	5	<b>Making Public Health work in Europe, Towards a healthier society</b>	Health systems in transition Excursion to Central and Eastern Europe European Public Health Policy and practice: Overview of planned change  Writing a research project proposal and preparation for placement
		<b>Europe's future of Public Health</b>	• Internship and draft thesis on (research) project and bachelor's thesis Finalising the bachelor thesis

## A new teaching model

Much of Maastricht University's fame can be put down to the teaching method it deploys; Problem-Based Learning (PBL). The teaching method devised for the European Public Health programme evolves from PBL, but goes one step further. This innovative method, based on the most recent educational ideas, is known as Active and Self-Directed Learning (ASDL).

### Active and Self-Directed Learning

Active and Self-Directed Learning stimulates students to be highly critical, investigative and motivated. Together with the programme staff, you share the responsibility for your education, development and personal growth. In other words, you have a great influence on the manner in which you learn the subject matter and master the skills. Do you want to study a theme in more depth, or do you feel that it would be worthwhile to write an essay about a specific issue? Go ahead. Do you want to collaborate with others on the organisation of a symposium about the issue? Excellent! Are you of the opinion that the only way to really comprehend a problem is to follow a course at another faculty? Well, then you should. Do you want to interview a policy maker in Brussels? That's fantastic!

The EPH staff and the Faculty of Health Sciences offer you every opportunity to tailor your programme to your needs, and are pleased to assist you in making your choices so that you graduate as an academic expert who:

- has a thorough knowledge of international healthcare issues and of the organisation of healthcare in Europe, together with all the related topics,
- is familiar with the relevant European institutions and can work with them with ease, self-assurance and flair,
- is original, a visionary, independent, entrepreneurial – and highly motivated.

### There are four phases in the path towards this goal:

- *sensitising*: developing an awareness of existing and future problems (and of your own ambitions, competencies and limitations);
- *exploration*: exploring the problem, the possible solutions, opportunities and threats (and your own strengths and weaknesses, including the backgrounds and possible ways of resolving them);
- *integration*: incorporating the knowledge and information extracted from a range of disciplines into one comprehensive, balanced vision (including a vision on your own development);
- *application*: solving the problems and translating your solutions into practical, suitable and effective applications (while realising personal growth at the same time).



## Educational methods

The bachelor's programme in European Public Health has a practical orientation, and the tutorial groups make frequent use of real-life issues. You will explore modern-day European public health issues and the European agenda for public health, the organisation of healthcare in Europe, European public health targets and the proposals for change these have prompted. These issues are approached from the angles of a number of disciplines. In addition, we also make use of a wide variety of teaching methods including lectures and seminars given by national and international guest speakers, as well as role playing, excursions, presentations by students, literature studies, and project-based interactive tutorial groups.

## Assessment methods

As you have probably guessed, we do not only base our assessments on written exams. ASDL makes use of so-called portfolios. A portfolio is a personal file that you take with you throughout the programme. All information relevant to the progress of your studies will be included in this file: assessments of papers and presentations, information on attendance, participation in tutorials and projects, etc.

### Example of a real-life issue

The Public Health Service in Aachen (Germany) informs the Public Health Service in Maastricht that a general practitioner in Herzogenrath (Germany) has notified them of a case of open tuberculosis relating to a 39-year-old Lithuanian electrician. It turns out that the electrician works for a highly specialised electrical engineering bureau, and has recently completed jobs at academic hospitals in the Euregion Aachen, Maastricht and Liege. Further investigation of his recent travels reveals that when the man's child was ill and his wife needed the car, he frequently travelled by train and bus between Herzogenrath and the three abovementioned cities. Three days later, a second notification of a case of open tuberculosis is received which relates to a train commuter from Kerkrade (the Netherlands). During your European Public Health studies, you employ the ASDL approach to analyse and deal with.

### "We need a great deal more..."

"The first I want is curiosity. I need people who want to understand the world around them and not those whose horizons are limited by what is needed to pass an exam. (...) The second quality I am looking for is people who are willing to take the initiative. We need many more of what have been termed social entrepreneurs, people who will spot an opportunity and go for it. (...) The third thing I want is people who can make connections. (...) Then we need to have people with the ability to see the big picture. (...) The fifth thing I want is people who know what they are up against. (...) The final requirement is for people that they can engage with key decision-makers at all levels. To do so we need a great deal more self-confidence."

Martin McKee: 'What is the role of Schools of Public Health in training European public health professionals for the 21st century?' Keynote speech during the 25th ASPHER Annual Conference.

## After the bachelor's

### Master's programmes

On the completion of your bachelor's programme, you will be awarded a Bachelor of Science (BSc) degree, and you can then continue immediately with a master's programme. The Faculty of Health, Medicine and Life Sciences offers European Public Health graduates the following English language master's programmes:

- MSc European Public Health
- MSC Global Health\*
- Master of Science in Public Health, with four specialisations:
  - Epidemiology
  - Health Education and Promotion
  - Healthcare, Policy Innovation Management
  - Work and Health
- Health Sciences Research Master (Master of Science, additional requirements apply)

\* Expected start September 2010

You can also register for other master's programmes offered by Maastricht University, such as European Public Affairs; European Studies on Society, Science and Technology; and Public Policy and Human Development, though additional admissions requirements may apply. With your internationally recognised BSc degree, you can also opt to continue your studies at another university in the Netherlands or abroad. Separate brochures are available from the faculty for each of these master's programmes, or you will find more information on our website:

[www.maastrichtuniversity.nl/fhml/masters](http://www.maastrichtuniversity.nl/fhml/masters)

## Career opportunities

The increasing influence of European decision making on the health policies of its member states is resulting in a growing demand for experts able to build bridges between health sciences and national and international policy making. Within this context, it is expected that graduates will find positions at organisations and companies active in the areas of European public health and healthcare. EPH graduates will be qualified for positions such as: International health consultants, Policy advisors, Health information officers, Project managers prevention, Public

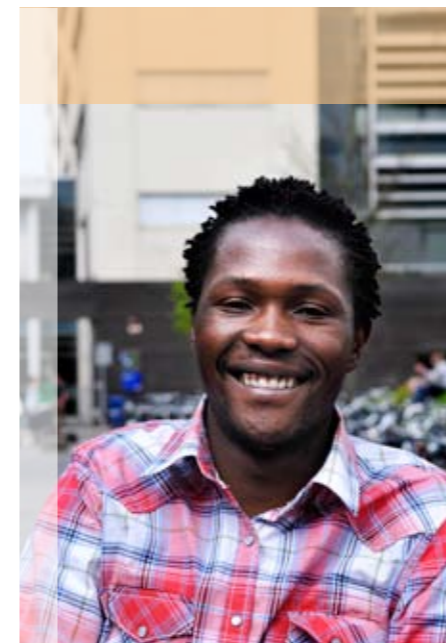
health advocates (NGO non-governmental organisations, for example at the European Public Health Alliance (EPHA) or European Hospital and Healthcare Federation (HOPE)), Staff personnel European affairs, Managers and Research scientists.

Excellent career opportunities will be offered, in particular,

- Regional and/or local institutions with cross-border catchment areas, such as
  - hospitals
  - healthcare insurance companies
  - national environmental organisations
  - Euregional healthcare and welfare agencies
- National and international umbrella organisations, such as
  - institutes for public health and environmental protection
  - patient federations and consumer organisations
  - food safety authorities
  - lawyers and other legal profession agencies in Brussels
- Governmental agencies and organisations, such as
  - Social Affairs and Public Health Ministries
  - national and regional government
- European and supranational institutions, such as
  - the World Health Organisation (WHO)
  - the European Parliament and the European Commission

### An ordinary week of a European public Health student

	Monday	Tuesday	Wednesday	Thursday	Friday
9.00 - 11.00	Tutorial group	Self-study	Lecture: The Euro-patient	Project group	Training English writing skills
11.00 - 13.00	Lecture: European Public Health topics	Self-study	Tutorial group	Project group	Lecture
13.30 - 15.30	Workshop active reading	Self-study	Project group	Library training	Self-study
15.30 - 17.30	Self-study	Self-study	ASDL Training	Lecture	Self-study



### With European Public Health I found my way in Maastricht

"With European Public Health I found my way in Maastricht Through my continued work as human rights defender in my home country Zimbabwe, I managed to get into contact with the Dutch consulate that assisted me to apply for a scholarship in the Netherlands which I did and was fortunately awarded one. The moment of my choice came when I had to choose which institution to study at. Maastricht University and in particular the European Public Health programme caught my eye and satisfied my academic prospects and desires with the Problem Based Learning system, the infrastructure and the mixed nationalities I encounter in my tutorial groups. EPH I regard as a very specialised and inspiring field of

study. EPH is rich in knowledge of organising, planning and implementing for public health delivery and health care systems across Europe and abroad. With the agenda of a new public Health, EPH focuses mostly on health promotion, protection and preservation. For me it is undoubted that the knowledge I gain in my study is critically essential in all developing and developed states. I intend to use this knowledge for the betterment of public health in my country and elsewhere needed."

Mehlu Dube,  
Second-year European Public Health

## Brief description

The bachelor's and continuing master's programmes in Medicine train you to be a basic medical doctor. After completing these programmes you can go on to specialise in general practice, paediatrics or surgery.

Average intake	340 students per year (numerus fixus)
Binding Study Advice	no
Language	Dutch
Duration of the programme	three-year bachelor's and three-year master's programme, full-time

## Tomorrow's doctors

The knowledge and skills of tomorrow's doctors are taking root in Maastricht today. When new graduates leave medical school, the world does not stop changing; new medical problems will arise just as scientific developments continue their march ahead both nationally and globally. Tomorrow's doctors must be able to manage any medical problem – be it well familiar or completely uncharted. Have you got what it takes to be one of tomorrow's doctors? If so, Medicine at Maastricht University may be the right choice for you.

## The educational programme

Year	Block/Cluster	Number of weeks	
1	<b>Emergency Care and Regulatory Systems</b>		
	1.1	Emergencies	7
	1.2	Traumata	6
	1.3	Dyspnoea	6
	1.4	Schock	6
	1.5	Abdomen	7
	1.6	Unconsciousness	7
2	<b>Stages of Life and Diagnostics</b>		
	2.1	Cell Growth	6
	2.2	Pregnancy-Birth-Growth	10
	2.3	Puberty and Adolescence	6
	2.4	Adulthood – Work and Health	6
	2.5	Ageing	6
	2.6	Electives	6
3	<b>Chronic Disorders</b>		
	Abdomen	10	
	Locomotor Apparatus	10	
	Circulation and Lungs	10	
	Psycho-medical Problems and Mental Healthcare	10	

## What is Medicine at Maastricht University?

Being a doctor means giving the best of your knowledge, abilities and person. Maastricht University's Medicine programme will equip you not only with a sound knowledge base, but also with the appropriate medical and inter-personal skills and professional attitude. Your extensive medical knowledge and PBL training will allow you to solve real patient problems and will give you the necessary tools to tackle new problems.

You will gain competence in skills such as taking blood samples, using a stomach pump and giving heart massage. At the same time, you will learn not to lose sight of the patient as a person, and to deal with emotionally difficult situations such as those involving disability and death.

You will work in a multidisciplinary team of health professionals and learn to build positive work relations. You will develop self-knowledge, an eagerness to learn, and modesty. You will also be an active participant in society; open and available to the public. Finally, you will learn to place great value on integrity and dignity in the face of ethical dilemmas involving such issues as euthanasia, cosmetic surgery and more.



## Set-up of the programme

Each year of the bachelor's programme focuses on a central theme. The first year is concentrated on acute disorders and regulatory systems, the second on life phases and diagnostics, and the third on chronic disorders.

During the first two years you will follow theme-specific teaching blocks lasting six to ten weeks. Each block consists of tutorials (and associated independent study) as well as lectures, practical sessions and skills training, all of them geared towards the same theme. Patients' problems are primarily dealt with on a theoretical basis during this time.

The third year differs somewhat in that it is split up into four clusters of ten weeks, each focusing on its own theme. Moreover, hands-on encounters with real patients are combined with tutorials, where preliminary and follow-up discussions about these encounters take place.

### Year 1: Emergency Care and Regulatory Systems

In your first year, you will deepen your knowledge of the body's regulatory systems through the study of first-aid treatment and acute medicine.

The first block 1.1, *Emergencies*, provides a general introduction to the programme and aims to familiarise you with PBL. It focuses on the stabilising mechanisms of the human organism with respect to circulation, consciousness, the respiratory organ, temperature regulation and general

homeostasis. These are all based on the acute medical problems faced by, for example, a patient who presents short of breath, a skateboarder who has been involved in an accident, or a burns victim. You will also learn the basic skills needed for adequate first aid treatment.

In block 1.2, *Traumata*, you will learn how to diagnose as well as provide first aid and further treatment for common injuries such as fractures, poisoning, abdominal traumas, etc. These serve as a starting point from which you will learn more about wound healing, cell division and blood clotting mechanisms.

In block 1.3, *Dyspnoea*, you will learn how to give first aid to someone who is having difficulty breathing, and perform a diagnostic thorax (chest) examination. This will be the starting point for studying the regulation of the body's respiratory system, gas transport and gas exchange.

The aim of block 1.4, *Shock*, is to provide insight into the various types of shock, their associated symptoms and the mechanisms that cause them. At the end of this block you will not only be able to correctly diagnose a person suffering from shock, but also provide the appropriate first aid.

Block 1.5, *Abdomen*, focuses on the structure and function of the abdominal organs and the regulatory mechanisms that may be disturbed by acute abdominal problems. You will be trained in dealing with diagnostic abdominal and gynaecological examinations.



Block 2.1, *Cell Growth*, will focus on different types of cells, their normal growth patterns and possible defects. You will learn about the role of cells in inflammations and cancer, as well as being introduced to the possibilities of molecular medicine.

Block 2.2, *Pregnancy-Birth-Growth*, will deal with all stages of childbirth, from conception and pregnancy to the delivery and care of newborn infants. Each of these topics will consider both normal functioning and specific problems, as will blocks 2.3 (*Puberty and Adolescence*) and 2.4 (*Adulthood – Work and Health*) and block 2.5 (*Ageing*).

The last block, 2.6, is an elective course block, where you can choose from fourteen topics.

### Year 3: Chronic Disorders

Chronic disorders are the focal point of the third year of the programme: the abdomen, locomotor apparatus, circulation and lungs, and psycho-medical problems. You will get hands-on experience with patients in the university hospital outpatient clinics, the local mental healthcare institution, a psycho-medical regional centre, rehabilitation centres and general practices. During some of your patient encounters, you will carry out Critical Appraisals of a Topic (CATs) to help you how to deal with clinical practice in a scientific manner, such as applying for laboratory tests and choosing a certain therapy.

In one such patient encounter at the teaching outpatient clinic of the university hospital, for example, you will (in pairs) examine a patient suffering from a chronic disorder. One student plays the role of doctor, while the other observes. Both subsequently receive feedback from a clinic doctor and must then write a report to be discussed in class. The tutorials take place once a week, with ten students and a tutor. The last hour of the tutorial is set aside for the group to consider in advance the patient encounters scheduled for the following week.

In the tutorials you will also discuss cases relating to health law and ethics relevant to patient encounters, and have several assignments to do. In addition, you will continually monitor a simulation patient suffering from a chronic disease; your role as doctor will include making new appointments and creating a patient file. The encounters will be discussed in peer supervision groups. Finally, you will also be expected to attend lectures, skills training and practical sessions.

## The teaching model

Medicine at Maastricht University is not the programme for students who enjoy a traditional curriculum with packed lecture halls and professors who dispense ready-made knowledge that need only be committed to memory. At Maastricht University, knowledge does not come cut and dried; rather, students construct their own knowledge, individually and in teams, and solve problems by finding and synthesising relevant information. In short, you have entered the world of PBL. To be a successful student in such an environment, you must show initiative, self-direction and discipline, as well as being an active team player. With the guidance of a tutor, you will work in small groups to tackle concrete patient problems. This will involve conducting personal research (independent study) and sharing your findings with the other students in your group, so that you can use your combined knowledge, insights and ideas to arrive at a solution. Below is an example of one such problem.

*Anna is in the sixth week of her pregnancy. One afternoon she gets a twitching pain in her abdomen. When she goes to the toilet, she notices some blood loss and panics. She calls her general practitioner, who advises her to wait and see what happens. However, in the evening the pain gets worse and the blood loss seems to increase. Her husband calls the hospital and the gynaecologist on call advises them to come in. Physical examination confirms an 'ongoing miscarriage'. That night, Anna indeed loses her baby.*

What could have caused the miscarriage? Why wasn't the general practitioner quicker to take action? Which other disorders are accompanied by abdominal pain and blood loss? At which stage of pregnancy is the risk of miscarriage greatest? How do you take care of Anna and her husband?

By working through a variety of problems this way, you will become an efficient problem solver equipped with the necessary skills for gaining access to new knowledge. As a doctor, you will be well equipped to respond to the problems that present themselves in day-to-day medical practice, as well as being able to handle new problems. New viruses, for example, are bound to emerge, such as the H1N1 virus (swine flu), which originated in Mexico in March 2009. At the same time, existing viruses will come to be fought using new methods, such as the recently introduced vaccine against the virus causing cervical cancer. In general, science and technology are developing rapidly, and will continue to do so after your graduation. At Maastricht University you will gain the knowledge you need to respond to these and other new developments.

## Practical skills

From the beginning of the programme, you will be confronted with aspects of real practice. For instance, how do you break the news to Anna that she is having a miscarriage? You will need to explain to her what is happening, comfort her, and give advice. To help you deal with such situations in real life, you can practice communication skills during consultations with simulation patients (healthy persons trained to portray the complaints and symptoms of a certain disorder). How do you examine a pregnant woman like Anna? In the skills lab, you will learn how to perform such examinations by practising on a model. Here, you will also learn how to measure blood pressure, conduct eye examinations, and give injections (using artificial arms or those of your fellow students).



What if Anna had had her baby but it was born with a heart defect? Who makes the decision whether to operate or not – the doctor or the parents? During your studies you will have the opportunity to take part in a forum on health law to examine such ethical issues in depth.

At first, your role in patient encounters will be as an observer only. Your technique will first be practised on models, simulation patients and fellow students, which means that patients do not have to be burdened needlessly. Your role will gradually become more active as you are given increasing responsibility; in the third year, patient encounters will become your focus. You will examine real patients in the teaching outpatient clinic of the academic hospital as well as in GP practices. You will also discuss these patient encounters in your tutorial group both before and after the clinic experience.

This programme is designed in such a way that theory and practice go hand in hand. For example, the curriculum and tutorial group topics are synchronised with skills training sessions, so that you address the same themes at the same time. In other words, when you are solving problems about, say, emergencies, the skills training will focus on resuscitation. That knowledge is offered in a realistic context makes it easier to learn and recall, and more likely to last. This is one of the reasons Maastricht University places such emphasis so early in the curriculum on learning from practical situations.

## Professional attitude

Being a doctor means giving the best of your knowledge, abilities and person. As a doctor you must have a professional attitude, which manifests itself in words and behaviour. Three types of professional behaviour can be distinguished: behaviour related to tasks (e.g., time management); behaviour towards others (e.g., respect, cooperation, assertiveness); and self-behaviour (e.g., coping with one's own emotions as well as feedback from others, self-insight and awareness of one's personal boundaries, ethical values etc.).

## International

Though the Medicine programme at Maastricht University is predominantly taught in Dutch, you will have plenty of opportunities to broaden your horizons: internationalisation is high on the faculty's agenda.

We are living in a global village, and the effects of this manifest themselves in medicine too: immigrants present to their doctors with 'imported diseases'; doctors work in foreign countries, for instance, to help refugees; and many doctors engage in international activities and conferences. In light of this, you will be offered many opportunities to gain international experience (including the possibility of financial assistance), learn medical English, and add international aspects of medicine to your studies in the optional Honours programme International Health. This programme tackles subjects such as 'health systems in other countries', 'specific diseases in developing countries', 'intercultural (non) verbal communication skills', 'health politics in an international context' and 'how war and migration influence refugees' health'.

## Types of examination

Each block is concluded with an examination which may take the form of, for example, an assignment or a presentation.

During the clusters in your third year you will also sit written and oral examinations of clinical and scientific knowledge, professional behaviour, and law and ethics. In addition, you will be examined on your skills, professional behaviour in tutorials, skills training and internships, portfolio (a structured description and analysis of your development), and progress. The latter involves students across all years sitting the same exam simultaneously (four times per year); each year you need to answer more questions correctly in order to pass.



## Broadening your horizons

*"In six years we learn everything we need to know and acquire the skills to become a 'basic doctor', from lung examinations to communication skills and 'bedside manners'. Medicine is incredibly interesting, but I have diverse interests that extend beyond the Netherlands and I'm always looking for more. Fortunately, the Medicine programme at Maastricht University offers opportunities to get more from your education. For instance, you can take part in the optional Honours programme International Health (HP-IH), which enables you to learn about medicine in a world without borders. Through the HP-IH, I've learned how to deal with cultural differences and I now know a great deal more about healthcare in*

*different countries. But I want to see and experience for myself the things that I've learned. That's why I'm planning an elective in Kenya, where I will work in a hospital for a while. But before that, I'm going to take a course in Swahili. I think it will be awesome when on morning rounds in the Kenyan hospital I'm able to talk to patients in their own language and ask them how they're feeling. I like to daydream about that when I'm burying my nose in my books sitting in my room on a drizzly Sunday morning in Maastricht."*

**Anne Maayke Spreeuwers, The Netherlands**  
Medical student

## The life of an average student

An average week in the life of an average first-year medical student is shown below.

	Monday	Tuesday	Wednesday	Thursday	Friday
8.30-09.00	Self-study	Self-study	Self-study	Presentation Visualisation in endoscopy	Communication and Reflection- (CORE) (Skillslab)
9.00-10.00			Presentation Animal testing research		
10.00-10.30			Practical Pharmacokinetics Health Topics		
10.30-11.00	Practical Tractus digestivus histology	Practical Microbiology	Self-study		
11.00 - 12.00			Tutorial		
12.00-13.00	Presentation Academic assignment	Self-study	Self-study	Tutorial training	
13.30 - 14.00	Practical in dissecting room			Self-study	
14.00 - 15.00					Abdominal anatomy
15.00- 15.30	Practical in dissecting room	Self-study	Self-study	Self-study	
15.30 - 16.00					
16.00 - 17.00					
17.00 - 17.30	Abdominal anatomy	Self-study	Self-study	Self-study	

## After the bachelor's

### Master's programme / Specialist training

After your bachelor's degree you can continue on to the three-year master's programme at Maastricht University, the FHML. The focus of the master's programme is on participation in healthcare and research. Your master's degree entitles you to call yourself a 'basic doctor'. It also means that you are eligible to apply for a place in a specialty training programme, such as general practice (three years), psychiatry (five years), paediatrics (six years), surgery (six years), sports medicine (four years) or occupational medicine (four years). Basic doctors with the ambition to join Doctors Without Borders can enter the programme in tropical medicine (2.5 years).

## Career prospects

Studies among graduates have shown that almost all of them found paid work within one year of graduating. In the light of recent developments in the medical community and in healthcare, the indications are that the opportunities in the national and international labour markets for doctors will only improve.





## Health Sciences

### In brief

Health Sciences is a broad-based programme focusing on health, the factors that affect health and the measures we can take to promote good health. The subject is approached from a range of angles, including the biological, behavioural, therapeutic, preventive and social angles. The programme offers many specialisations.

<b>Average intake</b>	approx. 300 students per year
<b>Binding study advice</b>	no
<b>Language</b>	Dutch And English (second half of second year)
<b>Duration</b>	three years full-time
<b>Follow-up programme</b>	several English-taught master's programme

### Slimming can be tricky

When Yarima, a Yanomami woman from inland Venezuela, left the rainforest for the first time in her life, she could hardly believe her eyes. She was completely stunned by the white people's strange attitudes to food.

'What would you like to eat?' She was asked. 'Are you hungry?' The questions had no meaning for her. They could just as easily have been asking her if she enjoyed breathing. Contrary to what many people think, a rainforest is anything but a paradise. Where Yarima lives, you eat whatever you can find, whenever you happen find it. If not, someone else will take it (or the food will leave of its own accord). Permanent hunger is humanity's natural condition and consequently, it is hardly surprising that evolution has given us a brain that immediately starts rejoicing when we see food. Fat and sugar in particular, is extremely mouth-watering. Since the days that sugars and fats were in extremely short supply, every opportunity to replenish the stocks has been more than welcome. Although we haven't inherited food shortages from our forefathers, unfortunately our brains have. This is what makes slimming so difficult; our systems revolt. A human body is built to do a lot on small quantities of food, but our way of life involves doing little on large quantities of food. The outcome is predictable; we exercise too little and eat too much and a serious diabetes epidemic is looming.

## What is Health Sciences?

The modern lifestyle and our inability to adapt to it play an important role in the problems we are facing today. Apart from physical and mental problems, these include social, ecological and economic problems. For example, we are living longer than ever before, but this is leading to more age-related diseases and problems associated with an ageing population. There is increasing demand for care for senior citizens, but there are fewer people available to provide this care. As more and more people are crammed into larger towns and cities, we are becoming increasingly vulnerable to infection by micro-organisms and viruses. To tackle problems like these effectively, we need knowledge and ingenuity. And this is exactly what the programme in Health Sciences can provide. The programme has a universal and multidisciplinary character in which you approach health from a whole range of relevant scientific angles. A complexity of sciences converge and interact, all revolving around the themes of health and disease. For example, the study of obesity does not stop at the workings of the metabolic system and the influence of heredity, psyche and social environment. You also look into matters such as the accessibility of the health services, the impact of fashion, advertising and public information, regulation in the food industry and the effect of income. This multidisciplinary and cohesive approach makes Health Sciences a perfect example of a broad-based programme. And particularly here at Maastricht University, which offers the broadest and most comprehensive health sciences programme in Europe. The programme has an outstanding national and international reputation and provides excellent opportunities for follow-up programmes in the Netherlands and abroad and first-rate career prospects.

## Main themes

Three main themes recur throughout the bachelor's programme.

### Health and disease

You contemplate the concept of health. Is being healthy the same as not being ill? How do you decide whether someone is ill or healthy? What are the most common physical and mental disorders in the Netherlands and beyond? How is the Dutch healthcare system organised?

### Health factors

You then study the factors that affect health. Particular factors usually interact to a certain degree. These may include heredity, upbringing, welfare level, lifestyle and the organisation of the healthcare system. For the purposes of the programme, these aspects are divided into biological, behavioural, therapeutic and social factors.

## Interventions

Once you know which factors affect health, you are able to put measures in place. How can we encourage people to adopt a healthy lifestyle? Wouldn't it be better to invest the money we spend on healthcare, on measures designed to prevent people from becoming ill? How can you curb industrial incapacity and what is the best way to help people return to work after a period of illness? The knowledge you acquire during the programme will enable you to answer questions like these.

## Programme structure

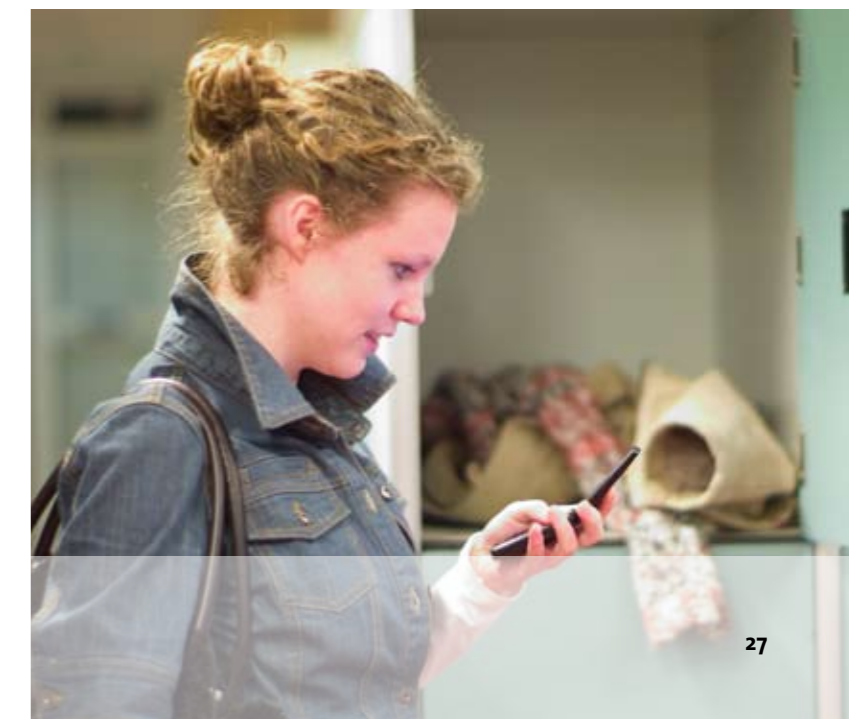
All students follow the same courses during the first year, so that they can acquire a broad-based foundation for the Health Sciences programme. You explore all four tracks in enough depth to enable them to make well-considered choices by the end of the year.

From the second year onwards, you choose and concentrate on one of the following four tracks:

- Policy, Management and Evaluation of Health Care
- Biology and Health
- Mental Health Sciences
- Prevention and Health

At the start of the third year, you also take two minors from one of the other tracks or at another faculty (in Maastricht or elsewhere).

To conclude the programme, in the third year you do an internship and write a paper; the bachelor's thesis. On obtaining your bachelor's degree you will have earned yourself the internationally recognised title *Bachelor of Science* (BSc). This title will qualify you (or even entitle you to preferential treatment) for a large number of master's programmes in the Netherlands and abroad.





## Programme schedule

As with other programmes at Maastricht University, you are not taught specific subjects, but rather study different themes during what are known as *course periods*. The theme for each course period involves various relevant scientific disciplines. The first year consists of six, partly parallel course periods lasting eight or four weeks. The first course provides an introduction to the Health Sciences programme and the basic subjects that recur later on in the programme. You also follow a number of courses to teach you how to get the best out of Problem-Based Learning (PBL). In subsequent course periods, you get to grips with a number of core subjects, including biological, behavioural, therapeutic and social factors, healthcare innovation and policy and healthcare organisation. You also learn about scientific research and how to set up a research project. Much of the literature is in English. At the end of the first academic year, the faculty issues you with (non-binding) study advice. The student advisers offer you guidance and support throughout your studies.

In the second and third years, you are taught in course periods lasting four or eight weeks, this time focusing on your chosen specialisation. Alongside theoretical knowledge, you are taught practical skills such as processing statistical data and compiling written and verbal presentations of research findings. This is obviously in addition to a basic medical knowledge. You also carry out 'field investigations' at the type of organisations you will encounter during the course of your studies. In the second

half of the second year, all courses are taught in English in what is referred to as the *International Classroom*. This is a period in which students from other countries also follow programmes at Maastricht University.

The first two course periods of the third year are reserved for minors. In the fourth and fifth periods, you are required to do an internship and make a start on your bachelor's thesis, which you write on the basis of a piece of practical research (existing or new). You may also choose to go abroad for this internship or thesis period. The sixth and final course period is intended for rounding off your thesis, thereby concluding your bachelor's programme.

## Teaching and assessment methods

During your first year, you are taught according to the 'classic' PBL system. You work on the assignments you are given in small tutorial groups, touching upon all the relevant disciplines and using any skills you already have at your disposal.

From the second year onwards, you experience other forms of teaching. For example, you are required to compile an 'academic skills dossier', which is used to assess your personal competences. The dossier will give you the chance to teach one or more of these skills after you have finished studying.

Every course period finishes with an assessment. This might be a written exam, an essay, a portfolio and/or a presentation. Your final grade for the course is not only based on this assessment, but also on mid-term reports and your attendance during tutorials and skills training lessons. The bachelor's thesis concludes your third year. After this, you will be able to call yourself a *Bachelor of Science* (BSc), which is an internationally recognised qualification for the follow-up: the master's programme. Alternatively, you could look for a job immediately.

## Curriculum for the first year

1.1	Healthy Living: Illness Health	8 weeks
1.2a	Health and Illness: Do we care?	8 weeks
1.2b	The Healthy Body	8 weeks
1.3	Academic Skills 1	4 weeks
1.4a	Psychology and Health	8 weeks
1.4b	Experimentation and Interpretation	8 weeks
1.5a	An Introduction to the Tracks	8 weeks
1.5b	The State of Care	8 weeks
1.6	Academic Skills 2	4 weeks

## Four tracks

At the end of the first year you opt for one of the four tracks. These tracks build on the knowledge you acquired during your first year. Although the content of the four tracks is very different, the disciplines clearly intersect. For instance, in the Prevention and Health track, behavioural science plays a far greater role than in the Biology and Health track. But insight from the behavioural science sector is often indispensable in the translation of biological research into an effective course of treatment. The multidisciplinary character of all four tracks means that the door to each of the other tracks stays well and truly open. After all, the foremost aim of Health Sciences is to bring medical and social disciplines closer together in order to shed more light on previously vague connections and remove the partitions between particular fields and organisations. This is also the reason for providing broad access to the master's programme for Health Sciences graduates.

The track you choose will obviously depend on your personal interests. You spend the third year building on your knowledge by taking minors, an internship and a thesis. Faculty study advisers are always on hand to help you make the right choice.

The next section comprises a description of each of the tracks. For more information, please visit our website [www.maastrichtuniversity.nl/fhml/bachelors](http://www.maastrichtuniversity.nl/fhml/bachelors)

## Policy, Management and Evaluation of Health Care

How much healthcare can you buy for 1? These days, approximately 10 cents of every euro spent in the Netherlands is spent on one form of care or another, and this amount is expected to rise in the years to come. For many years now, the healthcare sector has been one of the country's major employers. Almost a million people earn their living in the sector, and this number is expected to keep rising.

But apart from being big, the sector is also extremely complex. Many players operate in the healthcare sector. Alongside the government and numerous government-run

organisations, operators in the sector include care providers (hospitals, nursing and care homes, GP practices, etc.), the clients (individual patients, patient organisations, client councils, etc.), healthcare insurers and countless commercial and non-profit organisations focusing on research and development of drugs and innovation in care products. Together, they form the complex (and increasingly internationally regulated) network that we call 'the healthcare service'.

Despite the obvious differences between these parties, they all agree about one thing: healthcare must be organised as efficiently as possible. And it must be of the highest quality. The service must be efficient if it is to meet the growing demands (an ageing population throughout western Europe) with limited resources (funding and staffing). On the other hand, there must be room for care innovations. If effective, innovations could help to secure adequate access to healthcare for all. They could also safeguard the quality and freedom of choice within a system that remains affordable.

During the Policy, Management and Evaluation of Health Care track, you learn how to get to the bottom of these complex connections. Attention is focused on both the day-to-day care practices and the underlying structures. You address questions such as: What constitutes good healthcare? What rights do patients have? What is the effect of a certain intervention? Is there a better and more cost-effective way of organising healthcare? How can we organise care for the chronically ill, a growing group in our society?

To answer questions like these, you need a great deal of theoretical and practical knowledge. Knowledge of theories and models relating to care, and to management and policy – but also knowledge of information provision, economics, regulations and administration. Knowledge of current national and international developments that affect the way healthcare is organised. This broad basis will qualify you for countless policy and management positions within the healthcare sector.

**As a graduate specialising in Policy, Management and Evaluation of Health Care, you will:**

- be able to analyse the care sector from a range of theoretical perspectives;
- understand the various levels of decision-making in the sector;

## Broad vision

*"The Dutch are obsessed with health. More than 80% of the population claims to lead a healthy life. And yet one in every three Dutch people smokes and half of the population does not exercise as much as is generally recommended. So there is still a lot to be gained in the health stakes. As a health scientist, you will be able to do your bit. The programme teaches you which factors affect health and how you can influence these factors to improve health or prevent disease. You also learn how to use research to acquire new and pioneering knowledge, which might lead to a new strategy for tackling health problems. Some students will be more interested in the mental or biomedical aspects of health, others may focus on health-related behaviour and yet others may be fascinated by the thought of modernising healthcare policy or conceiving innovations for the healthcare*

*system. As a bachelor student in the Health Sciences programme, you learn a little about all these aspects. This allows you to develop a broad vision of health sciences, which will complement your specialised knowledge in a chosen field. Academics who can see beyond the horizons of their own specialist area are perfectly equipped to work within the complex and multifaceted field we call healthcare. If you are interested in studying and solving health-related problems and placing them in broader context, then the bachelor's programme in Health Sciences is definitely for you."*

**Prof. Dr. Marleen Baak,**  
Health Sciences programme coordinator



- have developed your powers of abstraction to allow you to fathom complex problems;
- have the management skills needed to develop and introduce concrete interventions.

**You will be qualified to work as:**

- a policy officer in the healthcare sector;
- an organisation expert;
- a quality assurance manager;
- a manager of a care institution;
- a policy implementation coordinator;
- a departmental head;
- a research scientist in the healthcare sector.

## Biology and Health

Let us assume that health is the outcome of a battle. There are three players on the battlefield. The first one is your own biological system, which tries to keep you in good health, whatever it takes. Then there are the enemies that come from outside: micro-organisms, viruses, toxins, too many to mention. And, finally, you have the third party: you ... or at least your behaviour. By leading a healthy life and not exposing yourself to danger, you are allowing your biological system to keep you healthy. But most of us are far from perfect. We tend to eat too much and exercise too little. As a result, we consume more energy than we expend. We store this excess energy in our subcutaneous fat cells. This is easy to explain from the evolutionary point of view. In the past, when we still roamed the savannah, we had to be careful with our scarce energy sources. But as this no longer applies to most of us in western society, the subcutaneous fat stores themselves have become the main worry.

In the Biology and Health track, the biological factors are offset against the various main players in the battle for health. Much attention is focused on how nutrition, exercise and the environment affect the development of diseases. You learn how biological systems and structures try to keep the body healthy, and how various external factors can impair and unsettle bodily functions. This requires both a basic biological knowledge as well as knowledge of epidemiology, behavioural science and medicine. You explore issues including: Is the incidence of certain health problems rising or dropping in today's population? What are the reasons and what are the implications for this? What can you do to prevent certain problems and what is the best way to study them? You also master research techniques, become acquainted with the ethical aspects of biological research and learn to statistically analyse, interpret and report research findings.

**As a graduate specialising in Biology and Health, you will:**

- understand the biological processes and systems in healthy and sick people;
- be able to identify the environmental factors affecting the way human biological systems perform;
- have the practical skills needed to carry out measurements in various human; biological systems and the environmental factors affecting these systems.

**You will be qualified to work as:**

- a policy officer in nutrition, exercise and health, or environment and health with a local health authority or municipal/provincial authorities;
- a nutritional adviser;
- an editor of a scientific journal;
- a clinical research scientist.

## Mental Health Sciences

If you fall awkwardly, you break a leg; if you catch a virus, you get the flu; if you neglect a flesh wound, it becomes infected. By what makes some people panic for no reason? Mental disorders are often more difficult to diagnose, explain and treat than physical problems. There is no doubt that this is partly due to the sheer complexity of our nervous system. In abstract terms, the human brain is by far the most complex thing known to the human brain. And that is without the methodology problems. It is tricky enough trying to follow the routes taken by certain poisons, but toxins have a molecular structure, which is more than can be said for a poisonous thought...?

According to modern opinion, the mind or psyche is the result of brain processes and therefore impalpable. Even if we could identify and understand every single detail of the neural processes, there would still be things we could not explain. Environmental factors and the power to control your own thoughts also play an important role. These factors usually affect each other, which makes something of a mockery of our current distinction between different mental health disciplines. In practice, health officers and theoreticians also find themselves involved in making diagnoses and providing help.

The basic premise of the Mental Health Sciences track is to offer a general academic programme that trains people to combine theory and practice. You study the biological, psychological and sociocultural aspects of psychopathology. The socio-cultural aspects include mood disorders such as depression, eating disorders such as anorexia nervosa, mental disorders such as schizophrenia and anxiety disorders such as phobias.

Mental Health Sciences is a field study that focuses on the actual social field of mental healthcare, and which approaches mental health from a range of scientific disciplines. You study material from the behavioural sciences (social psychology, personality studies and developmental psychology), the biomedical sciences (for example biology, psychiatry, psychophysiology and neurology) and the socio-cultural sciences (such as sociology). The practical lessons and skills training teach you how to make a diagnosis, compile a treatment plan and how to treat patients. If you take the right courses, this track will make you eligible for the master's in Mental Health, and subsequently the postgraduate specialisation allowing you to register as a fully qualified therapist.

**As a graduate specialising in Mental Health Sciences, you will:**

- have knowledge of and basic skills in carrying out research, and you will have mastered the interview techniques needed to identify abnormal (and normal) behaviour;
- be equipped to approach mental healthcare from a biological, psychological and sociological perspective.

**You will be qualified to work as a:**

- psychosocial worker;
- prevention officer;
- healthcare policy officer;
- crisis intervention expert;



- psychological adviser;
- university lecturer in behavioural and social sciences;
- psychological researcher;
- socio-scientific researcher.

## Prevention and Health

Although we nearly all agree that good health and growing old are among the most important things in life, very few of us actually have the resolve to do much about it. We are, however, quite happy to raise our glasses to a long and healthy life. Cheers!

Research has shown that that 40% of premature deaths can be put down to individual lifestyle choices, so the possibilities are endless if only we could influence people's behaviour. But changing people's habits and behaviour is by no means simple. You can tell people that smoking is bad for them, but it won't make them stop. The majority of information leaflets are never read, and people's surroundings often form another obstacle. Many people are simply not capable of leading a healthy life. Fortunately, modern insight and methods from psychology, policy studies and communication science provide us with instruments for influencing behaviour. Training courses, interactive information via the internet and modification of

## Good choice

"I chose the programme in Health Sciences because I had always been interested in health, but didn't know exactly which direction I wanted to take. In the first year of the programme, you approach health from various angles, which makes it easier to choose a specific track in the second year. I now know that I want to continue studying Policy, Management and Evaluation of Health Care. Before I came to Maastricht, I didn't know what to expect from Problem-Based Learning. But now I've got to grips with the system, I wouldn't want it any other way. You get more involved with the material, you learn to work in a group and it helps you to make friends. And

of course Maastricht is a great city! I have digs here and I've joined a sports club, even though my parents only live a thirty-minute train ride away. I spent a year sitting on various committees and I am now on the committee of the MSV Santé student society. This will probably take up a lot of my time in the second year, but it will teach me a lot and it's great fun! I would like to go abroad in my third year. So as you see, I've really made myself at home here!"

**Desie Dircks**  
First-year Health Sciences student



## No regrets

"After having taken a long, hard look at all the programmes on offer in the Netherlands, I finally decided to study Health Sciences. I wanted to do this in Maastricht. The teaching method in Maastricht, Problem-Based Learning, particularly appealed to me. After the first year, I had to choose a specialist track. I chose Biology and Health because I had always been very interested in nutrition and exercise. And I'm loving it! There's a lot of variation between independent study, lectures and practical lessons. I particularly like the practicals. Next

year, I'm hoping to take some of my courses in Australia. I think you learn a lot from going abroad for part of your programme. In my free time, I like socialising with the friends I've made at university or doing some form of sport at the university sports club. So far I have absolutely no regrets about choosing Maastricht University."

Lisa Hoving  
Second-year Health Sciences student



## Career prospects

Healthcare is currently one of the most rapidly growing employment sectors in the Netherlands. As a result of increasing longevity, this growth is expected to accelerate over the next few decades. Alongside this, many companies are starting to offer health and healthcare-based packages to their employees as part of the conditions of service. Scientific research and education are fuelling these developments. Career prospects for health science graduates are therefore extremely good and seem set to remain so for the years to come.

Most health scientists find work as a policy officer, manager (usually in a health-related organisation) or research scientist. A policy officer uses his or her knowledge of the

field to prepare, advise on and implement organisational policy, usually commissioned by the management or executive board. A manager heads a department and is responsible for the quality and progress of the work within (a part of) an organisation. A research scientist sets up and carries out research and makes reports of the findings. Scientific research may take place in a laboratory, but it can also involve field work whereby you interview, test or collect measurements from test subjects. Researchers also study relevant scientific literature, consult with colleagues and attend conferences and symposia. Although most researchers are attached to a university or research institute, they are also becoming increasingly common in the business sector.

the physical and social surroundings (at school, for example) would appear to be effective. Using this knowledge and these techniques, interventions can be set up to facilitate healthier behaviour.

Health officers try to use information and other measures to alert people to the benefits of a healthier lifestyle. Their work has three pillars:

- to prevent people from becoming ill;
- to identify the early signs of disease, thereby enabling early treatment e.g. breast cancer;
- to teach people who are ill to cope with their illness so that they can live as full a life as possible e.g. diabetes patients.

To work out the best way of encouraging people to live more healthily, health officers must first decide exactly which types of behaviour are causing ill health and why people prefer this unhealthy behaviour. They can then use this information to set up an intervention designed to change unhealthy behaviour. After carrying out sound scientific research, they will be able to see whether the intervention has indeed had the desired effect.

The Prevention and Health track is taught using realistic problems encountered by academically trained health officers. The programme covers various aspects involved in influencing people's behaviour (problem analysis, behavioural determinants, devising, implementing and evaluating an intervention).

### During the Prevention and Health track, you learn:

- which factors determine whether people behave in a healthy or an unhealthy way (psychology, sociology);
- which techniques can be used to persuade people to behave more healthily (psychology, communication science, policy studies);
- how to make a scientifically sound evaluation of an intervention.

### You will be qualified to work as a:

- coordinator of patient information in a hospital;
- research scientist;
- prevention officer;
- public or environmental health officer.

## After the bachelor's programme

### Master's programme

A bachelor's degree will qualify you for one of the various master's programmes in the Faculty of Health, Medicine and Life Sciences. But because 'Bachelor of Science' (BSc) is an internationally recognised title, you may also opt to take a master's programme at another university, either in the Netherlands or abroad. You may be required to take an entrance exam to check that you satisfy the relevant criteria.

The Faculty of Health, Medicine and Life Sciences in Maastricht offers the following master's programmes to Health Sciences students:

- Master of Science in Public Health, with four specialisations:
  - Healthcare Policy, Innovation and Management
  - Health Education and Promotion
  - Work and Health
  - Epidemiology
- Master of Science in Mental Health Sciences
- Master of Science in Physical Activity and Health, with two specialisations:
  - Biology of Human Performance and Health
  - Sports and Physical Activity and Interventions
- Research Master in Health Sciences (extra admission requirements apply)
- Health Food Innovation Management (extra admission requirements apply)
- Research Master in Nutrition and Metabolism (extra admission requirements apply)
- Global Health (expected to start in September 2010)

Separate brochures on each of these master's programmes are available from the Faculty Office. You will also find more information on our website at

[www.maastrichtuniversity.nl/fhml/masters](http://www.maastrichtuniversity.nl/fhml/masters)



## Admissions Biomedical Sciences, European Public Health and Health Sciences

Prospective students wishing to follow a programme at Maastricht University will need to meet a number of conditions. Some candidates will be automatically admitted to the programme of their choice; in other instances the university will first need to assess whether the candidates come into consideration for admission. The following diplomas are required for admission for Biomedical Sciences, European Public Health and Health Sciences.

### Dutch diploma

- For EPH and HS: VWO diploma.
- HBO propedeuse.
- Students with an 'old-style' VWO diploma ('gymnasium', 'atheneum' or 'HBS') can apply to the Admissions Board.

### For Biomedical Sciences:

- VWO diploma Natural and Sciences with physics
- VWO diploma Technology and Sciences with biology
- HBO propedeuse can apply to the Board of Admission.
- Students with an 'old-style' VWO-diploma ('gymnasium', 'atheneum' or 'HBS') can apply to the Board of Admission

### Preparatory mathematics course

The faculty MICC (Maastricht ICT Competence Centre) organises a variety of courses and exams for candidates who do not possess the necessary knowledge of mathematics. More information about these courses and exams is given in the special publication *Cursussen en toetsen voor wiskundedeficiënten* ('Courses and exams for students with inadequate mathematical qualifications'). This publication can be downloaded from our website ([www.maastrichtuniversity.nl/fhml](http://www.maastrichtuniversity.nl/fhml)); copies can also be requested from the secretariat of the Mathematics department, phone +31 43 388 3494.

### Colloquium doctum

Prospective students aged 21 or over who do not possess the required prior education can also be admitted to the programmes via a special admissions exam, the colloquium doctum. Candidates wishing to take this exam must apply before 15 March in the year in which they wish to begin their studies. More information is available by calling +31 43 3885716.

### Non-Dutch diplomas

- All diplomas that are equivalent to a Dutch VWO diploma. More information is available at [www.maastrichtuniversity.nl](http://www.maastrichtuniversity.nl)
- For German students is a German brochure available with admissions requirement.
- For more information please visit our website [www.maastrichtuniversity.nl/fhml/bachelors](http://www.maastrichtuniversity.nl/fhml/bachelors)

## Application and registration

### Application and registration

Information on the application and registration procedure can be found on [www.maastrichtuniversity.nl](http://www.maastrichtuniversity.nl) under 'Prospective students'.

### Tuition Fees

The tuition fees for EU/EEA students are set by the Minister of Education at the end of each calendar year. For the 2009/10 academic year, tuition fees for bachelor's students from EU/EEA countries are € 1,620 for students under the age of 30, and € 2,058 for those over 30. These fees are subject to an annual rise of 2 to 3%; this provides a good indication of the fees for these students in 2010/11.

For non-EU/EEA bachelor's students tuition fees are determined three years in advance. For 2010/11 and 2011/12 they are set at € 8,500. Please consult [www.maastrichtuniversity.nl](http://www.maastrichtuniversity.nl) for other fees and the latest information.

## Contact information Biomedical Sciences, European Public Health and Health Sciences

### Visitors adresse:

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## Admissions Medicine

### Dutch diploma

- VWO education with profiles 'Natuur en Gezondheid' (including Physics) or 'Natuur en Techniek' (including Biology).
- Applicants who have an HBO propedeuse or an HBO degree, or have a university propedeuse or a university degree must demonstrate adequate knowledge, at VWO level, of physics, chemistry, biology and mathematics B.

Note: 'Old-style' VWO diplomas no longer give access to medical education.

For more information on admission requirements, please visit: [www.vsnu.nl](http://www.vsnu.nl)

### Numerus Fixus

All medical faculties offer a limited number of places to students who want to study medicine. The number of places is determined annually. Currently, the number of places offered at Maastricht University is 341. Because every year there are more applicants than available places, the available places are allocated by means of a national lottery procedure.

The IB Groep performs the weighted lottery. You can go to their website, [www.ib-groep.nl](http://www.ib-groep.nl) for details about the procedure. The outcome of the lottery is announced around the middle of July.

### Non-Dutch diploma

Students who have a diploma from an institution outside the Netherlands must meet the following requirements to qualify for participation in the lottery:

- A diploma that is equivalent to a Dutch VWO diploma.
- A certain level of mathematics, biology, physics, chemistry (for more information, please visit [www.maastrichtuniversity.nl](http://www.maastrichtuniversity.nl))
- Proof of an adequate command of the Dutch language.

## Application and registration

Information about the application and registration procedure can be found on our website: [www.maastrichtuniversity.nl](http://www.maastrichtuniversity.nl)

## Contact information

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[www.maastrichtuniversity.nl](http://www.maastrichtuniversity.nl)

Based in Europe, focused on the world. Maastricht University is a stimulating environment. Where research and teaching are complementary. Where innovation is our focus. Where talent can flourish. A truly student oriented research university.

## Contact information

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