Our impact on Maastricht, Europe and the world

2 Expertise: academic impact
- How do you avoid promoting people to the level of their incompetence?
- Why do you impose the deadline for students?
- Why do you offer an environmental course?
- How do legislation and policies affect border regions?
- How do you ensure education?

Environment: physical and cultural impact
- How do you avoid promoting people to the level of their incompetence?
- How do you improve the treatment for obesity?
- Why do you offer an environmental course?
- How do you ensure education?

Economy: impact on the economy and health
- How do you promote sustainability in the real-asset sector?
- How do you promote entrepreneurship in students?
- How do you keep healthcare affordable?
- How do you add value as a UM graduate?

Four Brightlands campuses
- Brightlands Chemelot Campus, Sittard-Geleen
- Brightlands Maastricht Health Campus
- Brightlands Campus Greenport, Venlo
- Brightlands Smart Services Campus, Heerlen

For more information, please contact the UM Marketing & Communications office:
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Website: www.maastrichtuniversity.nl
Our impact on Maastricht, Europe and the world

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Maastricht University (UM) is a dynamic, international research university in the Netherlands. With approximately 17,000 students and 4,300 employees, our community is still growing. UM has quickly built up a solid reputation thanks to its high-quality, multidisciplinary research and study programmes. The university is particularly renowned for its innovative education model, European character and strong focus on social engagement and impact.

The international orientation of our university goes hand in hand with deep regional roots. UM places great value on its strong links with Limburg and the Euregion, nurturing partnerships with many regional companies, knowledge institutes and government agencies. Together, we aim to play a leading role in the sustainable economic development of the region.

In short, Maastricht University is firmly anchored in the midst of society. In this brochure you can read about our impact on areas ranging from the economy and health to culture and the physical environment.
On our academic community of students, staff and alumni –

Knowledge moves society forward
How do you avoid promoting people to the level of their incompetence?
“My research shows that you can avoid the ‘Peter principle’ by choosing the right type of performance measures. Promoting the person who runs the fastest in their current job, when the next role requires different competences, might mean promoting the wrong person. Which implies the right people are passed over and will probably leave the firm.

In the coming years we’ll investigate how far the design of performance-measurement processes actually contributes to the loss of talent. I argue that women are more likely than men to be passed over for a promotion. The biggest problem for accounting firms is that they lose a lot of their women – the leaking pipeline.

These days, half of the workforce is female, but performance-measurement systems have typically been created by men for men. So I’ll look at the leaking pipeline from a performance-measurement perspective and show that differences between men and women have to be taken into account.”

Isabella Grabner
Associate professor of Accounting at the School of Business and Economics
Students 16,950

1 October 2017

10,096

6,854
Total degrees awarded 5,499

2016/2017

Bachelor’s degrees
BA 2,611

Master’s degrees
MA 2,888
How do you improve the treatment for obesity?
“Obesity accounts for about one fifth of healthcare costs in the Netherlands. It’s often viewed as a medical problem, with the psychological processes that cause people to eat too much being neglected.

Our group discovered that many cognitive processes are involved in overeating. It’s a habit associated with all kinds of cues, such as the time of day or your favourite television series; these are Pavlovian processes. In our lab we found that these ‘acquired appetites’ can be suppressed by repeatedly exposing obese people to the intake-predicting cues but without the reward of eating.

To translate our knowledge on the cognitive processes of overeating to healthcare professionals, we published an iBook *Leren om niet te eten* (‘Learning not to eat’). It describes a number of interventions we’ve developed that make use of these and other insights. The number of obesity patients will only increase in the future, both in the Netherlands and abroad, so there’s a clear need to disseminate effective treatment methods. That’s exactly what we’re doing.”

---

**Anita Jansen**  
Professor of Experimental Clinical Psychology at the Faculty of Psychology and Neuroscience
6%
From outside Europe (40% more than in 2013)
94% From Europe

47% From the Netherlands

UM students living in South Limburg: 53.8% (including peripheral Belgian municipalities)

Maastricht
Why study in an international classroom?
Welcome to the International Classroom! At Maastricht University, students from all over the world learn together in small, diverse groups by solving problems which often correspond to real problems in society. This is a cornerstone of our internationalisation strategy, and goes well beyond just recruiting international students and staff. It also includes preparing students for the global labour market, organising activities to help staff and students develop their intercultural communication skills, and much more.

“\textit{I never felt the urge to stick exclusively with my fellow Cypriots at the university,}” says Costas Georgiades, master’s student of Globalisation and Law. “\textit{When you go abroad, you have to maximise the experience for yourself, which means exposing yourself to other cultures and people.} The International Classroom creates a space for you to connect with different realities and perspectives on both an academic and a social level. You hear perspectives on solving problems that you’d never imagined before. For example, what human rights means to me can differ from what it means to a German, or someone from China. Unconsciously, you develop skills that I think will be very beneficial for a future career.”
How do legislation and policies affect border regions?
When you live at the crossroads of the Dutch, German and Belgian borders, it’s not uncommon to cross those borders to visit a foreign city, work or live there. But certain rules can have an impact – positive or negative – on the daily lives of border residents. This impact is mapped in the annual ‘Cross-border impact assessment’ produced by Maastricht University’s Institute for Transnational and Euregional Cross-border Cooperation and Mobility (ITEM).

ITEM is an expertise centre for research, consulting, knowledge exchange and training in the field of cross-border mobility and cooperation. It is an interdisciplinary institute initiated by UM in cooperation with Zuyd University of Applied Sciences, the NEIMED centre of expertise on population decline, the (Dutch) Province of Limburg, the City of Maastricht and the Meuse-Rhine Euregion.

The annual report generates academic insights into themes involving cross-border mobility and cooperation. It is a valuable tool and resource for policymakers, with the topics submitted by partners such as border information points, regional authorities, Euregions and trade unions. Topics include the introduction of the toll for German motorways and the Belgian traveller’s ID. In 2017, ITEM’s cross-border impact assessment was recognised by the European Commission as an example of good practice.
Total professors: 489

2017

387 (79%)
102 (21%)
Academic publications 4,449

Normalised Citation Impact: 1.53 (Web of Science)
Publications produced in collaboration with international peers: 45.8%

Dissertations 335

2017 + 36%
How do you innovate education?
“Maastricht University is renowned for its education. We use Problem-Based Learning, with a strong emphasis on self-directed learning and the development of 21st century skills, such as problem solving, teamwork, communication and professionalism. Our research group has demonstrated that PBL has all kinds of beneficial effects on learning and preparing students for the labour market.

We’ve also developed new theoretical models on instructional design and the assessment of student achievement. These models drive educational innovation both within the university and beyond. They’re characterised by an ongoing cycle in which educational research fuels innovation, and innovation in turn fuels research.

Our work has attracted many people to Maastricht to learn how to be better educators or to become educational researchers. We’ve produced many leaders in education and created an infrastructure to help schools all over the world, in both rich and very poor countries, to improve their educational methods. All of this is based on the fundamental notion that education and educational change should be evidence-based and research-informed.”

Cees van der Vleuten
Professor of Education at the Faculty of Health, Medicine and Life Sciences
Alumni 64,731

2017

Patents: 60
Submitted patent applications: 10
Licences obtained: 6
Spin-offs: 6

Expertise: academic impact
Incoming exchange students: 1,430

Outgoing exchange students: 2,952

Students of executive education: 1,416
Executive master’s programmes for professionals

Students of entrepreneurial education: 1,908
Intracurricular education focusing on entrepreneurship
“Maastricht University was founded exactly one year after the closure of Limburg’s last coal mine. Although one involved heavy manual labour and the other intellectual work, they had one thing in common: both were of crucial importance to the region. The university became a flywheel just as the mines had been; naturally attracting other institutes, people and commerce. Not only the Limburg economy benefited from the establishment of the university; it was also a boon to the identity and pride of the region.”

Marcia Luyten
Writer, journalist, presenter and UM graduate, Faculty of Arts and Social Sciences
From our presence in the city to our impact on social issues —

We’re here to stay.
Why UM is housed in monumental buildings in the city centre
Ever since it was founded, with 50 medical students in the former Jesuit monastery at the Tongersestraat 53, large parts of Maastricht University have been housed in the old city centre. Over the years the university has acquired and renovated dozens of buildings. But preserving and maintaining monumental buildings is only financially possible if they are put to good use. Old monasteries, for example, have proven very useful for Problem-Based Learning, the educational approach that sets UM apart from other universities.

These days more than 40 percent of UM’s floor space can be found in the Maastricht city centre. Almost all these buildings are subject to the monumentenzorg, the law regulating the conservation of historical buildings. Parts of the Zwingelput 4, which was built against the old city wall and today houses University College Maastricht, date from as far back as the 15th century.

The university plays an important role in passing down culture to the next generation, which includes preserving the city’s cultural heritage. In this way, UM makes an important contribution to the sustainable management of monuments and historical buildings in the old city of Maastricht.
Number of historical UM buildings in the Maastricht city centre

Excluding the buildings on the Tapijn barracks site (18,221 m² gross floor area, of which 7,242 m² will be demolished and rebuilt)

28

Total gross floor area

90,985 m²

Investments in buildings and equipment (2016)
€28,510,000
How do you address the growing demand for meat?
One of the most well-publicised examples in recent years of science being translated into reality was the artificial hamburger by Professor Mark Post. In 2013 the world’s first lab-grown burger was cooked and tasted before an international group of journalists in London. It was assembled from 10,000 small strips of muscle, individually grown in the Maastricht University labs.

Currently, 18% of human-induced greenhouse gas emissions are produced by livestock. With the global demand for meat predicted to rise significantly by 2050, traditional meat production methods will not be able to keep up – not without grave consequences. Cultured beef is intended as a sustainable alternative. As Professor Post put it in his Ted talk: “A meat-eater with a bicycle is much more environmentally unfriendly than a vegetarian with a Hummer.”

Professor Post is co-founder and CSO of Mosa Meat, the company working to produce the beef, streamline the process and address the regulatory aspects. He hopes the product will be commercially available within three years.
What does “living a good life” mean in the digital society?
“What happens to privacy in a digital world? What happens to solidarity in an age of personalised medicine? Where does the public interest lie when powerful corporations like Google and Apple start getting involved in healthcare? These are the types of questions I study as a philosopher of technology.

My research aims to identify current and future societal challenges raised by digitalisation and datafication, and to develop normative responses that can help guide policymakers, medical researchers and practitioners. The big question here is how to safeguard public values – like accessibility, inclusivity and democratic control – in a world where scientific, civic and economic interactions are increasingly mediated by digital technologies.

Grappling with these challenges requires interdisciplinary collaboration, early on, between data scientists, medical researchers and scholars across the social sciences and humanities. Maastricht University’s Institute for Data Science is trying to facilitate this, and I’m pleased to be part of this community.”

Tamar Sharon
Assistant professor of Philosophy at the Faculty of Arts and Social Sciences
How do you contribute to sustainable knowledge development from a distance?
MUNDO is the Maastricht University Centre for International Cooperation in Academic Development. Through projects with institutions in low- and medium-income countries, MUNDO helps to strengthen its partners’ educational and research capacities.

One such project focuses on the development of expertise in international law at Universitas Padjadjaran (UNPAD) in Indonesia. During the four-year project, UM academics have been passing on their knowledge of international law to colleagues in Indonesia, and groups from UNPAD took part in further training at Maastricht University and the diplomatic training centre Clingendael, one of the project partners. Further, Problem-Based Learning has been implemented at the UNPAD law faculty. The new system met with approval from the students and the rector, who is familiar with the Maastricht educational approach and would like to see it implemented throughout the university.

Academics from UNPAD are also being trained in their English publication skills and their advisory capacities. The aim is to help the department live up to its ambition of becoming a key knowledge centre in the field of international law for both the Indonesian government and the Association of Southeast Asian Nations (ASEAN).
“The city of Maastricht is very privileged to have this university. Not only because it helps to preserve our old city centre, employs thousands of people and attracts international students who add flavour to Maastricht, but also because it’s a really open institution. By connecting with the local community, UM is deeply rooted in the region.”

Annemarie Penn-te Strake
Mayor of Maastricht
Economy: impact on the economy and health

On UM’s contribution to the economy and healthcare –

Because we care
How do you promote sustainability in the real-asset sector?
What started with a journal article on green buildings by two Maastricht scholars has since led to a unique collaboration between the world’s largest pension funds and academics. GRESB, a company that assesses the sustainability performance of real-estate and infrastructure portfolios and assets worldwide, was established in 2009.

It has since become the global measurement standard in the real-estate investment market, with its growing demand for more sustainable, greener and healthier buildings and infrastructure. Leading institutional investors not only rely on GRESB’s analytical tools to measure the environmental, social and governance (ESG) performance of real assets; they also use them to improve the sustainability performance of their investment portfolios, engage with managers and prepare for increasingly rigorous ESG obligations.

The UM academics involved with GRESB – professors Piet Eichholtz and Rob Bauer and associate professor Nils Kok – have since stepped back from the company. “But it was awesome to create this business”, says Bauer. “It was a good combination of solid academic research, the guts of large pension funds in our network and an entrepreneurial spirit at Maastricht University.”
### Expenditure 2016 (€K)

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td>66%</td>
<td>259,213</td>
</tr>
<tr>
<td>Depreciation</td>
<td>6%</td>
<td>24,210</td>
</tr>
<tr>
<td>Housing</td>
<td>6%</td>
<td>22,284</td>
</tr>
<tr>
<td>Other costs</td>
<td>22%</td>
<td>85,843</td>
</tr>
<tr>
<td><strong>Total expenditure</strong></td>
<td></td>
<td><strong>391,550</strong></td>
</tr>
</tbody>
</table>

### Revenue 2016 (€K)

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>56%</td>
<td>222,668</td>
</tr>
<tr>
<td>Tuition and exam fees</td>
<td>9%</td>
<td>36,998</td>
</tr>
<tr>
<td>Third-party funding *</td>
<td>24%</td>
<td>93,929</td>
</tr>
<tr>
<td>Other revenue</td>
<td>11%</td>
<td>44,414</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td></td>
<td><strong>398,009</strong></td>
</tr>
</tbody>
</table>
**Third-party funding** (€K)

- Contract education: 22%
- Contract research**: 78%

Total: **93,929**

**Contract research funding** (€K)

- Companies: 11%
- NWO/KNAW: 23%
- Government (national/international), non-profit (national/international) and collection box: 66%

Total: **73,614**
How do you plant the seed of entrepreneurship in students?
Come up with a new product and write a business case for it. This was the assignment given to Marloes Martens and her fellow students in the Master in Health Food Innovation Management, taught in Venlo. They came up with a new type of pasta, made from the most nutritious part of the oat grain: the bran. The project whet Martens’s appetite, and instead of doing a six-month internship with a company, she was allowed to focus on developing her idea. “The response was so positive I decided to give it a go.”

Since graduating in July 2017, Martens has been working tirelessly to develop and launch the oat pasta under her company Oatelli. “There’s more to it than I thought and I’m doing seven different jobs at once: development, marketing, sales, you name it.” She has now made contact with a professional producer, and hopes the product will be on the shelves of smaller shops by later 2018.

“Without this master’s programme the entrepreneur in me may have been awakened at some point, because I never choose the easiest path, but UM definitely inspired me. The knowledge and experience I gained during the programme feed well into what I’m doing now.”

---

**Marloes Martens**
Graduate of Health Food Innovation Management and founder of Oatelli
How do you keep healthcare affordable?
In the MERLN Institute, under the direction of the enterprising professor Clemens van Blitterswijk, researchers are studying how damaged tissues and organs can be repaired by means of regenerative medicine. This involves the development of “smart” biomaterials that stimulate tissue repair using the patient’s own stem cells.

Professor Pamela Habibovic specialises in the development of synthetic materials that prompt the patient’s own body to make new bone. More than 30,000 people have already been treated through a spin-off company using a previously developed material that fosters the regeneration of bone tissue. “The dream is that people will no longer need a new hip or heart valve, but rather that the tissue repairs itself by way of a temporary implant or an injection. We want to find affordable solutions for both the elderly and children. It’s inspiring to work on this together with biologists, engineers, chemists and mathematicians.”

In collaboration with researchers from Eindhoven and Utrecht, in 2017 MERLN was awarded a grant worth €18.8 million from the Gravitation programme of the Netherlands Organisation for Scientific Research (NWO) for the further development of intelligent biomaterials. Professor Habibovic is one of the six heads of the research programme, called Materials-Driven Regeneration.
## Gross production 2016 (€K)

Total value of goods produced and services provided

<table>
<thead>
<tr>
<th>Category</th>
<th>Value (€K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>375,427</td>
</tr>
<tr>
<td>Secondary</td>
<td>377,302</td>
</tr>
<tr>
<td>Students</td>
<td>412,118</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,164,847</strong></td>
</tr>
</tbody>
</table>

Direct: all main activities (teaching and research) at UM itself and by its suppliers  
Secondary: investments and expenditure by employees  
Students: expenditure by students

Panteia, a Dutch research bureau, has been commissioned to investigate the university's current economic footprint. The calculations are based on information from UM’s annual financial statements as well as data from the EU’s statistical agency EUROSTAT and the World Input-Output Database (WIOD).
### Gross added value in 2016 (€K)

The value of all goods produced and services provided minus the value of goods and services used to produce/provide them for the city of Maastricht and the Euregion + North Limburg.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>289,000</td>
</tr>
<tr>
<td>Secondary</td>
<td>165,029</td>
</tr>
<tr>
<td>Students</td>
<td>169,860</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>623,889</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Direct</th>
<th>Secondary</th>
<th>Students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Euregion</td>
<td>303,832</td>
<td>8,321</td>
<td>13,541</td>
<td><strong>325,694</strong></td>
</tr>
<tr>
<td>In Maastricht</td>
<td>290,467</td>
<td>4,454</td>
<td>2,666</td>
<td><strong>297,587</strong></td>
</tr>
</tbody>
</table>
How do you add value as a UM graduate?
“I come from this region, so it was only natural to set up my company here after finishing Health Sciences. In retrospect, that was a great decision. We employ people from 16 countries; the only other place in the Netherlands where that would have been possible is in Amsterdam. And with our international ambitions, having a head office literally on the border with Germany is a plus.

We produce washcloths for the everyday bathing of bedridden patients and an application aid for putting on and taking off compression stockings and tights. If you’re healthy and well, you probably won’t have heard of us. But when it matters, our simple tools have great added value for patients, old people and their carers. Their feedback on our products possibly makes me even prouder than the fact that we’re the market leader.

More than 25 years after graduating, the knowledge from my study programme is of course out of date, but I use the skills that Problem-Based Learning taught me every day. Unlike at other universities, in Maastricht there’s no chance of sneaking around anonymously for four years. I see the same in the six UM alumni I employ. Their way of approaching things and presenting themselves really sets them apart.”

Erik Joosten
Graduate of Health Sciences and CEO of Arion Group

Unlike at other universities, in Maastricht there’s no chance of sneaking around anonymously for four years.
The Panteia research bureau investigated the university’s impact on employment. This overview shows the number of people receiving a salary in 2016 (not FTEs).

Direct: UM employees
Indirect: people employed thanks to UM expenditure
Students: people employed thanks to UM students’ expenditure
<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>International (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic staff</strong></td>
<td>1,394</td>
<td>39%</td>
</tr>
<tr>
<td><strong>PhD candidates</strong></td>
<td>763</td>
<td></td>
</tr>
<tr>
<td><strong>Administrative and support staff</strong></td>
<td>1,511</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,668</strong></td>
<td></td>
</tr>
</tbody>
</table>
“Maastricht University is an important partner in the economic policy of the Province of Limburg, one of whose aims is to nurture the knowledge economy. The university’s international staff and students help to make Limburg the most international province in the Netherlands. And the Brightlands campuses are a nice example of how UM contributes to the development of the province on many fronts, from the economy to healthcare. Together with the Maastricht academic hospital, UM is one of the driving forces of the Limburg economy.”

Theo Bovens
King’s Commissioner, Province of Limburg
Open innovation community
Brightlands is an open innovation community in a global context, connecting four campuses in the province of Limburg: in Maastricht, Heerlen, Sittard-Geleen and Venlo. The campuses provide entrepreneurs, scientists and students state-of-the-art facilities to support development, education, innovation and growth.

Strengthening Limburg’s economy and knowledge infrastructure
Together with key partners, such as the financial services provider APG, DSM and the Maastricht University Medical Centre+, and with robust support from the Province, Maastricht University (UM) is working to strengthen Limburg’s economy and knowledge infrastructure in a sustainable manner. UM is a shareholder, and expressly strives to translate innovative research and teaching activities on the campuses into new applications for trade and industry.

Driven by worldwide social challenges and transitions
Naturally, there are close links between all four Brightlands campuses, and together they enable Limburg to serve as an innovation region where researchers and entrepreneurs take on the major challenges in the areas of materials, health, food and smart services.
One community

282 companies

12,324 jobs

8,764 students
Four areas of expertise

Brightlands Chemelot Campus
Smart materials and sustainable manufacturing

Brightlands Maastricht Health Campus
Regenerative and precision medicine, innovative diagnostics

Brightlands Campus Greenport Venlo
Healthy and safe nutrition, future farming and bio-economy

Brightlands Smart Services Campus
Data science and smart services
Brightlands Chemelot Campus, Sittard-Geleen

Location
The Chemelot Campus is a unique chemical and materials community that fosters accelerated business growth through the open exchange of ideas. One of the most sustainable chemical sites in Europe, it can house startups to large industrial firms.

Focus
Innovation in smart materials and sustainable manufacturing
The Brightlands Chemelot Campus in Sittard-Geleen focuses on the development of smart materials (for the biomedical, automotive and packaging industries) and sustainable chemical production processes (renewable, efficient and biobased). The aim is to build an international reputation as an open innovation ecosystem for top talent and industry.

The campus hosts both research and teaching activities. It is home to the Aachen-Maastricht Institute for Biobased Materials (AMIBM) as well as the Maastricht Science Programme (MSP), the country’s first liberal arts programme in the natural sciences. In the 2018 Keuzegids guide to higher education, the MSP was ranked in first place out of all broad-based bachelor’s programmes in the Netherlands.

AMIBM: Working towards a non-petrol-based economy

The Aachen-Maastricht Institute for Biobased Materials (AMIBM), located on the Brightlands Chemelot Campus, is a cross-border partnership between Maastricht University, RWTH Aachen and Fraunhofer IME. Its vision is to provide the missing link between fundamental and applied research on the one hand and the market on the other. AMIBM has succeeded in bringing together biologists, chemists, engineers and medical practitioners from almost 20 countries, attracted by the prospect of working towards a non-petrol-based economy in this dynamic location. The institute’s motto: ‘from plant to implant’.

AMIBM takes a unique approach that encompasses the entire biobased materials value chain, from raw materials (feedstock) and polymers (materials) to the end products derived from them (applications) as well as sustainability evaluations of the whole value chain. For example, research is being conducted on the production of wound plasters using stinging nettles and the development of materials using deep-sea bacteria taken from the waste of mechanically peeled shrimp.
Brightlands Maastricht Health Campus

Location
In Randwyck, the university’s groups on health, medicine, life sciences, psychology and neuroscience come together to create a knowledge-intensive ecosystem, intertwined with the MUMC+ academic hospital. This is one of the world’s leading locations for medical and biomedical research, with top-notch scanning facilities and incubators. It is also UM’s ‘valorisation campus’.

Focus
Medicine and health sciences, from molecular genetics, molecular imaging, toxicology and neurosciences to human kinetics, epidemiology, health sciences and social medicine
The Brightlands Maastricht Health Campus covers the entire process in the development of innovations in the health and life sciences. With its world-class imaging facilities, it is becoming a hotspot in the creation of ecosystems for imaging, regenerative medicine and innovative diagnostics.

The campus is home to an array of UM institutes and graduate schools with strong research reputations, including CARIM and NUTRIM, and trains large numbers of students in the fields of medicine, health, psychology and life sciences.

MaCSBio: The holistic approach of systems biology

Launched in 2015, the Maastricht Centre for Systems Biology (MaCSBio) pursues cutting-edge research in the interdisciplinary field of systems biology. This new, holistic approach combines biology, computational modelling and mathematics to create innovative models. The ultimate goal is to develop virtual versions of biological systems, which should lead to new insights and eventually predictions about the behaviour of such systems.

Research at MaCSBio focuses on multiscale modelling, organised into two complementary research lines that address areas of great importance to society: Systems Medicine of Chronic Diseases and Computational Biology of Neural and Genetic Systems. At UM, we believe the future of medical research lies at the interface of mathematics and biology. Our recently established two-year research master’s programme in Systems Biology teaches students how to model biological systems mathematically, and thus to better understand the underlying mechanisms of life.
Brightlands Campus
Greenport, Venlo

Location
The campus is located in Venlo, whose agri-food business is one of the most productive, sustainable and profitable in the world.

Focus
Healthy nutrition, plant breeding and cultivation, alternative raw materials and food sources
On the Brightlands Campus Greenport in Venlo, everything revolves around healthy nutrition. Innovators from the business sector, science and education work together here on innovations in the areas of healthy food, plant breeding and cultivation, alternative raw materials and food sources.

The campus is currently experiencing rapid growth, with increasing numbers of entrepreneurs and research institutes establishing themselves in and around the Villa Flora and the Innovatoren. The campus is already home to three UM research institutes, two master’s programmes and the top-ranked bachelor’s programme in the Netherlands (according to the latest Keuzegids guide to higher education): University College Venlo.

**University College Venlo: entrepreneurial spirit**

In the liberal arts programme at UCV, students explore food, nutrition and health from an interdisciplinary perspective. They design their own curriculum by choosing from a broad range of courses in the social sciences (e.g. psychology, sociology, economics, health management, public health and law) and life sciences (e.g. biology, chemistry, informatics, physiology and genetics).

The programme was launched in 2015, with the first graduates set to finish in September 2018. They will be able to enrol in a master’s programme such as the two programmes offered in Venlo. Alternatively, they will be qualified to work in food marketing at companies such as Nestlé or in policymaking at the World Health Organization.

UCV also taps into students’ entrepreneurial spirit by emphasising innovation and the translation of knowledge into marketable ideas, which will be helpful for those aiming to start up a company.
Brightlands Smart Services Campus, Heerlen

Location
This campus combines an academic and business ecosystem with labs focusing on innovation and expertise, all in a single strategic location. It offers the latest R&D and knowledge infrastructures, on-campus education, research-based business support and business development services.

Focus
Data science and smart services
The Brightlands Smart Services Campus in Heerlen houses companies, knowledge institutes and startups that have an interest in smart service innovations, and talented students who aspire to challenging careers. The campus is undergoing rapid development.

Take the project Techruption, in which a new community of large and small companies, organisations, startups and academic institutes are jointly working on technological innovations in blockchain and artificial intelligence. The campus also hosts the Business Intelligence and Smart Services (BISS) institute and a UM master's degree of the same name.

**BISS: We want more!**

The Business Intelligence and Smart Services Institute works, together with other knowledge institutions, on outstanding fundamental and applied research and facilitates co-creation between professionals, researchers and students. It also provides talent development programmes for both students and professionals. BISS is active in three areas of expertise: data ecosystems, data analytics, and decisions and impact. The focus is on developing innovative services with a socioeconomic impact.

BISS has built up a group of enthusiastic and dedicated researchers in different disciplines and established a thriving ecosystem with both for-profit and non-profit organisations. One of its multidisciplinary research programmes is the Deep Solar project, which uses deep-learning models to study solar panels and their characteristics. Faced with an evolving society and challenges such as climate change, creating sustainable models for managing resources and predicting the required energy loads is becoming ever more important.
“Brightlands is a strong incubator for innovation and internationalisation in the region. It plays an important role in helping startups recruit potential customers and attract capital from abroad. The collaboration in South Limburg is quite unique. The way the campuses cooperate with one another, the combination of high-tech with digital – that’s what makes this region special and also opens up opportunities. Because it’s through cross-fertilisation that innovation arises.”

HRH Prince Constantijn, special envoy for StartupDelta2020
Source: www.brightlands.com / www.zuidlimburg.nl
Our impact on Maastricht, Europe and the world

1 Expertise: academic impact

- How do you avoid promoting people to the level of their incompetence? 18
- Why do you impose the threshold for obesity? 22
- How do legislation and policies affect border regions? 26
- How do you secure education? 20

2 Environment: physical and natural world impact

- How do you address the growing demand for meat? 32
- What does "living a good life" mean in the digital society? 34
- How do you contribute to sustainable knowledge development from a distance? 36

3 Economy: impact on the economy and health

- How do you promote sustainability in the real-asset sector? 42
- How do you direct the need of entrepreneurship towards students? 46
- How do you keep healthcare affordable? 48
- How do you add value as a UM graduate? 52

4 Four Brightlands campuses

- Brightlands Chemelot Campus, Sittard-Geleen 62
- Brightlands Maastricht Health Campus 64
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Our impact on Maastricht, Europe and the world

1. Expertise: academic impact
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   - How do you improve the local food culture? p.10
   - Why is it so important to foster innovation? p.14
   - How do legislation and policies affect border regions? p.16
   - How do you ensure education? p.20

2. Environment: physical and naturalworld impact
   - How do you avoid promoting people to the level of their incompetence? p.22
   - How do you improve the local food culture? p.26
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   - What does “living a good life” mean in the digital society? p.36
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3. Economy: impact on the economy and health
   - How do you promote sustainability in the real-asset sector? p.42
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4. Four Brightlands campuses
   - Brightlands Chemelot Campus, Sittard-Geleen
   - Brightlands Maastricht Health Campus
   - Brightlands Campus Greenport, Venlo
   - Brightlands Smart Services Campus, Heerlen