UNIVERSITÉ DE NAMUR

MASTER

BIOMEDICAL SCIENCES

Fundamental and Preclinical Research

- Biotechnology and Bioindustries
- Cancers and Metabolism
- Molecular and Cellular Pathobiology

Clinical Research

Biomedical Data Management

Skin Health and Care

www.unamur.be

Master in Biomedical Sciences

The University of Namur offers five tracks within its Master in Biomedical Sciences, taught entirely in English.

Through life sciences research, the fundamental and preclinical programmes develop understanding of human health at the molecular and cellular levels, disease mechanisms, and the development of new models, therapeutics, biomarkers, and diagnostic tests.

Areas of specialisation in clinical research are also offered, leading to careers such as clinical research associate, clinical project manager, clinical trials assistant or data manager.

These professions involve setting up and monitoring clinical trials, ensuring the quality of data gathered, and compliance with applicable regulations, as well as the management of data processing.

Our 120-credit Masters are spread over two years, and the choice of a track will ensure your expertise in one of the following areas:

Fundamental and Preclinical Research	**at the University of Namur** Building on the key strengths of the research conducted within the NARILIS research institute. Three specialisations are proposed * Biotechnology and Bioindustries * Cancers and Metabolism * Molecular and Cellular Pathobiology
Clinical Research	**at the University of Namur – a joint degree with the University of Liège**
Biomedical Data Management	**at the University of Liège – a joint degree with the University of Namur**
The European Master of Sciences in Skin Health and Care, an Erasmus Mundus Joint Master	**a double degree from the University of Piemonte Orientale (Italy) and either the University of Namur or the Miguel Hernández University (Spain)**

Our 60-credit Master lasts one year and provides a basic grounding in Biomedical Sciences. At the University of Namur.

Your objectives

- To lead **scientific projects** which aim for better understanding of the molecular and cellular mechanisms in physiological and pathological conditions: to analyse data, interpret the results and share discoveries with the worldwide scientific community;
- To master every stage of the **development of new therapies**, in particular biotechnology or cell-related therapies;
- To develop **biomarkers** related to different therapies, for example using genetics and pharmacogenomics;
- To lead and monitor **preclinical or clinical trials** and to be responsible for the administrative management of testing;
- To ensure the **production quality** of biotechnological and biosimilar products, cell therapies (stem cells), gene therapies, tissue engineering, medical devices (implants, drug delivery devices...) and so on;
- To monitor the quality, safety and efficiency of a **drug** before it is placed on the market.

UNIVERSITÉ DE NAMUR

Focus on Fundamental and Preclinical Research and Clinical Research

Fundamental, preclinical and clinical research form an intrinsic part of the process of uncovering the basis of diseases and developing new therapies.

At UNamur, you have the opportunity to choose your area of expertise from these specialist fields.

The 120-credit Master in Biomedical Sciences with **a focus on fundamental and preclinical research** focuses your learning on the laboratory phase of research into new disease-causing mechanisms, as well as products and techniques before they are tested on humans. It is based on a solid grounding in fundamental research, biopharmaceutics, biotechnology and preclinical studies. Students can choose one main orientation among three tracks:

- Biotechnology and Bioindustries
- Cancers and Metabolic diseases
- Molecular and Cellular Pathobiology

The 120-credit Master in Biomedical Sciences with **a focus on clinical research** is based around the research carried out on human beings. This Master is offered by UNamur but also relies on the expertise of the University of Liège, which provides many courses related to this professional focus. Thus, courses are taught at both universities.

Whichever focus you choose, your degree programme will boast a significant professional dimension thanks to visits to companies and hospitals, practical projects and a 3 to 4-month **internship** in a laboratory, hospital or company **in Belgium or abroad.**

You will also have the opportunity to write a **thesis** based on 10 months personal project, which you will carry out in a university research group or a clinical setting, from design to completion.

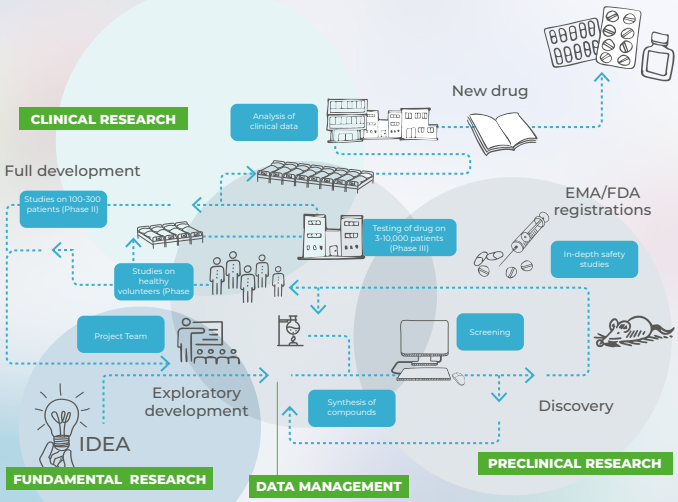
WHY SHOULD I CHOOSE THIS PROGRAMME?

* Unique programmes in the Wallonia-Brussels Federation with strong links to the biopharmaceutical and biotechnological industries;
* Belgian and international specialists as professors;
* Integrated practical sessions;
* Specialised studies in the field of drug development, including basic and translational research, biotechnology (scale-up and 3D reconstruction), quality assurance and regulatory affairs;
* Rapid integration into the world of work, thanks to company and hospital visits and a placement;
* An excellent command of field-based English;
* An official qualification as a bio-technician in handling laboratory animals and managing experiments, in addition to your Masters degree;
* Experience abroad;
* Many elective courses in cutting-edge fields;
* Access to a third study cycle: PhD (Doctorate) in Biomedical sciences.

Fore more information, please visit: www.unamur.be/medecine/etudes/biomed

PROGRAMME STRUCTURE

	ECTS
CORE CURRICULUM	**15**
Research Practice Training • Approaches to Career Development in Biomedical Sciences • Bioethics • Statistics Applied to Biomedical Sciences • Preclinical Drug Development	
ORIENTATION MODULES	**40**
The students select minimum 15 ECTS in one track and have access to the other tracks to complete their programme	
FUNDAMENTAL AND PRECLINICAL RESEARCH	At the University of Namur
BIOTECHNOLOGY & BIOINDUSTRIES	
Biotechnology: Principles and Scale-Up • Biopharmaceuticals • Quality Assurance: GMP, GCP, GLP and Auditing • Molecular & Clinical Pharmacology • Drug and Society • Protein Structure and Function • Proteins in the Early Secretory Pathway: Homeostasis and Quality Control • Molecular Diagnostic • Pharmaco-Economy and Health Technology Assessment • Vaccinology, Immunotherapy • Pharmacovigilance • Molecular Virology • Project Management: Development of Biomarkers	
CANCERS AND METABOLIC DISEASES	
Current Topics in Molecular Cell Biology • Organelle Dysfunction at the Basis of Diseases • Advanced Techniques of Cell and Molecular Biology • Stem Cells and Differentiation • Cell Models • Intracellular Trafficking under Normal and Pathological Conditions • Bacterial Genetics and Evolution • Glycobiology • Bacterial Cell Biology • Molecular Mechanisms of Neurological Diseases • Basic Research project conception • Genetic and Cell Therapy	
MOLECULAR AND CELLULAR PATHOBIOLOGY	
Cancer • Overcoming Multidrug Resistance in Cancer: Molecular Targets and Innovations • Cancer Biomarkers: Unlocking Diagnostics and Therapeutic Strategies • Anticancer Therapies • Hot Topics in Microbiomes, Diabetes and Cardiovascular Diseases • Comparative Pathophysiology • Inflammation • Host Pathogen Interactions • Biobanks, Personalized Medicine	
COMPLEMENTARY TRAINING OPTIONS	
Training in Animal Experimentation at Technician and Master Level • Human Resources Management • Forensic Sciences • Advanced English (Level B2+) • Interdisciplinary Program in Healthcare Innovation • Biomarkers and Surrogate Markers in Clinical Dermatology Trials • Meta-analysis of Interventional Studies • Clinical Project Management • Refresher Course in Dutch (level B1)	
CLINICAL RESEARCH	Both at the University of Namur and at the University of Liège
Patient and Researcher Interplay • Medical Psychology • Regulatory Framework for (Bio)Safety and Biorisk Management in Clinical Research • Intellectual Property and Patent • Writing and Reading skills • Biomarkers and Surrogate Markers in Clinical Research • Pathophysiology • Evidence Based Medicine • Clinical trials • Bioinformatic Skills • Clinical Trials • Critical Analysis of Clinical Trials • Clinical Research Associate Training	
The students may select 3 elective courses from the Biotechnology and Bioindustries or Complementary Training tracks	
PROFESSIONAL INTERNSHIP	**30**
INTRODUCTION TO SCIENTIFIC RESEARCH AND THESIS	**35**
TOTAL	**120**



Focus on Biomedical Data Management

Offered by ULiège, the 120-credit Master in Biomedical Sciences with professional focus in Biomedical Data Management also benefits from the renowned expertise in data management of UNamur's Faculty of Computer Science. This focus will lead to a specialisation in medical data management.

PROGRAMME STRUCTURE

	ECTS
CORE SUBJECTS	**22**
Communication • Cellular and Molecular Biology of Disease • Genomics • Biostatistics • Introduction to Oncology • Biorisk Management in Research and Development • Scientific English • Bioinformatics • Clinical Chemistry • Introduction to Translational Research • Multivariate Statistical Analysis	
ADVANCED SUBJECTS	**10**
Immunology and Vaccinology • Cardiovascular Biology • Neurosciences • Nutrition and Gastrointestinal Tract Biology • Pharmacology and Toxicology	
ELECTIVE MODULES	**10**
Oncology and Immunology • Preclinical Neurosciences • Clinical Neurosciences • Gastrointestinal Tract from Bench to Bedside • Advanced Concepts in Drug Therapy and Development • Clinical Aspects of Drug Therapy • Mass Spectrometry Technologies in Biomedical Research • Medical Records and Hospital Information • Legislation and the Legal Aspects of Hospitals and Medicine • Advanced Radiobiology and Radiation Protection • Advanced Biological Analysis	2 courses
PROFESSIONAL FOCUS	**30**
BIOMEDICAL DATA MANAGEMENT	Both at the University of Namur and at the University of Liège
Introduction to Programming • Operating Systems • Algorithmics • Data Analyses • Advanced Programming • Data Management within the Clinical and Reporting Processes • Patient Records • Clinical Data Management and Biobank	
PROFESSIONAL INTERNSHIP	**17**
INTRODUCTION TO SCIENTIFIC RESEARCH AND THESIS	**31**
TOTAL	**120**

Fore more information, please visit:
www.unamur.be/medecine/etudes/biomed

WHY SHOULD I CHOOSE THIS PROGRAMME?

* A door towards bioinformatics, which became central to the research fields;
* Shortage in the skilled trades;
* Synergies with UNamur's Faculty of Computer Science in terms of both teaching and research;
* Reinforcement and development of research projects within the Namur Research Institute for Life (Narilis) at UNamur and the Interdisciplinary Biomedical Research Centre (GIGA) at ULiège.

The European Master of Science in Skin Health and Care

UNamur is one of the European partner universities which together offer the European Master of Science in Skin Health and Care (EMOTION).

This 120-credit Master, limited to only 30 students, will entitle you to a **double degree** from the University of Piemonte Orientale (Italy) and one of its partner institutions: the University of Namur or the Miguel Hernández University (Spain).

You will have the opportunity to experience teaching at these universities, all experts in their field, whilst gaining international experience and learning about other ways of teaching and about the cultures of the partner countries.

EMOTION's mission is to educate the future generation of translational scientists in the skin health & care sector.

This Master comprises two semesters in Italy and one semester in either Belgium or Spain.

In the first year, held in Italy, courses in Anatomy, Physiology, Pharmacology, Dermatology, Regulatory Affairs, Pharmaceutical Technology and Medicinal Chemistry are taught together with workshops on Project Management, Drug Discovery, and the Features of the Pharmaceutical and Cosmetic Sectors.

In the first semester of the second year, you are invited to choose whether you wish to continue your studies in Preclinical Dermato-Cosmetic and Pharmaceutical Research (in Spain) or in Clinical Development (at the University of Namur):

CLINICAL DEVELOPMENT	At the University of Namur
Clinical Trials • Quality Assurance: GMP, GCP, GLP and Auditing • Bioethics • Critical Analysis of Clinical Trials • Clinical Research Associate Training • Clinical Project Management • Meta-analysis of Clinical Trials • Biomarkers and Surrogate Markers in Clinical Dermatology Trials	

You will also attend workshops intended to introduce you to the world of industry and provide you with transferable and soft skills (including an introduction to the markets of cosmetic products, dermatological drugs and medical devices, discovery of hot topics in dermatology in 21st century and know-how for entrepreneurship).

Finally, in the second semester of the last year, you will have the opportunity to carry out work on your thesis in industry or in academia at one of the three partner universities or anywhere else in the world.

For more information concerning this Master as well as related Erasmus Mundus bursaries, please visit: www.emotion-master.eu

EMOTION

AN ERASMUS MUNDUS JOINT MASTER

Career opportunities

Biomedical Sciences can lead to many different careers, mainly in the area of research, either basic or applied. This research is carried out at universities, university hospitals, government agencies (e.g. public health institutes, drug and health product agencies, health policy bodies...) and in laboratories in the biopharmaceutical, biotechnological, nutrition or cosmetics sector.

Basic biomedical research aims to understand, via an experimental approach, how the human being works at the level of cells and molecules. It comprises many fields (cancerology, neurobiology, metabolic diseases, genetics, stem cells...) and its conclusions may one day lead to clinical applications.

Applied biomedical research puts into practice the advances made in basic research. Its objective is to improve the way conditions are diagnosed and treated. For example, it might aim to design new vaccines or new diagnostic tests. It also paves the way for careers in the pharmaceutical or cosmetics industries.

Clinical research management involves the setting up and coordination of clinical trials in hospitals, clinical research organisations and the biopharmaceutical industry, and can lead to the following careers:

- **clinical trials assistant** - assists investigating doctors in carrying out clinical trials;
- **clinical project manager** - executes the clinical trial development plan, in accordance with regulations and deadlines;
- **clinical research associate** - sets up and monitors the clinical trials in a particular project, whilst ensuring the quality of the data gathered in compliance with regulations;
- **data manager** - responsible for the processing, validation, and management of data collected in the context of clinical trials, as well as data supporting diagnostic decision-making in personalized medicine.

As well as research, **the clinical sector** offers a large number of other career paths: toxicology, nutrition, clinical biology, bioengineering, medical imaging... as well as medical data management.

Biomedical Sciences can also lead to **many other opportunities** in the fields of research and development, production, insurance and quality control, regulatory affairs, intellectual property, consultancy, medical representation, teaching, and so on.

Importantly, the Master in Biomedical Sciences allows you to further your studies with a third cycle (**Doctorate in Biomedical Sciences**) or to take an interuniversity certificate in Health Product Regulatory Affairs, offered jointly by UNamur and ULiège.

UNIVERSITÉ DE NAMUR

www.knok.be

Conditions for admission to the Master in Biomedical Sciences

MASTER 120 IN BIOMEDICAL SCIENCES, FOCUS ON FUNDAMENTAL AND PRECLINICAL RESEARCH
Biotechnology and Bioindustries / Cancers and Metabolic Diseases / Molecular and Cellular Pathobiology
MASTER 120 IN BIOMEDICAL SCIENCES, FOCUS ON IN CLINICAL RESEARCH
MASTER 60 IN BIOMEDICAL SCIENCES

Students with a first degree obtained in Belgium

DIRECT ACCESS

* Bachelor in Biomedical Sciences.
* Bachelor in Biology;
* Bachelor in Pharmacy.

ACCESS subject to a maximum of 15 ADDITIONAL CREDITS

* Bachelor, Medicine, Veterinary Medicine, Dentistry, Physiotherapy and Rehabilitation, Motor Sciences, Chemistry;
* Master in Chemical and Materials Science Engineering, Public Health, Physiotherapy and Rehabilitation.

ACCESS subject to AN ADDITIONAL 15 TO 30 CREDITS

* Bachelor (short-cycle) in Midwife, Nurse Responsible for General Care;
* Advanced Bachelor (short-cycle) in Anaesthesia, Intensive Care and Emergency Medical Aid.

UNIVERSEH Membre de l'alliance européenne European Space University for Earth and Humanity

ACCESS subject to AN ADDITIONAL 30 TO 60 CREDITS

* Bachelor (short-cycle) in Dietetics, Occupational Therapy, Nursing, Medical Imaging Technologist, Medical Laboratory Technologist;
* Bachelor (short-cycle) in Chemistry orientation Biochemistry, Biotechnology, Applied Chemistry, Environment;
* Bachelor (short-cycle) in Nursing for holders of the certificate of Hospital Nurse.

ACCESS BY APPLICATION

* Other higher education qualifications obtained in the French Community of Belgium, such as a bachelor's degree (short-cycle) in agronomy, specializing in agro-industries and biotechnologies, subject to any additional teaching units;
* Higher education qualifications obtained outside of the French Community of Belgium;
* On the basis of VAE ('Valorisation des acquis de l'expérience' – recognition of previous experience).

For admission to Masters degrees, please contact the Admission Service.

Students with a first degree obtained outside of Belgium

If you have a degree from an institution outside of Belgium, you will need to complete and return the admissions request form before 30 September (31 March for students from outside the European Union): **www.unamur.be/inscription**

MASTER 120 IN BIOMEDICAL SCIENCES, FOCUS ON IN BIOMEDICAL DATA MANAGEMENT

This Master is offered jointly by UNamur and ULiège. For details of conditions for admission, please see the ULiège website: **www.enseignement.uliege.be/cms/c_9780514/en/enrol**

EUROPEAN MASTER OF SCIENCE IN SKIN HEALTH AND CARE (EMOTION)

For more information concerning this Master as well as related Erasmus Mundus bursaries, please visit **www.emotion-master.eu**

Découvrez le détail des cours sur :
www.unamur.be/medecine/etudes/biomed

FSC www.fsc.org MIXTE Papier issu de sources responsables FSC® C014352

information

Rue de Bruxelles, 85
5000 Namur
Tel. +32 (0)81 72 50 30
info.etudes@unamur.be
www.unamur.be/etudes/info-etudes

admission

UNamur • Admission Service
Rue de Bruxelles, 85
5000 Namur
Tel. +32 (0)81 72 40 17
inscriptions@unamur.be
www.unamur.be/inscription