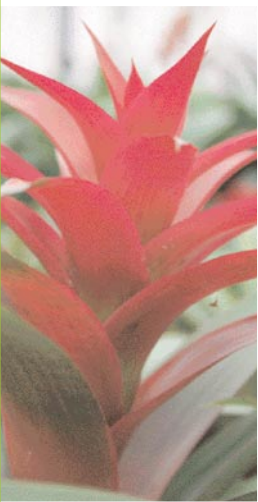




KATHOLIEKE UNIVERSITEIT
LEUVEN



Master of Biology

Majors:

- Ecological and Evolutionary Biology
- Molecular and Physiological Biology

Faculty of Science



Master of Biology

This Master's programme covers many aspects of modern biology, from the molecular to the population and community levels, with emphasis on scientific capabilities such as problem-solving skills, independent thinking, and communication. Master's students will receive solid theoretical training and acquire the latest techniques in fundamental and applied research.

Department of Biology

The Master of Biology programme is organised by the Department of Biology at K.U.Leuven. Its staff is committed to excellence in teaching and research.



The department comprises five units with diverse research activities ranging from molecular and physiological research at the level of cells and organisms to ecological research on populations, communities and ecosystems.

Our research is internationally renowned and embedded in well-established worldwide collaborations with other universities, research institutes and companies. Although the primary motivation of our research is to obtain insight into patterns and processes at different levels of biological organization and to understand the basis and evolution of mechanisms allowing organisms to adapt to their continuously changing environment, this knowledge often leads to applications with important economic or societal benefits.

Katholieke Universiteit Leuven (K.U.Leuven)

In 1425, Pope Martin V promulgated the foundation bull of the Katholieke Universiteit Leuven. The university was initially modelled on the universities of Paris, Cologne and Vienna. Today, it offers an extensive range of undergraduate and graduate degree programmes to approximately 34,500 students, including 5,000 international students from over 100 different countries. More than 4,800 professors and researchers make up the university's academic staff. In recent decades, K.U.Leuven's research efforts and output have increased considerably in both quality and quantity, thus positioning Leuven at the forefront of European universities.



The city of Leuven

Leuven is a typical university town, and many attractive student cafés and restaurants add to its charm. Leuven also hosts a variety of concerts and recitals by world-famous orchestras, ensembles and soloists as well as exhibitions of important modern Flemish painters and sculptors.

Belgium

Belgium is an ideal base for trips throughout Europe: cities such as Paris, Strasbourg, Geneva, Venice, Cologne, London and Amsterdam are easily accessible by train. Thanks to its central location, K.U.Leuven is a truly cosmopolitan university.



Divisions and major research projects

Animal Ecology and Systematics

- Ecology and evolution of aquatic organisms with emphasis on community ecology and ecological biogeography, biodiversity and nature conservation, stress ecology, evolutionary ecology and behavioural ecology, molecular ecology and population genomics, fisheries, aquaculture and environmental microbiology
- Co-operation and conflict in social insects
- Functional morphology of social insects
- Vertebrate archaeobiology of late Quaternary deposits onwards

Animal Physiology and Neurobiology

- Functional genomics, proteomics, and peptidomics in various model organisms
- Identification and functional analysis of receptor–ligand couples
- Study of the neurobiological and endocrine mechanisms underlying the control of phenotypic plasticity and reproduction in ecdysozoan research models
- The role of hormones in vertebrate development
- Molecular mechanisms of developmental and lesion-induced plasticity of the mammalian brain

Plant Systematics and Ecology

- Phylogeny of flowering plants based on DNA sequences and characters of floral ontogeny, palynology, seed and wood anatomy
- Molecular systematics and evolutionary developmental studies in Ericales
- Ecology of seed germination
- Effects of fragmentation on biodiversity in nature reserves

Molecular Physiology of Plants and Micro-organisms

- Molecular and biochemical analysis of nutritional, metabolic or hormonal controlled signal transduction processes in plants and micro-organisms
- Molecular genetics, metabolism and physiological role of steviosides, fructans and other reserve carbohydrates
- Development and validation of transgenic plant and yeast models as tools for medicinal and medical research and biopharming
- Identification of novel drug targets and lead-compounds with therapeutic potential, novel antimycotics, novel enzymes, and products for food and non-food applications



Molecular Microbiology and Biotechnology

- Molecular genetics of nutrient sensing and signalling in yeast
- Nutrient sensing and antifungal targets in the pathogenic yeast *Candida albicans*
- Development of novel industrial yeast strains for baking, brewing, wine and bioethanol production
- Yeast and plant trehalose metabolism for improvement of stress resistance in crop plants
- Yeast as a tool for selecting and studying mammalian proteins with medical interest



Career prospects

Having obtained a Master's degree of Biology, you will be in a position to pursue a career as a scientific researcher at universities, in agro-industries, at pharmaceutical and biotech companies, environmental conservation organisations and NGOs. You will also be an excellent candidate for employment as a scientific advisor in banks and private investment foundations, a policy officer in governmental and public administration, a scientific communications advisor, scientific journalist or a science teacher.

Programme

The Master of Biology programme consists of 120 credits (internationally accredited through the European Credit Transfer System - ECTS) divided over two years and is only available as a full-time programme. The programme offers maximal flexibility allowing students to compose a personalised study track according to their interests and needs. Students can focus their studies in two major areas of specialization: Ecological and Evolutionary Biology (M1) or Molecular and Physiological Biology (M2). Students take one of these two specializations as a major and choose courses to a value of 30-36 credits. The other area is taken as a minor with a study load of 12-18 credits.

The programme is completed with a choice of methodological (12-18 credits) and elective (18 credits) courses and the mandatory research training (42 credits). The latter includes individual research training projects during the first year and a Master's thesis during the second year, each to be carried out in one of the research divisions of the department.

MASTER OF BIOLOGY 120

COURSE CREDITS

COMPOSE YOUR INDIVIDUAL MASTER'S PROGRAMME 120

MAJOR (to be chosen from M1 or M2) 30-36

MINOR (to be chosen from M1 or M2) 12-18

METHODODOLOGICAL COURSES 12-18

MANDATORY RESEARCH TRAINING 42

OPTIONAL COURSES 18

ECOLOGICAL AND EVOLUTIONARY BIOLOGY (M1) 30-36

- Advanced Ecology 6-8
- Advanced Aquatic Ecology 5
- Marine Ecology 3
- Applied Aquatic Ecology and Sustainable Development 6
- Evolutionary Ecology 6
- Speciation and Phylogenetics 6
- Ethology and Behavioural ecology 6-8
- Archaeozoology 3

MOLECULAR AND PHYSIOLOGICAL BIOLOGY (M2) 30-36

- Mechanisms of Plant Development 6
- Molecular Cell Biology 6
- Mechanisms of Signal Transduction and Cell Regulation 6
- Molecular and Developmental Animal Physiology 6
- Model Organisms in Functional Genomics 6
- Molecular Genetics and Biotechnology of Yeast 6
- Immunological Biotechnology 5
- Comparative Endocrinology 6
- Trends in Plant Physiology and Biotechnology 6

METHODOLOGICAL COURSES 12-18

- Laboratory Animal Science 5
- Radiation Protection 3
- Applied Statistical Methods in Bioinformatics 5
- Applied Biostatistics 6
- Statistical software 3
- Theoretical Modelling in Biology 3
- GIS for Water Resources Engineering 3
- Gene and Genome Technology 5
- Bioinformatics: High-throughput analysis 5
- Bioinformatics: Structural and Comparative Genomics 4
- Bioinformatics: Evolutionary and Quantitative Genetics 4
- Advanced Fluorescence and Fluorescence Microscopy 6

MANDATORY RESEARCH TRAINING**42**

- Individual Practical Exercises 6
- Interactive Seminar 6
- Master's thesis 30

OPTIONAL COURSES**18**

- To be chosen from other Master's programmes 18

For detailed descriptions of this programme's courses and for the course timetable, please consult www.kuleuven.be/onderwijs/aanbod/opleidingen/E

Admission requirements

Direct access:

- Bachelor of Biology
- Bachelor of Biochemistry
- Bachelor of Biotechnology
- Bachelor of Biomedical Sciences
- Bachelor of Bioscience Engineering
- Bachelor in Medicine
- Bachelor in de biologie
- Bachelor in de biochemie en de biotechnologie, minor biologie
- Bachelor in de biomedische wetenschappen
- Bachelor in de bio-ingenieurs-wetenschappen
- Bachelor in de geneeskunde

After admission:

- Another Bachelor's degree, minor Biology or Life Sciences

Non-native English speaking students are required to submit a TOEFL or IELTS certificate. TOEFL (Computer-based test 213 pt., Internet-based test 79 - 80 pt., Paper-based test 550 pt.) or IELTS (6.5 - 7 pt.)

Additional information

In order to gauge whether the expected entry level matches your curriculum, we require that you submit a complete transcript of your academic records.

- 1) A complete list of courses for which you obtained credit (including the number of ECTS credits).
- 2) Your marks, preferably following the ECTS-scale. If another scale is used, please provide a table with the grading marks.
- 3) For the courses that you deem most relevant as a preparation for the Master's that you are considering, provide a short (about one half to one page) description according to the standard guidelines for an ECTS-study guide.

Deadline for application

The deadline for applying is 1 March for non-EU students and 1 June for EU students.

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More information

www.kuleuven.be/ma/EMABIOL

General information

International programmes: www.kuleuven.be/internationalprogrammes

International Office: www.kuleuven.be/english

Faculty of Science

Programme director

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International Admissions, Exchange, and Scholarship Unit

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This brochure provides the most complete information available for this Master's programme offered by K.U.Leuven during the 2010-2011 academic year. However, small changes to the composition of the programmes may be approved after the publication of this brochure. In no way is the university legally bound by the information provided in this brochure. The most recent information on all our academic programmes can be consulted on www.kuleuven.be/onderwijs/aanbod/opleidingen/E.

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