



Students work in state of the art laboratories

BIOTECHNOLOGY

Biotechnology is one of the key technologies of the 21st century with numerous implications for medicine, industry and everyday life. The advent of recombinant DNA methods just a few decades ago sparked a dramatic increase in both basic and applied science and product development. These applications range from discovery and production of biopharmaceuticals or optimised enzymes in washing powder to new diagnostic kits or genetically modified organisms (GMOs) for food production and tissue engineering for medical purposes. Biotechnology helps to answer today's pressing questions concerning climate change, nutrition and health.

Biotechnology is the basis for new, intelligent and energy-efficient products and optimised production methods. It integrates natural and engineering

sciences and can broadly be classified into white (environmentally and resource friendly products and production methods in the chemicals industry), red (medical products, diagnostics and therapeutics), green (transgenic plants with enhanced properties) and grey (application in environmental engineering) biotechnology – all with their specific needs and requirements.

Key Features

The department of Biotechnology offers an international MSc programme in Biotechnology. All courses are held exclusively in English. The key features are:

- From BSc to MSc in 1 1/2 years (3 semesters)
- Course starts in summer or winter semester
- Project-oriented teaching in small groups
- Intensive training programme in tutorials and seminars
- Application-oriented teaching and research
- Choice of two focuses
- Modular structure of the course programme based on ECTS
- Master thesis can be conducted in-house or outside the university in companies, partner research institutes or partner universities in Germany or abroad
- Comprehensive student services and guidance
- External evaluation and accreditation of the course programme is performed regularly

Doctoral Degree, PhD

A doctoral degree is generally a prerequisite for a higher career in academia or for a senior management position in research, development or production departments in industry. Graduates from the Master programme in Biotechnology can choose from a wide range of possibilities for their doctoral studies, both

at Mannheim University of Applied Sciences in cooperation with the Medical Faculty of the University of Heidelberg or at other partner universities. Doctoral students may also apply for scholarships.

Module Structure

The master programme offers two focuses: Biomedical Science and Technology and Bioprocess Development. The curricula include the following modules:

For a detailed module description see www.biotech.hs-mannheim.de

Biomedical Science and Technology	Bioprocess Development
<p>1st Semester</p> <ul style="list-style-type: none"> • Biostatistics • From Research to Market • Biomedical Science • Cell Based Assays • Pharmacology 	<p>1st Semester</p> <ul style="list-style-type: none"> • Biostatistics • From Research to Market • Strain Development • Cell Culture Technology • Bioreaction Design
<p>2nd Semester</p> <ul style="list-style-type: none"> • Drug Discovery • Genomics and Bioinformatics • Bioanalytical Sciences • Electives *) 	<p>2nd Semester</p> <ul style="list-style-type: none"> • Enzyme Technology and Biocatalysis • Process Automation • Protein Downstream Processing • Electives *)
<p>3rd Semester</p> <ul style="list-style-type: none"> • Master Thesis 	<p>3rd Semester</p> <ul style="list-style-type: none"> • Master Thesis

*) Electives: Immunology, Biochips and High-Content Screening, Clinical Chemistry, Plant Biotechnology, Transgenic Animals in Medicine,

Pathophysiology, Environmental Biotechnology, Bioinformatics, Modern Analytical Methods, Proteomics



APPLICATION

The MSc Programme in Biotechnology at Mannheim University of Applied Sciences is intended for applicants who have successfully completed a first academic degree in a biological science. This could be a BSc or equivalent in biotechnology or a similar discipline such as biological chemistry, microbiology, biological engineering, biomedical sciences or molecular and cell biology.

Students should have:

- *Solid knowledge and skills in mathematics, chemistry, microbiology, molecular and cell biology and biochemistry*
- *Very good English language skills (TOEFL paper-based score at least 580 or equivalent for applicants from non-English-speaking countries)*
- *Proof of at least six months' research-orientated practical experience*

For details and our online application formula see www.biotech.hs-mannheim.de

Selection of Candidates

An MSc admission board reviews the applications. Selection is based on the applicant's academic qualifications, referees' evaluation and further qualifications such as practical or work experience.

Fees

There are general tuition fees for the master programme of 500 EUR per semester. Additionally students have to pay for medical insurance (currently 55 EUR per month) and the fee to Student Services (currently 89 EUR per semester).

A Perfect Environment

Through the impressive concentration of biotechnology research, development and production centres within 15 km of the university, Mannheim University of Applied Sciences provides a perfect environment for biotechnology students. This biotech cluster boasts 70 start-up biotechnology companies along with prestigious universities, the world-renowned German Cancer Research Centre, the European Molecular Biology Laboratory, the Max Planck Institute for Medical Research, and multinational companies such as ABBOTT, BASF, Merck and Roche Diagnostics. Mannheim University of Applied Sciences has links to all of these companies and institutions. This greatly supports its application-oriented approach and opens the door for attractive career opportunities.

Impressive Equipment

Students work in state of the art laboratories (e.g. Microbiology, Biochemistry, Cell- & Molecular Biology, Chemistry, Bioanalytics) conducting research aided by a wide range of modern equipment and technologies, including flow cytometry, MALDI tandem mass spectrometry, 2-Photon laser microscopy, life cell imaging technologies, and a wide range of bioreactors of different sizes and with different control units.

DEPARTMENT OF BIOTECHNOLOGY INTERNATIONAL MSC PROGRAMME IN BIOTECHNOLOGY

Accommodation

Mannheim University of Applied Sciences arranges accommodation for our students in new and attractive students' residences. For reasonable rates, students can live in spacious rooms with fully equipped kitchens on each floor. The rent is approximately 200 EUR per month.

Cultural and Sports Programme

International students will enjoy a diverse and stimulating cultural programme, including guided tours of German cities, trips to museums, and excursions to sites of cultural and historical interest. They can also take advantage of an attractive sports programme.

Career Centre

The Mannheim University of Applied Sciences Career Centre supports students during their study and when planning their professional career. It offers additional seminars and courses, e.g. in learning strategies, time management, presentation and rhetoric skills, business start-up or company excursions.

Contact – Department of Biotechnology

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