



# Pharmaceutical and Industrial Biotechnology

## Master-Studiengang

### General Information

<b>Characteristic</b>	Master-Studiengang
<b>Degree</b>	Master of Science (M.Sc.)
<b>Credits</b>	120 CP
<b>Standard Period of Study</b>	4 Semester
<b>Start of Studies</b>	nur Wintersemester
<b>Form of Study</b>	Direct Study, Full-time Study, International Study
<b>Language</b>	English
<b>Admission Restriction</b>	restricted (Uni-NC)
<b>Specific Admission Requirements</b>	yes ( <a href="#">Details</a> )
<b>Faculty</b>	<a href="#">Naturwissenschaftliche Fakultät I - Biowissenschaften</a>
<b>Institute</b>	<a href="#">Institut für Pharmazie</a>
<b>Accreditation</b>	accredited

### Programme Goals

Biotechnology and biotechnology-based methods become increasingly important in a global bioeconomy. The master's programme offers specialization in the fields "Pharmaceutical Biotechnology" or "Industrial Biotechnology".

"Pharmaceutical Biotechnology" covers all relevant aspects for the development of new biotechnology based drugs, starting from drug target identification to up- and downstream processing till final formulation. It also provides a basis for understanding the mechanisms and processes of diseases.



“Industrial Biotechnology” covers all relevant aspects on the development of new industrial biotechnological processes, starting from access to and pretreatment of renewable resources to up- and downstream processing till the application and process optimization. Biocatalysis, synthetic and systems biology and metabolic engineering will be covered during the classes.

For detailed information, e.g. curriculum, course contents etc. please see our website [http://downstream.pharmazie.uni-halle.de/pharma\\_industrial\\_biotech\\_msc/](http://downstream.pharmazie.uni-halle.de/pharma_industrial_biotech_msc/)

The master’s programme *MSc Pharmaceutical and Industrial Biotechnology* is specifically designed for degree holders in (bio-)chemistry, biology, biotechnology, biochemical engineering and pharmacy to carry out scientific work and critical evaluation of scientific results in a responsible and independent manner. Students will also have the opportunity to learn a range of methodologies and modern laboratory techniques. The graduate master’s degree is internationally recognized.

## Study in Halle!

### **About Halle and the University**

With a population of almost 240,000, Halle is one of the largest cities in Central Germany. The small metropolis on the Saale river offers a versatile mixture of art, culture, gastronomy and recreation. Numerous national institutions are also headquartered in Halle. The Leipzig-Halle international airport is only 15 minutes away by train or car. It takes just over an hour to get to Berlin.

Martin-Luther-Universität Halle-Wittenberg, founded in 1502, is one of the oldest universities in Germany and, with around 20,000 students, the largest in the federal state of Saxony- Anhalt. We rely on modern laboratory equipment as well as extensive support of our students by many professors and employees. With more than 260 programmes on offer in different areas of study, there is a suitable subject for everyone.



# Career Opportunities

The programme qualifies for positions in industrial and pharmaceutical biotechnology and related fields:

- Research and development
- Production
- Teaching
- Management, administration and quality assessment
- Counseling, sales and marketing

The programme also qualifies for PhD positions.

# Accreditation

This study programme is accredited.

# Programme Structure

- Modules of the programme (90 CP)
- Master thesis (30 CP)

# Modules

Module	CP	rec. sem.
<b>Compulsory modules (80 CP)</b>		
Construction of production organisms: Hosts and vectors	10	1
Introduction to Bioprocess technology (Upstream Processing)	5	1
Introduction to Industrial and Pharmaceutical Biotechnology	5	1



Module	CP	rec. sem.
Analytical Methods	10	2
Optimization of bioprocesses	5	2
Purification of products from biotechnological processes (Downstream Processing)	10	2
Project work	5	3
Master thesis	30	4
<b>Elective modules (40 CP) (one field of specialization must be selected)</b>		
<b>Field of specialization: Pharmaceutical Biotechnology</b>		
Drug target identification and validation	10	1
Legal and economical aspects of biotechnology	5	2
Biopharmaceuticals	5	3
Biopharmaceuticals in regenerative medicine	10	3
Technological and clinical aspects of biopharmaceuticals	10	3
<b>Field of specialization: Industrial Biotechnology</b>		
Introduction to Chemical Biotechnology	10	1
Agro- and economical aspects of biotechnology	5	2
Applied Biocatalysis	10	3
Pretreatment and Thermochemical Processes	10	3
Systems and Synthetic Biology	5	3

The content, learning objectives, workload, requirements and prerequisites of specific modules are detailed in the module catalogue and in [the study and examination regulations](#) (in German only), respectively.

## Admission Requirements

The programme is primarily aimed at graduates of a bachelor's degree programme in (bio)chemistry, biology, biotechnology or (bio)engineering. Furthermore, graduates of a comparable study programme, e.g. pharmacy, can be admitted.



Applicants for the *MSc Pharmaceutical and Industrial Biotechnology* must

- hold a bachelor's degree (minimum 180 ECTS (= credit points (CP)) or equivalent in (Bio-)Chemistry, Biology, Biotechnology, (Biochemical) Engineering, Pharmacy, or related fields with a **minimum grade of 2.5 or better** according to the German academic grading scale.
- prove sufficient knowledge of English language (i.e., non-native speakers) by means of an internationally recognised test result such as
  - **TOEFL iBT** (at least 90/120), **TOEFL CBT** (235/300), or **TOEFL PBT** (580 / 677)
  - **IELTS** (at least band 6.5),
  - **UNlcert II** (writing and speaking).

Previous knowledge in biochemistry (chemical, physical and molecular biological basics of life processes in organisms, experimental skills), biotechnology (up- and downstream processing, protein and enzyme technology, experimental skills), or biology (basics of cell and molecular biology, experimental skills) is essential. Basic knowledge in the other disciplines as well as in-depth knowledge in mathematics (differential and integral calculus), physics (experimental physics, optics, atomic and molecular physics) and chemistry (general/inorganic, organic and physical chemistry, preparative skills, chemical arithmetic) are additionally required.

Decisions on compliance with the admission requirements are taken by the study and examination board of the programme or the committee appointed for this purpose, respectively.

*This chapter consists of excerpts roughly translated into English. Only the study and examination regulations are legally binding.*

## Application/Enrolment



The admission to the *MSc Pharmaceutical and Industrial Biotechnology* is currently **restricted** (Uni-NC).

- Applicants with a bachelor's degree (or equivalent) obtained in Germany must apply via [www.uni-halle.de/bewerben](http://www.uni-halle.de/bewerben) by **31 July 2021**.
- Applicants with a bachelor's degree (or equivalent) obtained abroad must apply via [www.uni-assist.de](http://www.uni-assist.de) by **31 March 2021**. (The decision on acceptance will be made by the board of examiners until 31 May.)

Halle University reconsiders its admission policy every winter semester and determines whether admission to a study programme is restricted (Uni-NC) or free (no NC). From May each year, the current decision is published here (see also General Information).

Applicants who are scheduled to complete the bachelor's degree (or equivalent) after the application deadline, may apply with a provisional graduation certificate or the semesters' transcripts (i.e., the modules and grades overview must reflect at least 2/3 of the degree's total credits), respectively. The final graduation certificate shall be submitted with the enrolment at university, for enrolment for the winter semester, however, not later than 31 January in the year following admission.

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### Information for international applicants

For any questions regarding application and admission please contact:

Student Registration Office - International Students Section

Mrs. Kati Gaudig

e-mail: [kati.gaudig@verwaltung.uni-halle.de](mailto:kati.gaudig@verwaltung.uni-halle.de)

URL: [www.uni-halle.de/international-students](http://www.uni-halle.de/international-students)



# Programme Advisor

For detailed information concerning the contents, goals and structure of the programme, please contact the programme advisor.

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# Links

- [Application and Enrolment \(https://www.ich-will-wissen.de\)](https://www.ich-will-wissen.de)
- [International Office \(https://www.uni-halle.de\)](https://www.uni-halle.de)