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/

The master’s programme *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 University 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.

Accreditation

This study programme is accredited.

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.

Programme Structure

One-subject Master (120 CP)

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

Modules Pharmaceutical and Industrial Biotechnology 120 CP

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.

<table>
<thead>
<tr>
<th>Module</th>
<th>CP</th>
<th>rec. sem.</th>
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<tbody>
<tr>
<td><strong>Compulsory modules (80 CP)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Construction of production organisms: Hosts and vectors</td>
<td>10</td>
<td>1</td>
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<tr>
<td>Introduction to Bioprocess technology (Upstream Processing)</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Introduction to Industrial and Pharmaceutical Biotechnology</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Analytical Methods</td>
<td>10</td>
<td>2</td>
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<tr>
<td>Optimization of bioprocesses</td>
<td>5</td>
<td>2</td>
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<tr>
<td>Purification of products from biotechnological processes (Downstream Processing)</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Project work</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Master thesis</td>
<td>30</td>
<td>4</td>
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<tr>
<td><strong>Compulsory optional modules (40 CP)</strong> (1 field of specialization must be selected)</td>
<td></td>
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<tr>
<td><strong>Field of specialization: Pharmaceutical Biotechnology</strong></td>
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<tr>
<td>Drug target identification and validation</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Legal and economical aspects of biotechnology</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Biopharmaceuticals</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Biopharmaceuticals in regenerative medicine</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Technological and clinical aspects of biopharmaceuticals</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td><strong>Field of specialization: Industrial Biotechnology</strong></td>
<td></td>
<td></td>
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<tr>
<td>Introduction to Chemical Biotechnology</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Agro- and economical aspects of biotechnology</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Applied Biocatalysis</td>
<td>10</td>
<td>3</td>
</tr>
</tbody>
</table>

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Degree

Master of Science (M.Sc.)

Admission Requirements

Applicants for the MSc Pharmaceutical and Industrial Biotechnology 120 CP must

- hold a bachelor's degree (minimum 180 CP) or equivalent degree in (Bio-)Chemistry, Biology, Biotechnology, (Biochemical) Engineering, Pharmacy, or related fields with a final mark of at least 2.5;

- prove sufficient knowledge of English language (i.e., non-native speakers) by means of an internationally recognized 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),
  - UNIcert-II (writing and speaking).
At the beginning of the course, students should have previous knowledge of biochemistry (chemical, physical and molecular biological basics of life processes in organisms, experimental skills), biotechnology (upstream and downstream processing, protein and enzyme technology, experimental skills), or biology (basics of cell and molecular biology, experimental skills). 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.

For detailed information on admission requirements, please consult the study and examination regulations (in German only). Decisions on compliance with the prerequisites are taken by the study and examination board of the programme.

Zulassungsvoraussetzungen (German version)

Der Studiengang wendet sich vor allem an AbsolventInnen eines universitären Bachelor-Studienprogramms in (Bio-) Chemie, Biologie, Biotechnologie oder (Bio-) Ingenieurwissenschaften; es können auch AbsolventInnen eines vergleichbaren Studienganges bzw. Studienprogramms wie z. B. Pharmazie zugelassen werden.

Voraussetzung für die Zulassung zum Studium des Ein-Fach-Masters Pharmaceutical and Industrial Biotechnology 120 LP ist der Nachweis

- eines qualifizierten Abschlusses (grundsätzlich Note gut, d. h. besser als 2,5) in einem Bachelor-Studienprogramm (Bio-) Chemie, Biotechnologie, oder (Bio-) Ingenieurwissenschaften mit mindestens 180 LP oder eines vergleichbaren Studienganges bzw. Studienprogramms;

- ausreichender Kenntnisse der englischen Sprache mittels eines international anerkannten Sprachtests:
  - TOEFL iBT (mindestens 90/120), TOEFL CBT (235/300), oder TOEFL PBT (580/677)
  - IELTS (mindestens band 6.5)
Für den Studiengang sollten bei Studienbeginn Vorkenntnisse in Biochemie (chemische, physikalische und molekularbiologische Grundlagen von Lebensvorgängen in Organismen, experimentelle Fähigkeiten), Biotechnologie (Up- und Downstream Processing, Protein- und Enzymtechnologie, experimentelle Fähigkeiten), oder Biologie (Grundlagen der Zell- und Molekularbiologie, experimentelle Fähigkeiten) vorhanden sein. Grundkenntnisse in den jeweils anderen Disziplinen sowie vertiefte Kenntnisse in Mathematik (Differential- und Integralrechnung), Physik (Experimentalphysik, Optik, Atom- und Molekülphysik) und Chemie (allgemeine/ anorganische, organische und physikalische Chemie, präparative Fertigkeiten, chemisches Rechnen) sind zusätzlich erforderlich.

Ausführliche Informationen entnehmen Sie bitte der gültigen Studien- und Prüfungsordnung. Über die Erfüllung der Zugangsvoraussetzungen entscheidet der zuständige Studien- und Prüfungsausschuss oder eine für diesen Zweck vom Studien- und Prüfungsausschuss bestimmte Kommission.

**Application/Enrolment**

The admission to *Pharmaceutical and Industrial Biotechnology 120 CP* is currently limited by numerus clausus (Uni-NC).

Applicants who obtained their master's qualification in Germany must apply via [www.uni-halle.de/bewerben](http://www.uni-halle.de/bewerben) until **July 15**.

Applicants who obtained their master's qualification abroad must apply via [www.uni-assist.de/en](http://www.uni-assist.de/en) until **March 31**. (The decision on acceptance will be made by the board of examiners until May 31.)
Halle University evaluates the numerus clausus of its study programmes on an annual basis. Please check this page around May to see if the quota for your programme of choice has been lifted or maintained.

You might apply with a previous graduation certificate, respectively your last semester’s transcripts. The final graduation certificate should be handed in with the enrolment at university, respectively max. 4 months later (January 31).

**Information for international applicants**

For any questions regarding application and admission please contact:

Registration Office: International Students Section  
Mrs. Kati Gaudig  
e-mail: kati.gaudig@verwaltung.uni-halle.de  
Tel: +49-345-552 13 14  
Fax: +49-345-552 70 52

URL: https://www.uni-halle.de/ssc/bewerbungsinformationen/ba-ma-studium_/?lang=en

Note: Indian students should not apply through any consultant company! Application at MLU is possible directly without creating any further costs!

**Programme Advisor**

For detailed information concerning the contents, goals and structure of the programme, please contact the programme advisor.
Pharmaceutical and Industrial Biotechnology
(Master-Studiengang)

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Phone: 0345 55-25949
Email: markus.pietzsch@pharmazie.uni-halle.de

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**Links**

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