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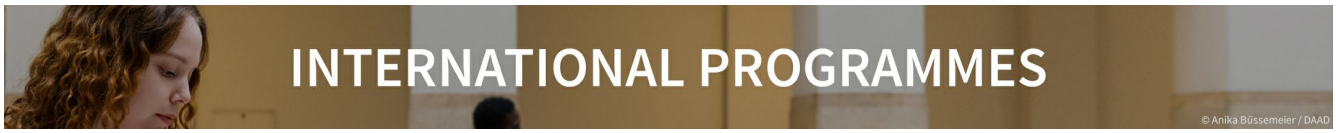


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# Master's degree

## Optical Technologies – Photonics and Laser Technology

**Leibniz University Hannover** • Hannover

## Overview

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|---|---|
| **Degree** | Master of Science |
| **Course location** | Hannover |
| **In cooperation with** | Cluster of Excellence PhoenixD<br>Hannoversches Zentrum für Optische Technologien<br>Laser Zentrum Hannover e.V. |
| **Teaching language** | • English<br>• German |
| **Languages** | The course can be studied in an English or a German track. |
| **Full-time / part-time** | • full-time |
| **Programme duration** | 4 semesters |
| **Beginning** | Winter and summer semester |
| **Application deadline** | **Application from students from non-EU countries (VPD from uni-assist is required)**<br>• 15 April to 31 May of the year for the winter semester<br>• 15 October to 30 November of the previous year for the summer semester<br>**Application from students from Germany and the EU**<br>• 1 June to 15 July of the year for the winter semester<br>• 1 December to 15 January of the year for the summer semester<br>Prospective students applying from outside the EU must request a**Preliminary Examination Documentation** (VPD) from uni-assist before applying to the Master's programme. The processing time for the VPD takes **up to eight weeks**. Therefore, please allow enough time before applying for the programme. More information about applying for the VPD can be found on the central application pages. |
| **Tuition fees per semester in EUR** | None |
| **Combined Master's degree / PhD programme** | No |

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| **Joint degree / double degree programme** | No |

**Description/content**

Optical technologies are among the key technologies of the 21st century. From the electronic scanning cash register to the application of lasers in production, telecommunication, and medicine – optical devices have become an indispensable part of daily life.

The optical technologies comprise these applications and exploit the extraordinary properties of light for a large range of scientific and technical applications. This interdisciplinary field accelerates modern industrial trends and allows for the development of innovations in fields as diverse as mechanical and automobile engineering, micro- and optoelectronics, and lighting technology as well as pharmaceutical and medical device engineering, among others.

The Master's course aims to educate specialists and executive staff for the optical industry. The programme benefits from strong collaboration between scientific and engineering disciplines in Hannover. Through the Hannover Centre for Optical Technologies (HOT) and the Laser Zentrum Hannover (LZH), which is associated with Leibniz University Hannover, companies can be involved in ongoing research and education and each Master's student can connect to the optical industry at an early stage of their career. The collaboration of the Faculties for Mathematics and Physics and the Faculty for Mechanical Engineering bridges the gap between fundamental research and technical applications of optics.

**Course foci:**

- Optical Metrology
- Laser Technology
- Biophotonics
- Technical Optics and Automotive Lighting
- Optics in Production and Power Engineering

For further information, you can also visit this website (in German): https://www.maschinenbau.uni-hannover.de/de/studium/studienangebot-der-fakultaet/optische-technologien-m-sc/.

# Course Details

**Course organisation**

The Master's course aims to provide broad knowledge in the emerging field of optical technologies. The programme, thus, conveys recent scientific findings, concepts, and methods according to the current state of the art.

To lay the foundation for students from different fields, fundamental physics and engineering courses such as "Optical Measurement Technology" or "Design and Simulation of Optomechatronic Systems" are compulsory.

Within the range of numerous optional and compulsory optional modules, students are invited to focus on different advanced aspects of applied optics according to their personal interests and strengths.

The education is rounded off by a high number of practical trainings. Besides lab courses at the university's institutes, students complete an eight-week basic internship, a twelve-week industrial training, and a scientific student project. Within the scope of the Master's thesis, the students are finally asked to transfer learned methods and competences to current scientific problems.

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| **Certificates for specific modules are awarded** | Yes |

**International elements**

- Specialist literature in other languages

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| **Integrated internships** | The course contains two integrated industrial internships:<br><br>**Initial internship**<br>The initial internship enables students to gain their first experience of industry. Within a working environment of experts, students, teachers, and technical personnel, the student is able to develop practical knowledge of varied manufacturing processes and facilities.<br><br>The initial internship lasts eight weeks and may be combined with the advanced internship. If applicable, students may receive credit for internships that have already been completed or previous vocational training or activity.<br><br>**Advanced internship**<br>The advanced internship prepares students for the productive cooperation in research-based companies in the optical industry and in companies of other industries that use optics for quality control in production or as part of a total product.<br><br>During the internship, the focus is on work closely related to the field of engineering within a development team or a research and development area. Usually, the student receives a subtask, which they will work on, document, and present after having received proper training in the course of the internship.<br><br>The advanced internship lasts twelve weeks. Students may receive credit for internships that have already been completed. |
| **Course-specific, integrated German language courses** | No |
| **Course-specific, integrated English language courses** | No |

# Costs / Funding

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| **Tuition fees per semester in EUR** | None |
| **Semester contribution** | Approx. 400 EUR semester fee ("Semesterbeitrag")<br>The semester fee includes the following:<br><br>• Contribution to the "Studentenwerk Hannover" (student services organisation)<br>• Contribution to the student government (Student Union, AStA)<br>• Semester ticket<br>• Contribution to administrative costs for the Federal State of Lower Saxony<br><br>http://go.lu-h.de/study-costs |
| **Costs of living** | Compared with other European countries, the cost of living in Germany is quite reasonable. The prices for food, accommodation, clothing, cultural events, etc. are basically in line with the EU average. You will need around 850 EUR a month to cover your living expenses. The largest expense will be your monthly rent. In Hanover, the rent amounts to between 300 and 500 EUR per month.<br><br>Cost of studying at Leibniz University Hannover:<br>http://go.lu-h.de/study-costs<br><br>General information on the cost of studying in Germany:<br>https://www.study-in.de/en/plan-your-stay/money-and-costs/cost-of-living_28220.php |

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| **Funding opportunities within the university** | Yes |
| **Description of the above-mentioned funding opportunities within the university** | Although tuition fees no longer exist in Lower Saxony, costs are indeed incurred at university, such as the semester fee, accommodation and living costs, and costs for learning materials. Here you will find possibilities to help you finance your studies:<br>www.uni-hannover.de/en/studium/finanzierung-foerderung<br><br>Deutschlandstipendium:<br>go.lu-h.de/deutschlandstipendium<br><br>Niedersachsenstipendium:<br>go.lu-h.de/niedersachsenstipendium |

# Requirements / Registration

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| **Academic admission requirements** | Bachelor's degree, German "Diplom", "Staatsexamen", or equivalent in physics, mechanical engineering, or related area with a certificate of the necessary credit points<br><br>Additional information for applicants from China (People's Republic of China, but not Hong Kong and Macao), Mongolia, India, and Vietnam: any university study achievements that you have earned generally have to be checked and certified by the "Akademische Prüfstelle" (APS), irrespective of your nationality or whether you have already completed a degree in another country. |
| **Language requirements** | Applicants have to provide proof that their English skills are at least at a level C1 by submitting one of the following language certificates, which must not be older than two years:<br><br>• Test of English as a Foreign Language (TOEFL iBT) with a result of 95 points<br>• International English Language Testing System (IELTS) with a result of 7.0<br>• Certificate in Advanced English (CAE) |
| **Application deadline** | **Application from students from non-EU countries (VPD from uni-assist is required)**<br><br>• 15 April to 31 May of the year for the winter semester<br>• 15 October to 30 November of the previous year for the summer semester<br><br>**Application from students from Germany and the EU**<br><br>• 1 June to 15 July of the year for the winter semester<br>• 1 December to 15 January of the year for the summer semester<br><br>Prospective students applying from outside the EU must request a**Preliminary Examination Documentation** (VPD) from uni-assist before applying to the Master's programme. The processing time for the VPD takes **up to eight weeks**. Therefore, please allow enough time before applying for the programme. More information about applying for the VPD can be found on the central application pages. |
| **Submit application to** | Applicants from **non-EU countries** can only apply with a**preliminary review documentation** (VPD) from uni-assist. You must apply for this at uni-assist at least eight weeks before the application deadline for the study programme expires. Take this into account when planning your application! For more information, please visit our website. |

# Services

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| **Possibility of finding part-time employment** | There are many job opportunities for students on campus (in the different departments, the central administration, etc.) and off campus. About two-thirds of our students work at part-time jobs while pursuing their studies.<br><br>Internal job postings:<br>https://www.uni-hannover.de/en/universitaet/stellenangebote-arbeit-an-der-uni/jobboerse<br><br>Student jobs outside of the university:<br>jobbico Uni Hannover |
| **Accommodation** | Links on housing in Hanover (including a video about housing in Hanover for international students) |

# Contact

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Course website: https://www.maschinenbau.uni-hannover.de/en/study/range-of-courses-offered-by-the-faculty/optical-technologies-m-sc/

https://www.facebook.com/MaschinenbauLUH/

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