



Deutscher Akademischer Austauschdienst
German Academic Exchange Service



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Master's degree



Master of Science in Micro- and Nanotechnologies

Technische Universität Ilmenau • Ilmenau

Overview

Degree	Master of Science
Teaching language	<ul style="list-style-type: none">English
Languages	<p>The main teaching language is English. Some elective subjects may be offered in German.</p> <p>A German language course is compulsory (part of the curriculum) for students who do not have any German language proficiency.</p>
Programme duration	4 semesters
Beginning	Winter semester
Application deadline	<p>Application period for students with international certificates: 16 January to 15 May Application period for students with German certificates: 16 April to 15 September</p> <p>Foreign applicants who need to apply for a visa to enter Germany should submit their application at least three months before the application deadline.</p>
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	<p>Studying microtechnologies and nanotechnologies at the TU Ilmenau offers a combination of classical microtechnologies and modern nanotechnologies. It covers methods, tools, and theoretical considerations for research and development in the world of microscale and nanoscale structures.</p> <p>The aim of this engineering science-oriented interdisciplinary Master's programme is to teach the scientific fundamentals and basic technical knowledge about microstructure and nanostructure generation as well as their systemic integration in systems. Students acquire skills to contribute and drive future developments in microtechnologies and nanotechnologies as well as nanotechnical applications.</p> <p>Particular attention is devoted to teaching the relevant methodological variety of lithographic nanostructuring techniques (top-down strategy), the molecular structuring through self-assembly (bottom-up approach), the opportunity of combining both concepts, and the required characterisation techniques.</p> <p>The programme comprises the following foci:</p> <ul style="list-style-type: none">Nanotechnology, nanoelectronics, and nanosensorsMaterials for microtechnologies and nanotechnologies

- Technologies of microstructuring and nanostructuring
- Structure and material characterisation
- Semiconductors
- Microsystems technology / system integration
- Microelectronic packaging and assembly

Under the principle of unity of research and teaching, this interdisciplinary programme is supported by the Institute of Micro- and Nanotechnologies MacroNano® and its Centre of Micro- and Nanotechnologies. Students will be involved in research projects from an early stage. They have the opportunity to gain hands-on experience in the modern laboratory space (used as clean rooms in different classes) available in two technology buildings.

Course Details

Course organisation

The programme is based on courses both in fundamental and engineering sciences. It aims to deepen skills and competencies acquired from undergraduate studies or practical work experience in the fields of semiconductor technology, microelectronics, microtechnologies and nanotechnologies.

During the first two semesters, the required theoretical background is taught. At this time, the students already have the opportunity to select certain specialisation courses in combination with elective soft skill courses. Students without German language knowledge are expected to take at least one German course. The third semester consists of a further specialisation subject and an advanced research project. Within the fourth semester, students work on the Master's project and thesis, which is defended in a colloquium.

Semester 1: Electronics Technology 1, Semiconductor Devices 1, Materials of Micro- and Nanotechnologies, Nanodiagnostics, Nanotechnology, Introduction to Project Work, Soft Skills

Semester 2: Microtechnologies 2, Lab Materials & Micro-/Nanofabrication, Introduction to Project Work, Soft Skills, Advanced Studies (personal choice of subjects related to the course outline)

Semester 3: Project with Seminar, Advanced Studies (personal choice of subjects related to the course outline), Technical Subject (choice from the entire Master's curriculum)

Semester 4: Master's thesis with colloquium

A Diploma supplement will be issued Yes

Course-specific, integrated German language courses Yes

Course-specific, integrated English language courses No

Costs / Funding

Tuition fees per semester in EUR None

Semester contribution Approx. 150 EUR (including a public transportation ticket)

Costs of living Approx. 860 EUR per month (including apartment)

Funding opportunities within the university

No

Requirements / Registration

Academic admission requirements

For admission to the Master of Science in Micro- and Nanotechnologies (MSc MNT), the successful completion of a Bachelor's or comparable course of at least six semesters or 180 credit points is required. The MSc MNT builds upon Bachelor's degrees in the following fields:

- electrical, electronics and communications engineering
- mechatronics
- technical physics
- material science
- mechanical engineering

All of the above Bachelor's degree programmes must include an in-depth component in the following areas:

- fundamentals of electrical engineering
- electronics/microelectronics
- analogue and digital electronics
- semiconductor physics/technology
- material science
- physics, chemistry, and higher mathematics

Language requirements

Applicants must provide one of the following certificates:

- TOEFL iBT 95 to 120 (Internet-based)
- IELTS minimum 7.0
- CEFR minimum level C1
- Cambridge Exam: CAE

Additionally, please check the admission pages for language requirements.

Application deadline

Application period for students with international certificates: 16 January to 15 May
Application period for students with German certificates: 16 April to 15 September

Foreign applicants who need to apply for a visa to enter Germany should submit their application at least three months before the application deadline.

Submit application to

Online application: <http://www.tu-ilmenau.de/apply>

Services

Possibility of finding part-time employment

Temporary jobs are available in local businesses such as shopping malls and supermarkets. Based on availability, it is also possible to apply for "Hiwi" jobs (student assistant) to support research projects.

Accommodation

TU Ilmenau is a campus university. Most of its academic buildings and all of its dormitories are located on the Ehrenberg campus. The dormitories have been renovated in the past few years in

order to accommodate students in single and double bedrooms. The Student Guild guarantees all first semester students a room in the dormitories, provided they apply on time. The dormitory rent in Ilmenau is approx. 162-295 EUR per bed per month, depending on the type of apartment and how well it is furnished. Of course, you may also independently look for a privately rented apartment in Ilmenau and the surrounding area. We cannot offer estimates on the cost of private accommodation because prices vary due to the wide range of conditions.

Support for international students and doctoral candidates

- Accompanying programme
- Welcome event
- Buddy programme



Jonas is studying Micro- and Nanotechnologies at the TU Ilmenau

Film production of Bellmannmedia shows a testimonial of a Micro- and Nanotechnologies Master's student, the facilities and the studying atmosphere on the campus of TU Ilmenau.

» more:
<https://vimeo.com/480437945>

Technische Universität Ilmenau



Students at the campus of TU Ilmenau (2017)

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The history of the TU Ilmenau is characterised by its training of engineers, particularly in the fields of electrical engineering and mechanical engineering. Today, engineering, sciences, economics, and media are the pillars of the university's education and research. The university is also bound to its scientific tradition in its future development. This tradition, along with the strong interdisciplinary connection to the economic and social sciences as well as to the natural sciences, determines the profile of the university. Its firm aim is to be counted among the best academic, technologically oriented educational establishments. Hence, modern forms of study and innovative courses are developed and supported by the university. The strong commitment of its staff and the sound education of the students, including professional supervision, receive high-level academic recognition. With regard to its future structural development, the TU Ilmenau seeks to attract outstanding personalities for research and teaching.

The TU Ilmenau is a state-founded, higher education establishment with about 5,500 students. Our university does not charge any tuition fees. The university upholds high standards, both in terms of academic content and the facilities offered to the students. A long-standing trademark of the TU Ilmenau has been the combination of a friendly, personal academic setting with pleasant social conditions.



University location

The triangle formed by Weimar, Ilmenau, and Eisenach within Germany is of both historical and cultural significance. Goethe, Schiller, Bach, and Luther will forever be linked to this beautiful landscape. Ilmenau itself, a market town of about 39,000 inhabitants, is situated in the picturesque valley of the Ilm in the northern foothills of the Thuringian Forest. The city was greatly influenced by Johann Wolfgang von Goethe. In fact, the "Kickelhahn" is a monument high up in the woods around Ilmenau that contains a few verses from poems written by Goethe that are translated into several languages. It is a monument to this man's influence on the city. Ilmenau has always been famous for its glass and porcelain manufacturers. Trade roads were maintained between Ilmenau, the greater Thuringian area, and the world in order to transport valuable glass and porcelain products from Ilmenau to other areas. From its founding date up to the 19th century, glass was a staple of the economy. Today, Ilmenau still holds on to its roots while looking to the future. The city is alive with new technological businesses. This makes it possible for students at the TU Ilmenau to coalesce with mentors and companies with real-world experience. Ilmenau is a great place to study the science of the future while also being grounded in the heritage of the past.

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🌐 Course website: <https://www.tu-ilmenau.de/en/study/before-the-study/range-of-courses/master/micro-and-nanotechnologies-msc>

📘 <https://de-de.facebook.com/TU.Ilmenau/>

🐦 https://twitter.com/TU_Ilmenau

🌐 <https://www.linkedin.com/school/tu-ilmenau/>

📷 <https://www.instagram.com/tu.ilmenau/>

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Disclaimer

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