Study in Chemnitz: English language Master's degree programmes

UNIVERSITY OF TECHNOLOGY
IN THE EUROPEAN CAPITAL OF CULTURE
CHEMNITZ

Advanced and Computational Mathematics | Advanced Functional Materials

Advanced Manufacturing | Automotive Software Engineering

Design and Test for Integrated Circuits | Embedded Systems

English Studies | Information and Communication Systems
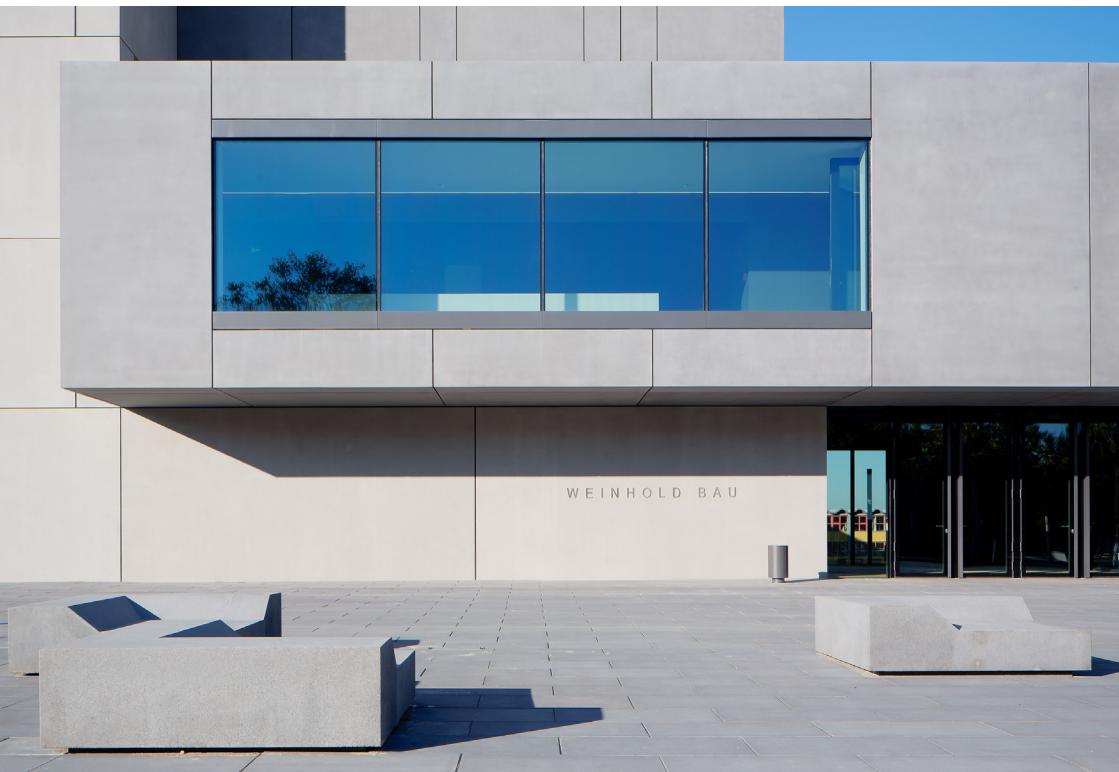
Micro and Nano Systems | Web Engineering

Welcome @TUC

**Overview of all
degree programmes**
www.tu-chemnitz.de/studiengaenge

Online application
https://campus.tu-chemnitz.de/

Overview of the English language Master's degree programmes

Faculty of Mathematics

Master Advanced and Computational Mathematics*

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Mathematics from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 according to the CEFR
Standard period of study: 4 semesters (Part-time-studies possible)
Degree: Master of Science (M.Sc.)
Start of the degree programme: usually winter semester
Language of tuition: English

Faculty of Natural Science

Master Advanced Functional Materials

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Chemistry or Physics from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 according to the CEFR
Standard period of study: 4 semesters
Degree: Master of Science (M.Sc.)
Start of the degree programme: usually winter semester
Language of tuition: English

Faculty of Mechanical Engineering

Master Advanced Manufacturing

Admission requirements: in general vocationally-qualifying university bachelor's degree in Engineering, Natural Science or equivalent degree programme with in-depth scientific knowledge in certain areas, English language proficiency at Level B2 according to the CEFR
Standard period of study: 4 semesters
Degree: Master of Science (M.Sc.)
Start of the degree programme: in winter semester only
Language of tuition: English, some of it in German

* Accredited degree programme

Faculty of Electrical Engineering and Information Technology

Master Design and Test for Integrated Circuits

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Electrical Engineering and Information Technology from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 and German language proficiency at level A2 according to the CEFR

Standard period of study: 4 semesters

Degree: Master of Science (M.Sc.)

Start of the degree programme: usually winter semester

Language of tuition: English

Master Embedded Systems

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Electrical Engineering and Information Technology from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 and German language proficiency at level A2 according to the CEFR

Standard period of study: 4 semesters

Degree: Master of Science (M.Sc.)

Start of the degree programme: usually winter semester

Language of tuition: English

Master Information and Communication Systems

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Electrical Engineering and Information Technology from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 and German language proficiency at level A2 according to the CEFR

Standard period of Study: 4 semesters

Degree: Master of Science (M.Sc.)

Start of the degree programme: usually winter semester

Language of tuition: English

Master Micro and Nano Systems

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Electrical Engineering, Information & Communication Technology from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 and German language proficiency at level A2 according to the CEFR

Standard period of study: 4 semesters

Degree: Master of Science (M.Sc.)

Start of the degree programme: usually winter semester

Language of tuition: English

Faculty of Computer Science

Master Automotive Software Engineering

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Applied Computer Science, Computer Science, Automotive Informatics from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 and German language proficiency at level B2 according to the CEFR

Standard period of study: 4 semesters (Part-time-studies possible)

Degree: Master of Science (M.Sc.)

Start of the degree programme: usually winter semester

Language of tuition: English

Master Web Engineering

Admission requirements: in general vocationally-qualifying university Bachelor's degree in Applied Computer Science or Computer Science from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level B2 according to the CEFR

Standard period of Study: 4 semesters

Degree: Master of Science (M.Sc.)

Start of the degree programme: usually winter semester

Language of tuition: English

Faculty of Humanities

Master English Studies*

Admission requirements: in general vocationally-qualifying university Bachelor's degree in English Studies from Chemnitz University of Technology or equivalent degree programme with regard to content, English language proficiency at Level C1 and German language proficiency at level A2 according to the CEFR

Standard period of study: 4 semesters (Part-time-studies possible)

Degree: Master of Arts (M. A.)

Start of the degree programme: usually winter semester

Language of tuition: English
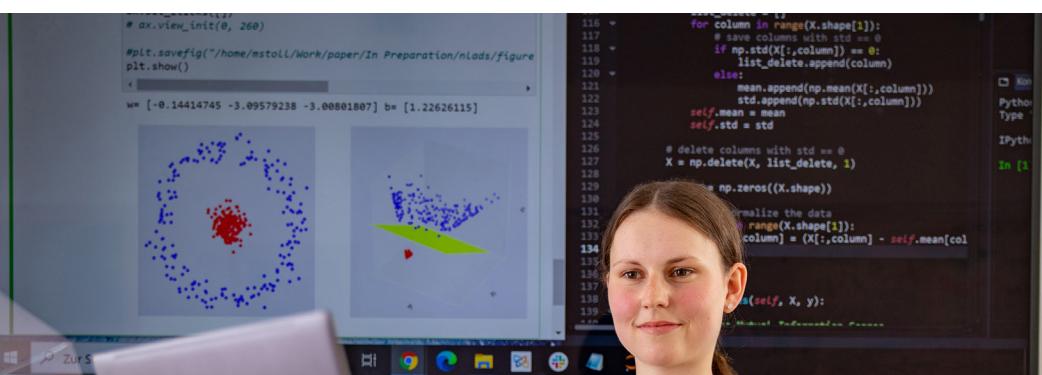
* Accredited degree programme

Master Advanced and Computational Mathematics

Mathematics is indispensable for an efficient treatment of complex real-world problems coming from engineering, computer science, economics, finance etc. To list a few but rather influential and striking examples, we refer to household automatic control systems, Google ranking, portfolio optimization, weather forecasting or big data analysis. In these and many other areas, state-of-the-art mathematical concepts are used to model, analyze and solve the given problem. The aim of this four-semester Master's programme is to train highly qualified graduates in mathematics who are capable of successfully dealing with challenges encountered in academic and practical working fields. Based on a Bachelor's degree in mathematics, the program deepens knowledge and skills in both theoretical and applied mathematics and prepares students for professional careers in business, industry or research.

Why study at Chemnitz University of Technology?

Chemnitz University of Technology offers outstanding education to its students, providing them with various and attractive career perspectives. Owing to an excellent professor-to-student ratio, Chemnitz University of Technology ranks among the top five universities in Germany with respect to the quality of teaching. This high staff-to-student ratio allows more individual attention to be given to students, better enabling them to meet specific academic needs and to enjoy shorter course completion times than in most other German universities. Millions of euros have been invested in Chemnitz University of Technology in recent years, both by the government and through research projects funded by industry, making it one of the most modern research-based universities in Germany.

Degree Structure

Advanced and Computational Mathematics		
1. semester · Levelling up course		**1. semester**
One Basic Course in Advanced Pure Mathematics	One Basic Course in Computational Mathematics	One Basic Course in Data Science

2. - 3. semester · Choose your field of specialisation:

Advanced Pure Mathematics, Computational Mathematics or Data Science

and attend the corresponding courses teaching you the latest state-of-the-art · **2. - 3. semester**

3.sem. · one Seminar · **3.sem.**

4.sem. · Master Thesis · **4.sem.**

1.- 3. sem. · Language Courses
German (at least level A2), Optional language courses · **1.- 3. sem.**

For details, please visit www.tu-chemnitz.de/mathematik/mscphd/

Career Opportunities

Job prospects for graduates of the M.Sc. programme Advanced and Computational Mathematics are excellent. Job opportunities are very versatile and cover a wide range of different branches in industry and economics, such as:

· Consulting
· Banks and insurance companies
· Software developing
· Logistics

· Scientific research
· Information technology
· Data analysis
· Telecommunications

In addition, graduates with excellent grades qualify for the Ph.D. programme of the Faculty of Mathematics.

Master Advanced Functional Materials
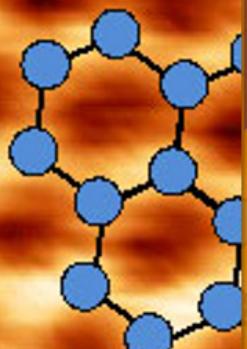
The advanced chemical and physical aspects of modern materials and the transfer of skills in synthesis, development, analysis and manufacturing of functional materials are the key issues of the programme Advanced Functional Materials. The research oriented extension and intensification of physical and chemical knowledge is based on advanced practical training in actual research fields in a modern laboratory environment.

„Graphene, an atomically thin sheet of carbon, is a good example for an advanced functional material. It combines mechanical strength with extra-ordinary flexibility, is highly transparent for light but impermeable for gases, has high electrical and thermal conductivity. These properties render graphene in combination with other advanced materials useful for a large number of prospective applications in sensors, displays, flexible and printed electronics, lightweight composites, and so on."
Prof. Dr. Thomas Seyller, Speaker of the university's focus area „Intelligent Systems and Materials" and of the DFG priority program 1459 „Graphene".

Degree Structure

Basic Modules (1st - 3rd semester)
· Advanced Concepts in Chemistry and Physics
· Synthetic Methods in Chemistry
· Material Characterisation
· Sustainable Chemical Production Technologies
· Surfaces, Thin Films and Interfaces
· Semiconductor Physics – Nano Structures
· Physics of Solar Cells
· Facets of Materials Science

Specialisation Modules (1st - 3rd Semester)
· Research Project
· German as a foreign language or English (depending on language competence level)
· modules must be selected: e. g. Polymer Materials, Colloids & Interfaces, Lab Course Colloids & Interfaces, Circular economy of polymers, Computational Chemistry, Molecular electronics, Sustainable Energy Infrastructure, Introduction to magnetic materials, Sensor Systems, Materials in Micro and Nano Technologies, Modern Battery Materials, Complex Materials for Manufacturing

Module Master Thesis (4th Semester)

Career Opportunities

Current trends on the labor market indicate an increasing demand for graduates, who understand the processes in natural sciences on their transdisciplinary origin. Hence fields of work are for instance:

· Automotive Manufacturer
· Aerospace Industry
· Research Institutes
· Semiconductor Industry

· Chemical Industry
· Pharmaceutical Companies
· Energy Sector
· Life Science Sector

The Master's degree provides in addition the opportunity for doctoral studies (Ph. D.) at an university or research center, such as Max-Planck Institute or Fraunhofer Gesellschaft.
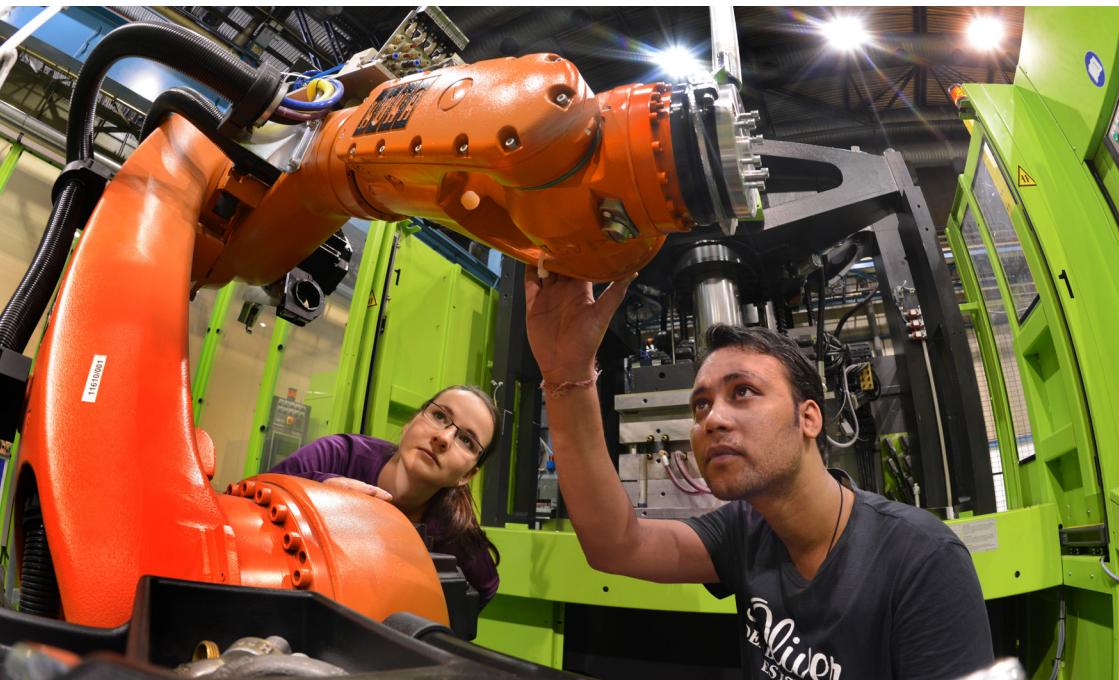
Master Advanced Manufacturing

The degree programme puts especially new emerging technologies, manufacturing methods and materials into focus, from which disruptive effects can start off for the production of tomorrow. Besides a stable knowledge from the Bachelor's degree in the field of production technologies, the applicants should also provide additional skills and experience to fulfill the high expectations of the degree programme. From digital competences like Industry 4.0 up to the application of new functional materials, new challenges have emerged for production technologies with which students should deal profoundly in theory, implementation and application scenarios.

„The structure of the degree programme offers us possibilities of choice and evolvement in the profiles of Hybrid Technologies, Printed Functionalities, Work Design & Sustainability Management and Production Systems. We can apply the skills gained during the projects of the research module on a practical test and amplify them due to the intensive interchange with our professors. The degree programme ends with the Master thesis in 4th semester in which expert knowledge converges with methodical knowledge."

Student of the Master's degree programme Advanced Manufacturing

Degree Structure

Basic Modules (1st semester)

Advanced Manufacturing

- Mathematics for Engineering Science
- Digital Manufacturing
- Additive Manufacturing
- Resource Efficiency from an Economic Perspective
- Research Methods

Advanced Modules: Electives/Soft skills

(1st - 3rd semester, compulsory and elective modules)

- Deutsch für Ingenieure
- Deutsch als Fremdsprache
- Englisch in Studien- und Fachkommunikation
- Applied Human Factors
- Applied Modelling and Simulation in Solid Mechanics II

Specialisation Modules: Major subjects (2nd- 3rd semester)

one of the following four major subjects (compulsory and elective modules):

Hybrid Technologies, e. g.

- Textile Process Chains
- Recycling of Plastics
- Applied Modelling and Simulation in Solid Mechanics
- Surface and Interface Engineering
- Polymer-based Hybrid Structures

Smart Production, e. g.

- Joining Technologies and Strategies
- Forming Process Chains
- Machining Technologies
- Efficient Process Chains
- Design and Control of Smart Production Systems

Work Design & Sustainability Management, e. g.

- Sustainable Smart Manufacturing
- Life Cycle Engineering
- Life Cycle-oriented Management
- Sustainability Management
- IT-supported Evaluation of Material Flows and Process Chains
- Instrumentation

Printed Functionalities, e. g.

- Printing Processes
- Automotive Sensor Systems
- Media Physics
- Printing Presses
- Research Lab
- Surfaces, Thin Films and Interfaces
- Printed Electronics & Special Topics of Functional Printing

Module Applied Engineering Project (3rd semester)

Module Master Thesis (4th semester)

Career Opportunities

Graduates of this degree programme are highly wanted in companies characterised by manufacturing through disruptive innovations like digitalisation, hybrid technologies and new functional material systems in consideration of resource- and energy efficiency. Notable examples are companies with branches like aerospace, mechanical -, automotive- and plant engineering as well as a widespread industrial basis of small and medium-sized companies up to engineering offices. The possibility to continue the scientific education at a university is offered to all graduates and also the doors are open for doctorial studies (Ph.D).

Master Automotive Software Engineering

Automotive, avionics and mechanical systems are important application areas for most modern industries. The design of embedded control units in these areas relies on methods of computer science and engineering. Specific aspects of the development of these hardware/software systems are in the main focus of this Master's degree programme. The program provides knowledge and skills in three fields:
· Automotive Software Engineering
· Embedded Systems
· Real-Time and Communication Systems

"I am studying Automotive Software Engineering at Chemnitz University of Technology because of the provided outstanding environment: we develop course-related applications on original onboard control units of well-known automobile manufacturers. We process data from genuine BMW test vehicles and attend lectures held by guest professors that work for potential future employers, and teach in-depth knowledge and practical experiences."

Chirill Svet, graduate of the Master's degree programme Automotive Software Engineering

Degree Structure

Automotive Software Engineering (1st - 3rd semester)

· Design of Software for Embedded Systems

Elective modules:
· Formal Specification and Verification
· Automotive Software Engineering
· Neurocomputing
· Software Engineering and Programming Basics
· Empirical Software Engineering

Embedded Systems (1st - 3rd semester)

· Advanced Platforms for Automotive Systems

Elective modules:
· Hardware/Software-Codesign I and II
· Operating Systems for Distributed Systems
· Embedded Software Lab
· Automotive Sensor Systems
· Advanced Integrated Circuit Technology

Real-Time and Communication Systems (1st - 3rd semester)

Elective modules:
· Software Service Engineering
· Real-Time Systems
· Dependable Systems
· Security of Distributed Systems

Computer Science (1st - 3rd semester)

Elective modules e. g.:
· Advanced Management of Data
· Multimedia Retrieval
· Media Encoding
· Artificial Intelligence for Mobile Robots

Key Competences (2nd - 3rd semester)

· Fundamental Scientific Methods
· Business Planning and Management of Startups
· Distribution of Technical Devices

· Spanish
· For non-native German speakers: German as a foreign language

Module Research Seminar Computer Science and Module Research Internship (3rd semester)

Module Master Thesis (4th semester)

Research

The Master's degree programme is closely connected to the special interest research area "Embedded Self-Organising Systems" (ESS) of the Faculty of Computer Science. Therefore, courses and labs are often integrated in current research projects. Well-known industry partners, for example BMW and Airbus, offer opportunities for practical research trainings.

Career Opportunities

Companies and OEMs in the automotive and aviation industry seek graduated engineers who have successfully completed this Master's degree programme. Employment opportunities include: product development for control units, applied research and quality assurance.

Master Design and Test for Integrated Circuits

The programme provides a future-oriented education in the fields of designing, manufacturing and testing of integrated circuits. The initial theory courses are the base for the more practical oriented modules later. All courses are held by researchers actively working in the field enabling best up-to-date skills for the professional career of the graduates.

"This Master's programme expertly blends theoretical knowledge with hands-on experience, providing a comprehensive understanding of the increasing necessity of semiconductor test. Students can look forward to becoming part of a pioneering community that is at the forefront of technological innovation and securing a promising future in the global tech industry."

Dr. Ralf Montino, Vice President PLI, Elmos Semiconductor SE

"IC design is at the heart of semiconductor innovation, enabling the creation of new, more powerful, and energy-efficient devices. This Master degree program equips graduates with skills and knowledge for a wide range of excellent career opportunities in Saxony, but also Germany and worldwide."

Uwe Gaebler, Senior Director Development Center for Automotive Electronics and Artificial Intelligence, Infineon Technologies

Degree Structure

Basic Modules (1st - 2nd semester)
- Design of Digital Systems
- Design of Heterogeneous Systems
- Test of Digital and Mixed- Signal Circuits
- Elements of Integrated Circuits
- Technologies for Micro and Nano Systems
- Integrated Circuit Design - Transistor Level
- Reliability of Micro and Nano Systems

Practical Oriented Modules
(2nd - 3rd semester)
- Research Internship
- Research Project
- Applied Circuit Design and Testing
- Layout of ICs and PCBs

Module Master's Thesis (4th semester)

Focal Modules (1st - 3rd semester)
- Modern microscopies
- Verification of Digital Systems
- Numerical Methods for Materials and Reliability of Micro and Nano Systems
- Failure Analytical Methods for Micro and Nano Systems
- Smart Sensor Systems
- Semiconductor Physics - Nano Structures
- Advanced Integrated Circuit Technologies
- Microsystems Design
- Micro and Nano Devices
- Flexible Electronics
- Digital Components and Architectures for Data Processing
- Multisensorial Systems
- Digital Signal Processing
- Programming and Data Analysis
- Optimisation in Applications
- Advanced Methods for Integrated Circuits

Career Opportunities

The possibilities for the graduates are excellent. They may work in IC design houses, fabs, semiconductor test companies and device characterisation departments. The English course language enables you to work world-wide, f.e. in the following areas:
- Semiconductor industry
- Chip and sensor industry
- Automotive, aviation and railway industry
- Research and development at universities
- Employment at state-owned and private research facilities
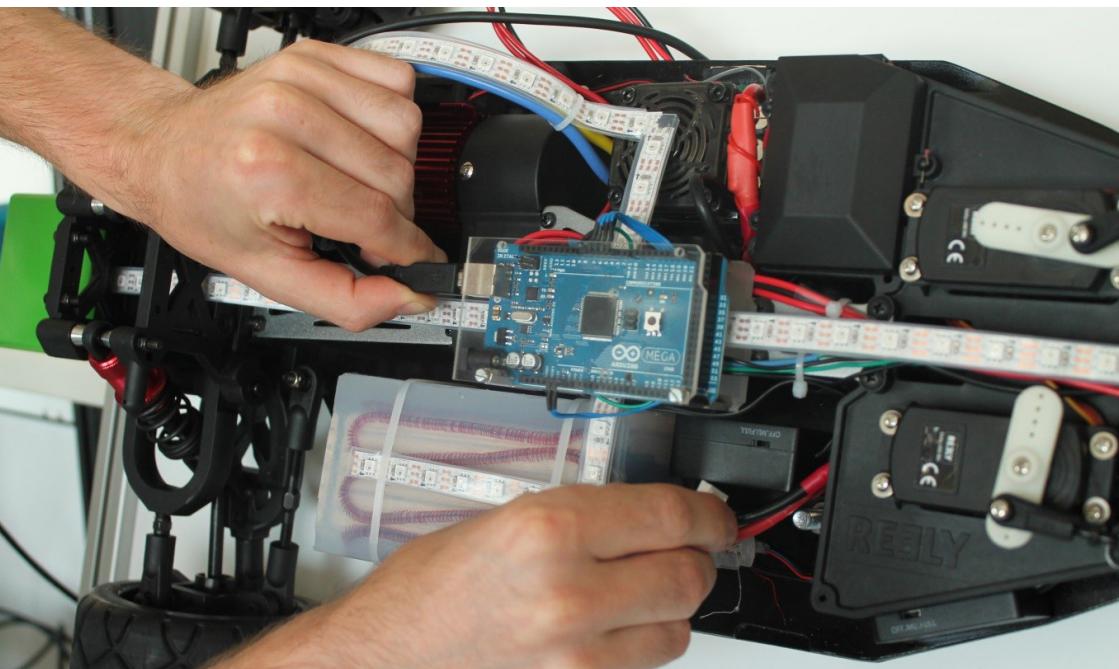
Master Embedded Systems

Embedded systems are important in industry and research as a key technology and make our daily life more comfortable and safer. Embedded systems are ubiquitous, and today's economy and society would not survive without them. They drive innovation and help for diversification of products in terms of functionality, efficiency and quality. The English language programme provides a world-class education with focus on future challenges of embedded systems. Graduates will gain the ability to solve engineering tasks at the interface between hardware and software. The aim here is to develop intelligent system solutions by combining microsystem technologies, information and communication technologies and software development. Therefore, besides the theoretical education also the practical training plays an important role.

"Sensor systems offer interesting examples for Embedded Systems. They need a dedicated electronics for signal acquisition and amplification. By means of digital signal processing the measurement information can be extracted and transmitted. The decision about hardware and software realisation of system functionality needs experts which are educated in both fields."

Prof. Dr. Olfa Kanoun, Chair for Measurement and Sensor Technology

Degree Structure

Basic Modules (1st - 2nd semester)
- **Components for Embedded Systems:** Digital Components and Architectures for Data Processing, Smart Sensor Systems, Digital Signal Processing 1, Computer Vision 1, Design of Software for Embedded Systems, Real-Time Systems, Project Lab Embedded Systems
- **System Design:** Design of Digital Systems, Hardware/Software-Codesign I

Focal Modules (2nd - 3rd semester, Elective Modules)
- **System Design:** Design of Heterogeneous Systems, Test of Digital and Mixed-Signal Circuits, Hardware/Software Codesign II, Hardware Acceleration using FPGAs, Verification of Digital Systems
- **Automotive Systems:** Advanced Platforms for Automotive Systems, Automotive Sensor Systems
- **Signal Processing:** Image Processing and Pattern Recognition, Multisensorial Systems, Digital Signal Processing 2, Video Signal Processing, Computer Vision 2, Programming and Data Analysis, Mobile Localization and Navigation, Antennas and Wave Propagation, Self-Organizing Networks, Network Security
- **Embedded Systems:** Advanced Embedded Systems
- **Nontechnical Modules:** Optimization for non-Mathematicians, Management Accounting, Communication and Leadership

Module Research Project and Research Internship (3rd semester)

Module Master's Thesis (4th semester)

Career Opportunities

The possibilities for graduates are excellent both in science and in industry, because of the increasing importance and the high potential for innovation in embedded systems. The English Master program trains the abilities to become a global player in his field. In addition, the occupation of leadership positions in management is also possible.

- Automotive industry
- Aerospace
- Sensor industry
- Chip industry
- Robotics
- Plant Engineering
- Software development
- Research

Master English Studies

The research-oriented Master's degree programme in English Studies is characterised by its internationality and the deepening of theoretical and practical competences with the possibility of setting individual focal points. The specialisations of Teaching English to Speakers of Other Languages (TESOL), Digital English Linguistics, English Literatures with a focus on postcolonial cultural and literary representations and practices, and Anglophone Area Studies with a social science orientation can be flexibly combined. By blending academic expertise with a strong professional orientation (through a practice-oriented module and especially in the TESOL module), the degree programme qualifies students for an entry into the national or international job market.

"The Master's degree programme English Studies at Chemnitz University of Technology allowed me to experience international English in Germany first-hand: I was able to choose the most suitable specialisations for my interests from many diverse courses; I experienced the true meaning of 'Englishes' with colleagues from around the world; and I was prepared for many job opportunities with different English applications during and after my studies."

Marina Ivanova, Graduate

Degree Structure

The degree programme consists of core modules that deepen core scientific skills, as well as research- and application-oriented advanced modules, which are rounded off by a Master Thesis. The acquired skills can, moreover, be applied in an internship during the second year of study.

Core Modules (1st - 4th semester)
• Translation Skills
• Academic Skills
• Multimedia Skills
• Digital Skills
• Project Management Skills
• Professional Skills
• Cultural Skills
• Practical Skills

Advanced Modules (1st - 3rd semester)
Two of the following modules must be selected:
• Teaching English to Speakers of Other Languages (TESOL)
• Digital English Linguistics
• English Literatures
• Comparing Societies, Politics, and Cultures in Anglophone Countries

Module Master Thesis (3rd/4th semester)

Career Opportunities

English Studies equips students with the written and oral communication skills necessary for a professional career. Our programme prepares students for a variety of careers in the following areas:

In International Communications and Knowledge Transfer:
• Interpreter/Translator
• Teacher (private sector), Lecturer/Researcher (university level, requirement of a doctoral degree)
• In-house Editor, Literary Agent, Librarian

In Media and Public Relations:
• Press Officer, Public Relations Advisor
• Web Content Editor, Advertising Copywriter
• Project Manager
• Journalist, Media Agent

Master Information and Communication Systems

This English-language Master's degree programme covers a wide range of modules with the focus on future challenges of the increasingly globalised field of Information and Communication Systems. Digitisation and the increasing penetration of private and occupational areas of life by Information and Communication technologies will extensively shape the information society of the future. Students at Chemnitz University of Technology are qualified to solve engineering problems and to work in research and development as well as in management positions. Focal points of the degree course are Communications Engineering, Microwave Engineering and Photonics, Circuit and System Design, Communication Networks, Digital Signal Processing and Circuit Theory.

"In today's world, there is practically no engineering application that does not contain elements of Information Systems and Technology. The universal scope of this field makes it an indispensable and futuristic branch of electrical engineering. The new Master's degree programme, the university, and the city of Chemnitz – a city with an illustrious technological heritage – together offer a most promising academic and cultural experience with unparalleled value-for-investment. We look forward to processing your application."
Prof. Dr. Madhukar Chandra, Head of Chair

Degree Structure

Lectures are given by professors with a sound background from industry and research who formerly worked at Nokia, Siemens Networks, Loewe, Alcatel-Lucent, Daimler and the German Aerospace Center.

Basic Modules (1st - 3rd semester)
- Design of Digital Systems
- Advanced Mobile and V2X Communication
- Digital Signal Processing
- Basics of Microwave and Photonic Systems
- Next Generation Internet

Focal Modules (1st - 3rd semester)
- Image Processing and Pattern Recognition
- Digital Signal Processing
- Video Signal Processing
- Programming and Data Analysis
- Aerospace Remote Sensing
- Antennas and Wave Propagation
- Design of Heterogeneous Systems
- Test of Digital and Mixed-Signal Circuits
- Verification of Digital Systems
- Hardware Acceleration using FPGAs
- IP Networking and Software Defined Networking Lab
- Communication Networks Seminar
- Network Security
- Self-Organizing Networks
- Optimization for Non-Mathematicians
- Management Accounting
- Communication and Leadership

Module Research Project (3rd semester)

Module Master Thesis (4th semester)

Career Opportunities

Graduates are offered excellent career opportunities both in academia and in the global Information and Communication industry. Also occupational activities in management are possible. Graduates are well prepared for working at:
- communication equipment manufacturers
- network operators
- consulting companies
- research institutes
- automotive companies
- aerospace companies

Master Micro and Nano Systems
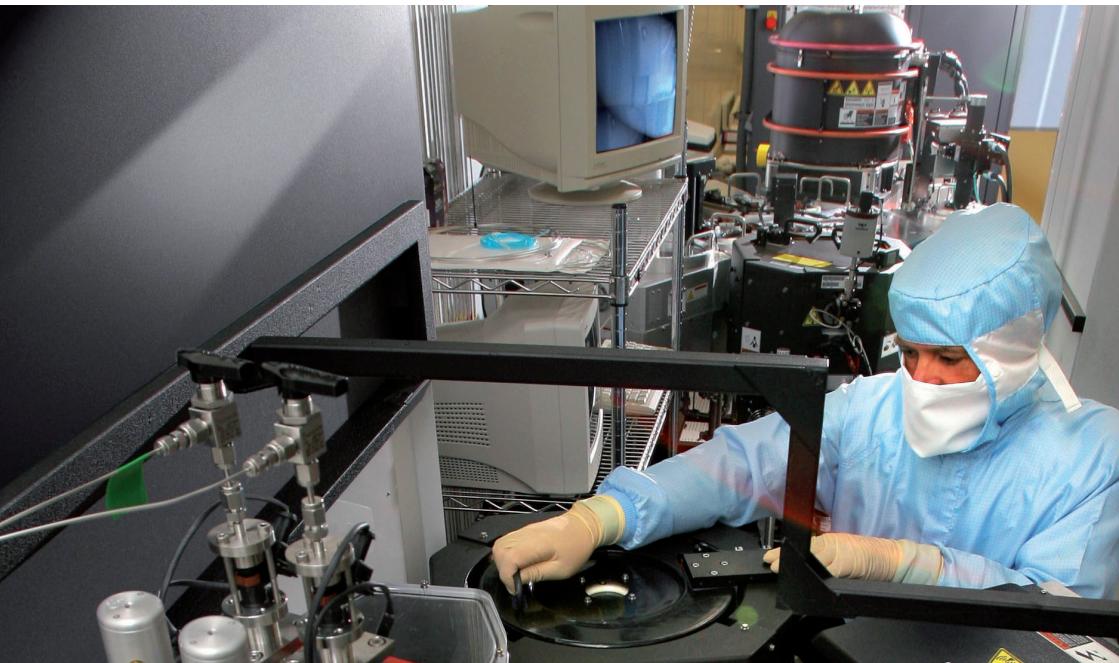
The programme provides world-class, future-oriented education in design, manufacturing, characterisation and integration of miniaturised components into engineering systems.
The interdisciplinary courses cover fundamental theoretical knowledge in physics and engineering but also application-oriented skills in developing innovative products, in business administration and management. Classes and practical training address current and prospective needs of industrial and academic research.

"Studying Micro and Nano Systems was a very good choice for me. I am very passionate about the application-oriented character of the degree programme and the possibilities of research in the clean room facilities at the Center of Microtechnologies at the University Campus. Also, because of the internationally-recognised Master's degree, I can start my doctorate anywhere in the world."

Benchirouf Abderrahmane, Student of Micro and Nano Systems

Dregree Structure

Basic Modules (1st - 2nd semester)
· Microsystems design
· Design of Heterogeneous Systems
· Semiconductor physics / Nanostructures
· Micro and nano devices
· Smart Sensor Systems
· Reliability of micro and nano systems
· Technologies for micro and nano systems
· Advanced integrated circuit technology
· Materials in micro and nano technologies

Focal Modules (2nd - 3rd semester)
· Automotive Sensor Systems
· Integrated circuit design – transistor level
· Fields and Waves
· Design for Testability for Circuits and Systems 2
· Power semiconductor devices
· Microscopy and analysis on the nano scale
· Optoelectronic devices
· Surfaces, Thin films and Interfaces
· Micro optical systems
· Self-Organizing Networks
· Network Security

Module Research Project (3rd semester)

Module Master Thesis (4th semester)

Career Opportunities

The possibilities for graduates are widespread, because of the high potential for innovation in nano and micro systems. The teaching language, English, offers degree holders excellent chances to become global actors, for example in the following areas:
· Automotive industry
· Semiconductor industry
· Chip and sensor industry
· Plant engineering
· Research and development at universities
· Employment at state-owned and private research facilities
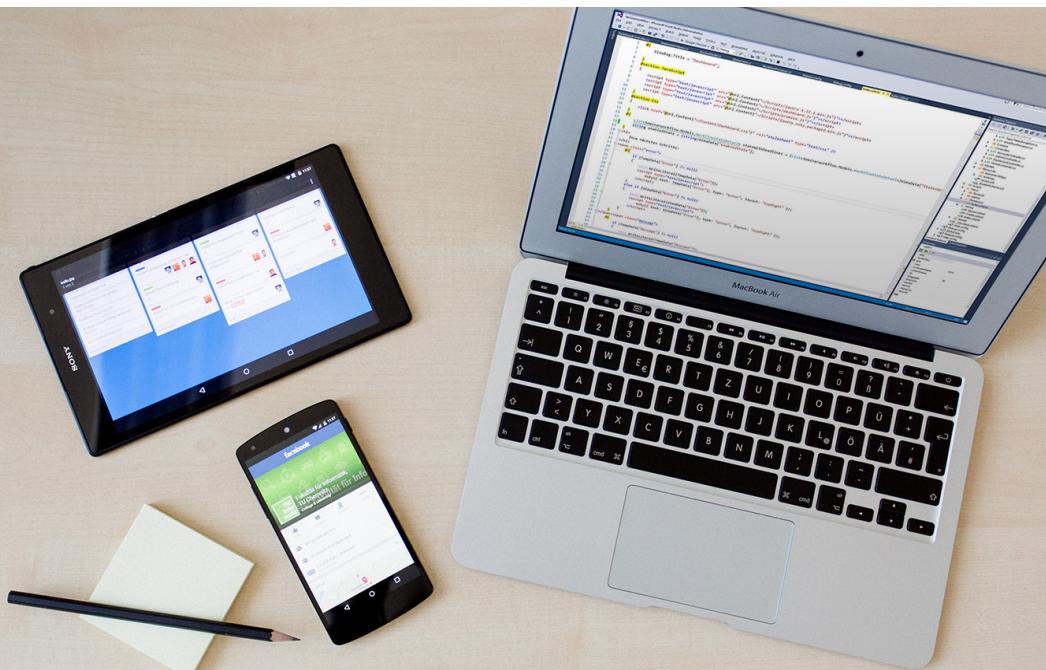
Master Web Engineering

Internet and Web have become the foundation of today's knowledge society. Web-based applications play a central role here and lead to advantages – whether it is on the Smart Watch, the Smartphone, in the cloud, distributed world wide via the Internet of Services or via the Internet of things in our Smart Home and the industry 4.0. It is the diversity, complexity and globality which are challenges for the development and secure operation of these applications. For this, methodical and practical skills in software development, management and evolution of data-intensive and web-based software solutions are necessary. The Master degree program Web Engineering teaches these skills. The focus here is on Databases, Information Systems, Software Engineering as well as Internet and Web technologies. Special highlight: Within the framework of current economic problems, you will learn project work, economic aspects and coordination as part of a team and help to find a solution for challenging research problems.

„The course of study offers an ideal mix of theory and practice. Principles and architectures of the web are taught and showed how to use them in industry and economy. For me, Web Engineering opened up a playground which, thanks to the rapid growth of the Web, always offers new opportunities for experimentation and development. Systematic planning, development and integration of web applications have become my dissertation topic and profession."

Valentin Sieger, Graduate

Degree Structure

Main Modules (1st - 2nd semester)
Elective modules:
- Current Trends in Web Engineering
- Cloud & Web Applications
- Software Service Engineering
- Databases and web techniques
- Databases and object orientation
- Model-Driven Software Development
- Quantitative Analysis of Software Designs

Specialisation Modules (1st - 2nd semester)
Elective modules e. g.:
- Data security and cryptography
- Distributed Systems Design
- Distributed Software Security
- XML
- Operating systems for distributed systems
- Real-time systems
- Introduction to Artificial Intelligence

Key Competences (1st - 2nd semester)
Elective modules:
- Business planning and management of start-ups
- Start-up financing
- Technical sales
- Business to Business Marketing
- Communication and leadership
- German as a Foreign Language II (Level A2)
- English in Study and Specialised Communication II (Level B2)

Module Seminars (1st - 2nd semester)
- Seminar Web Engineering
- Preparatory Seminar Simulation game Web Engineering

Until graduation, students whose native language is not German must prove that they are at level A2. Students whose native language is not English can elect the module English in Study and Special Communication II (level C1).

Module Simulation Game (3rd semester)
The simulation features an innovative teaching concept with focus on user-centered solutions as well as teamwork and economic considerations in projects.

Module Master Thesis (4th semester)

Career Opportunities
Graduates will find interesting job opportunities in many areas on the German and international labour market, for example in the following sectors:
- Information and communication technology (ICT) industry (in the Internet of Services, Industry 4.0, E-Business)
- Web and media industry (agencies, search engines and portal operators, software houses)
- Industries in the Big Data environment (medical, pharmaceutical and chemical industries)
- Software Industry as Web Engineering Expert or Software Engineer
- Consultancy sector

NOTIZEN

FURTHER INFORMATION:

Studying in Chemnitz
www.study-in-chemnitz.com

Online Application
www.tu-chemnitz.de/studienbewerbung

FAQ - Frequently Asked Questions
www.tu-chemnitz.de/studierendenservice/faq.php.en

Student Service
Straße der Nationen 62, Room A10.044
+49 371 531-12125
admission@tu-chemnitz.de

Central Course Guidance Service
Straße der Nationen 62, Room A10.046
+49 371 531-55555
studienberatung@tu-chemnitz.de

Postal Address
Technische Universität Chemnitz
Studierendenservice und Zentrale Studienberatung
09107 Chemnitz

International Office
Bahnhofstraße 8, Room A16.101
+49 371 531-13500
iuz@tu-chemnitz.de

Academic Course Guidance
For an overview of all academic counsellors
www.tu-chemnitz.de/studienberater

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AKKREDITIERTER STUDIENGANG

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