

# Degree programmes taught in English

at Friedrich-Alexander-Universität  
Erlangen-Nürnberg (FAU)







## Welcome to the Heart of Europe

At the heart of Europe lies the metropolitan region of Nuremberg—home to one of Germany's oldest and most distinguished universities: Friedrich-Alexander University Erlangen-Nürnberg (FAU), founded in 1743.

We offer the ideal innovation-driven environment to 40,000 students from around the world to kickstart their careers in Engineering, Economics, Natural Sciences, Medicine, Law, and the Humanities. In many fields, our University counts among the major global players in higher education with connections to more than 500 universities worldwide.

FAU is home to two elite research bodies funded by the Excellence Initiative, which promotes science and research at German Universities: the Cluster of Excellence Engineering of Advanced Materials and Processes (EAM) as well as the Graduate School in Advanced Optical Technologies (SAOT).

The unique advantage of the University is that subjects do not exist side by side, but together—because collaboration across disciplinary boundaries is a top priority at FAU. This is evidenced by the multi-faculty major research areas as well as the numerous interdisciplinary degree programmes and the research centres spanning several disciplines. This strength feeds directly into students' education because research and teaching at FAU are intertwined, bringing the latest breakthroughs and insights straight into the classroom. A Master's degree at FAU enables students to seamlessly continue into doctoral studies if they wish.

At FAU, you will not amass huge student debts: under Germany's education system no tuition fees are charged in most courses. You do not have to pay to receive an excellent education!

International students thrive at FAU, not least thanks to our broad range of degree programmes taught in English. You will join a young, bustling community fluent in English and open to cultural exchange, so it is easy to settle in. If you wish to improve your German or English, look no further than FAU's free language courses.





# Engineering

## **MSc Advanced Materials and Processes (MAP) (Elite degree programme)**

This elite Master's degree programme is a unique combination of chemical and biological engineering with materials science and engineering. By providing students with a cutting edge education, MAP is training the next generation of engineers with the skills necessary to produce innovative materials in the most efficient and sustainable way. MAP is built around the following four focal subjects: Advanced Processes, Biomaterials and Bioprocessing, Computational Materials Science and Process Simulation, Nanomaterials and Nanotechnology, with students specializing in two out of four from the second semester onwards.

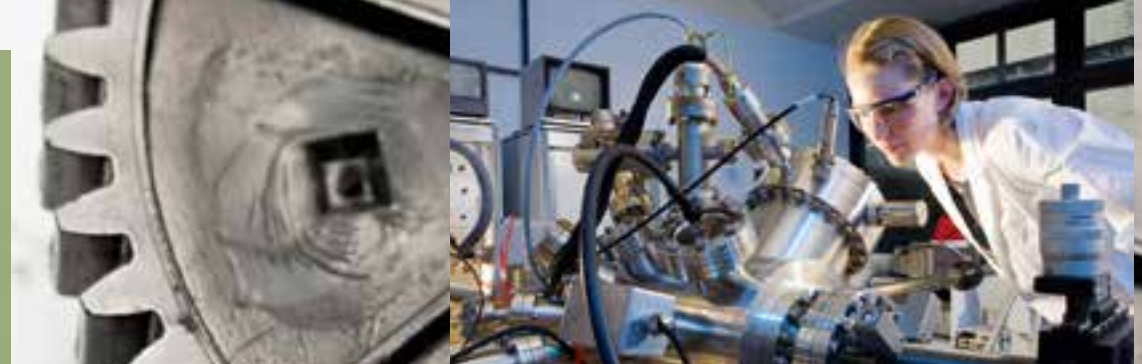
The intensive study of these topics together with the associated project work as well as practical applications, an industrial internship and soft skills provide students with broad career opportunities in industry as well as in academia. MAP is one of the cutting-edge programmes supported by the Bavarian Elite Network.

## **MSc Advanced Optical Technologies (Elite degree programme)**

As part of the Elite Network of Bavaria, MAOT provides training in modern optics—a key technology for the 21<sup>st</sup> century. Erlangen is a leading centre for optics. The PhD programme SAOT, the Max Planck Institute for the Science of Light, the Fraunhofer Institutes, and the Bavarian Laser Centre collaborate with MAOT. The course covers six subjects: Optics in Communication, Optics in Medicine, Optical Material and Systems, Optical Material Processing, Optical Metrology, and Computational Optics. The interdisciplinary lectures are held in small groups by experts in engineering, physics, and medicine.

## **MSc Chemical and Biological Engineering**

This Master's programme is aimed at educating engineers for careers in the chemical, petrochemical, and pharmaceutical industries, in biological and environmental process technology or in the energy sector, and at preparing them for the complex tasks in these fields. A balance between practice and theory and an orientation towards industrial and social developments is achieved in a curriculum including both fundamentals and modern topics from current research, and by close cooperation with the relevant industries. Students also have the option of studying at the FAU Busan Branch Campus in South Korea. All graduates of FAU Busan receive a German MSc degree. They are simultaneously registered at FAU which allows them to carry out parts of their studies in Germany.



## **MSc Communications and Multimedia Engineering**

This programme emphasizes the fundamental concepts of advanced communications and multimedia as a preparation for cutting-edge research and development. CME technologies have experienced rapid growth and have attained high economic importance worldwide. Examples are numerous in digital speech, audio and video coding, digital transmission, and communication networks. The high-profile, research-oriented faculty entertains strong links with domestic and international high-tech industry and helps students establish contacts with leading companies in audio technology, medical systems, and mobile and optical communications.

## **MSc Computational Engineering:**

This programme is an innovative discipline fusing the expertise of established engineering fields, computational sciences, and applied mathematics. It was created in response to an increasing demand for high-performance computing in a variety of scientific and technical fields. Students will be perfectly prepared for the new challenges in simulation and modelling. In addition, it is possible to obtain a MSc degree with the Bavarian Graduate School of Computational Engineering (BGCE, [www.bgce.de](http://www.bgce.de)) or a double degree with KTH, the Royal Institute of Technology in Sweden.

## **MSc Medical Engineering, branch of study Medical Imaging and Data Processing**

The programme is a technical and research-driven Master's degree programme with a specialized focus on medical needs. Students are familiarized with systematic and instrumental methods and acquire professional and methodological skills. Thanks to the interdisciplinary content, graduates are highly qualified for a career in medical image and data processing. Methods for developing software systems in medical engineering are taught, ranging from basic algorithms for image improvement, image reconstruction, and image registration to computer-aided diagnostic support and hospital information systems.





## Natural Sciences

### MSc Chemistry

This degree programme has a strong focus on research and is divided into three main modules: Organic Chemistry, Inorganic Chemistry and Physical Chemistry. During their studies, students may focus on a variety of different research areas, among them food chemistry, crystallography, nano-electronics, microbiology, electrochemistry, and biochemistry. In 2012, the degree programme was awarded the European Euromaster® label.

### MSc Integrated Life Sciences

Understanding biological systems often necessitates a solid background in physical and mathematical methods. ILS students acquire a strong knowledge of mathematical and physical methods to analyze and describe biological processes quantitatively. Structure-function relationships of proteins, DNA sequence analysis, and complex interactions between biomolecules or cells are typical areas of application. Students will obtain advanced knowledge and methodological skills with a focus on two of the three different directions: Mathematical Modelling and Systems Biology—Bioimaging and Biophysics—Biological Structures and Processes.

### MSc Materials Physics

This course focuses on the physical properties of materials. It includes advanced solid state physics, lab courses on experimental methods in solid state physics, and specialization in a research subject leading to a Master's thesis. Courses on mechanical, electrical, and optical properties of selected materials, soft matter physics, biophysics, theoretical and computer physics, or special aspects of materials engineering and chemistry may be chosen. The Master's thesis is closely connected to the research of the EAM Cluster of Excellence, the interdisciplinary centres for molecular materials and interface-controlled processes (ICMM, ICICP), and to the Max Planck Institute for the Science of Light (MPL).

### MSc Molecular Science

Molecular science is a comparatively recent field of research encompassing biochemistry, molecular chemistry, medicine, and pharmacy. The most cutting-edge scientific and technological developments are covered by the degree programme, preparing graduates for a career in upcoming fields such as life sciences, biotechnology, and nanotechnology. In 2012, the degree programme was awarded the European Euromaster® label.

### MSc Physics

This programme includes one year of coursework and, subsequently, a one-year training phase directed towards performing independent research. It aims at advanced training in selected fields of physics and offers the opportunity for specialization. The Master's degree qualifies graduates for a subsequent doctoral thesis. The subjects reflect the physics research pursued at FAU. Focus points are astrophysics and astroparticle physics, optical sciences and solid-state physics on the experimental side, and computational and statistical physics, light-matter interaction, quantum gravity, and condensed matter physics on the theoretical side. Optionally, special Master's courses can be selected with a focus on Physics in Medicine.

### Physics Advanced

#### (Graduate and Doctoral Programme of the Elite Network of Bavaria)

Physics Advanced is an international study programme that integrates research with coursework at the BSc, MSc, and doctoral level. Physics Advanced offers exclusive research-focused courses embedded into the programme at Erlangen which are complemented by an extensive programme of research schools and social activities. This study programme is open to exceptionally talented and motivated students. The highly interdisciplinary environment of the Erlangen Faculties of Sciences, Engineering, and Medicine and the Max Planck Institute for the Science of Light is ideal for such a programme.





## Linguistics, Literary, and Cultural Studies

### MA English Studies

This is a consecutive two-year full-time course or a four-year part-time course with a strong research orientation. The course of study is modularised and encourages a specialisation in one of the two fields “Culture and Literature” and “Linguistics and Applied Linguistics”. Culture and Literature enables students to combine specially designed courses on literary and cultural history and theory with a broad range of interdisciplinary modules. Linguistics and Applied Linguistics focuses on the description and analysis of the English language in the light of current linguistic theories and teaching approaches.

### MA Human Rights

The programme addresses the growing importance of human rights in all areas of society and academia, covering fundamental challenges as well as current issues. Graduates will be equipped with theoretical and practical skills to pursue professional activities in human rights contexts. In the first semester, all students will enrol in three compulsory modules covering political, philosophical, and legal foundations of human rights respectively. In the second semester, students will participate in a compulsory, interdisciplinary module on non-discrimination and may elect four out of the following special modules: Economic, Social and Cultural Rights; Human Rights and International Economic Law; Freedom of Religion and Belief; Gender and Human Rights; International Criminal Law; Transitional Justice; Human Rights of Refugees and Rights of Persons with Disabilities.

### MA North American Studies

**Culture and Literature:** In this research-oriented programme, students learn how to contextualize and evaluate US American, Canadian and Caribbean cultural phenomena, media products, and literary writing from the colonial period to the present day. Basic modules provide historical frameworks and theoretical tools, and foster academic language skills. Integrated advanced and focus modules offer a historical survey and train students’ culturally specific analytical skills. Students develop and conduct their own research based on their critical understanding of both disciplinary and interdisciplinary contexts.

### MA The Americas/Las Américas

This programme combines a theory-based education with the practice-oriented application of methods for research in and between the fields of North American and Latin American Studies. It provides graduate students with the basics of the comparative discipline of Inter-American Studies and with the expertise necessary for differentiated research in this area. In regional and interregional core units, students focus on the history, politics, societies, and the cultures and literatures of North and Latin America, and learn to place them in a hemispheric, transnational context. In language classes, students learn to speak and write academic English and Spanish.



## Social Sciences and Economics

### MA Development Economics and International Studies

The programme combines analytical and quantitative methods with an emphasis on policy and practice. It is designed to enhance the knowledge and skills of graduate students seeking leadership responsibilities in public, non-profit, and private sector organizations for international cooperation and development, and for those intending to pursue careers in teaching and/or research in the general field of development economics.

### MSc Economics

This modern, internationally oriented Master's degree programme in economics allows students to both gain a professional qualification and to prepare for a possible doctoral degree. Students can choose to specialize in the areas of Labour Economics, Macroeconomics and Finance, Public Economics, Energy Markets or Health Economics. In the first stage of this programme, students take the Master's courses. In a second stage, graduates with excellent grades can progress directly to their doctoral studies and obtain a PhD. Intensive supervision is an important feature of the programme, while studying abroad and completing an internship at a renowned company, economic research facility or other institution are strongly encouraged.

### MSc International Business Studies

The programme provides students with a comprehensive understanding of the complexity of international business. Special attention is given to the variety of approaches that businesses choose to adapt their international operations to the diversity of laws, business practices, and cultures across the globe. Students acquire all the skills necessary to succeed in an international environment.

### MSc International Information Systems

This is a four-semester programme for young talents who aim for challenging management positions in globally operating high-tech businesses. Excellent studying and working conditions will prepare students for an international career in business with a strong focus on managing international information systems. The programme is appropriate for students who have a strong interest in information technology and its role in today's business environment.

## Sport Science and Sports

### MA Physical Activity and Health

This programme provides graduate students with knowledge and practical experience in the field of physical activity and health promotion. Its areas of emphasis are physical activity and exercise for disease prevention and rehabilitation. Students are trained in: conceptualization of intervention strategies, programme implementation within specific settings and/or target groups (e.g. vulnerable groups such as the chronically ill or ethnic minorities), quality assurance, and scientific evaluation.





## Service and advice at FAU

We help you land on your feet in your new home and make new friends! Our wide range of student services is here to help, from guidance prior to arrival and finding accommodation to student counselling, intercultural training, and leisure activities.

The **Student Advice and Career Service (IBZ)** is the University's main point of contact for students in all questions regarding degree programmes and subject combination options, admission regulations, and application procedures as well as course schedules and examinations. The Career Service supports both undergraduates and postgraduates in planning and managing their career with a wide variety of professional cross-faculty events and counselling.

The **Central Office for International Affairs (RIA)** coordinates FAU's activities abroad and is the main contact point for all questions regarding international studying, teaching, and mobility. RIA oversees several scholarship and exchange programmes and provides assistance to international students in many different areas.

The **University Library** with its almost inexhaustible supply of media for all disciplines and a valuable inventory of old manuscripts is one of the largest libraries in Bavaria. At the FAU **Language Centre**, students and staff can acquire additional qualifications in more than 20 languages. Various academic **musical groups** give all University members a chance to prove their musical talent. The University's **Sports Centre** has a wide range of offers from aerobics to windsurfing.

The University's **Family Service** co-ordinates and connects numerous services for mothers, fathers, children and their relatives for research, studies, and work.

The **Alumni Network** provides students with a contact forum for many topics and events for professional advancement.



## The best career opportunities— in the region and everywhere else

FAU is the ideal springboard to a job with one of the top global companies in the Nuremberg Metropolitan Region. Take advantage of our strong partnerships with leading business and research organisations including Siemens, Audi, Adidas, the Max Planck Society, Fraunhofer, and the Helmholtz Association of German Research Centres.

The University and its Career Service provide many events and opportunities to make direct contact with world-class employers. The biggest strengths of the Metropolitan Region are transport and logistics, information and communication, medicine and pharmaceuticals, energy, power electronics and environment, new materials, automation technology, and innovative services.

Branches of all big banks and insurance companies are located in the region. There are also numerous small and medium-sized businesses, for example in health technology, that offer a variety of professional prospects in the region.

In the past decade, around 1,400 jobs have been created by businesses that were start-up projects at FAU. Many of these new companies are based on patents registered by the University and its researchers.

Collaborations with regional and national companies from all lines of business allow for a direct transfer of research results. Subject specific placements, theses and student jobs with companies allow FAU students to gain insight into different occupational fields as well as important practical experience. This is why the superbly qualified graduates of FAU are sought-after employees both in Germany and abroad.





## A World-Class Region

Nuremberg and Erlangen are situated in one of the most picturesque and economically developed parts of the world: Bavaria. The Nuremberg area is one of the most cosmopolitan in the heart of Europe and has been a cultural hub for centuries. Historic cities such as Prague and Munich as well as sublime Alpine landscapes with fairy-tale castles overlooking mountains and lakes are all within easy reach.

Building on its tradition and location, the Nuremberg region has established itself as an industry powerhouse driving Germany's economic success. It is home to innovative start-ups and leading global corporations that have partnered with FAU to form world-class research networks such as Energy Campus Nuremberg, Medical Valley European Metropolitan Region Nuremberg, and Nuremberg Campus of Technology.

The region also provides a haven for leisure and adventure. Compared to other parts of Europe, the cost of living is very affordable. Bavaria's medieval jewel—the imperial city of Nuremberg—and its neighbouring town of Fürth offer value-for-money accommodation. Travel is effortless with the region's well-developed rail and bus services.

More than half a million people live in Nuremberg, which rates as one of the cities with the best quality of life in Germany. Its historic architecture, green spaces, and safe environment also make it one of Europe's foremost tourist attractions. Erlangen is a dynamic and diverse university town—around a quarter of its 100,000 inhabitants are students. Nearby, a pristine natural paradise awaits: the ancient forests, hills, and meadows of Franconian Switzerland attract hikers, rock climbers and cyclists in equal measure.

A special attraction of Bavarian life is the world-renowned quality of its beer. Local brewing traditions have remained virtually unchanged for centuries. The Erlangen-Nuremberg area—home to the world's oldest beer festival—boasts the highest density of breweries in Europe and an equally impressive number of beer gardens for open-air relaxation during the warm summer months.



### Contact

Friedrich-Alexander-Universität  
Erlangen-Nürnberg (FAU)  
Schlossplatz 4  
D-91054 Erlangen  
[www.fau.eu](http://www.fau.eu)

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