Technical developments are becoming increasingly complex and are based to a large extent on mathematical principles. Engineers are thus dependent on powerful hardware and software and a mastery of computer science methods as a key competence. Only in this way can they successfully develop new products, compare technical solutions or predict the effects of design decisions. Computational Engineering was developed based on these insights and combines computer science, mathematics, and engineering as interdisciplinary courses of equal importance in one degree program. The field is a globally recognized discipline that addresses the solution of physical problems in science and engineering using mathematical models, computer and software systems.
The interdisciplinary degree program imparts not only broad specialist knowledge but also the competence to work in teams in research groups and industrial projects. Computational Engineering is a versatile, interdisciplinary degree program that offers many opportunities for further education after the bachelor's degree – also abroad.
Computational Engineering
Bewerbung für zulassungsfreie Studiengänge
#FAUtogether
In the Bachelor's degree program, the courses in the first four semesters are usually taught in German, then in German or English. In the second semester, students choose a technical application subject. Technical application subjects are
Foundations and Orientation Phase (GOP)In the Foundations and Orientation Phase (GOP), students should prove that they are up to the requirements of a scientific study program in Computational Engineering and, in particular, that they have acquired the methodological skills necessary to continue the degree program successfully.
The structure of the degree programIn addition to the three main sections Mathematics, Computer Science, and Technical Applications, the degree program consists of a compulsory elective section, an internship, soft skills, a seminar, and the Bachelor's thesis.
Mathematics [at least 37.5 ECTS]: This section contains compulsory modules that correspond to the usual mathematics for engineers. These modules are supplemented by two additional modules in numerics for engineers.
Computer Science [55.0 ECTS]: This section consists of some modules from the bachelor's degree program in computer science and three additional modules from the field of scientific computing and high-performance computing.
Technical Application Subject, TAF [min. 35 ECTS]: This section lists all modules that are specific to the application subject. Each TAF has a TAF representative who supports the students with all questions.
Technical elective modules [max. 17.5 ECTS]: In this section, the student can choose modules that correspond to his/her personal interests.
Soft Skills and Practicum/Internship [15 ECTS]: This section consists of a freely selectable module (5 ECTS credits) and an internship (10 ECTS credits), which consists of either an 8-week professional internship (industrial internship) or an internship module from a catalog of selectable internships.
Seminar [5 ECTS]: Within the framework of the seminar, a lecture is to be given and a written paper is to be prepared.
Bachelor thesis [15 ECTS]: The Bachelor's thesis consists of a research paper of approx. 360 hours. The topic of the thesis must be from the field of computational engineering and must be worked on under the guidance of a qualified member of the Faculty of Engineering.
The bachelor's degree program consists of the following areas:
Computational Engineering (CE) is an interdisciplinary subject and includes Computer Science, Applied Mathematics and an engineering subject (the so-called Technical Application Subject). The program consists of

compulsory and elective modules from the fields of computer science and mathematics, a technical application subject, a technical elective subject, the elective subject “Key Qualifications” with university internship or (optionally) an eight-week industrial internship, a seminar and the Bachelor’s thesis, which must be completed during the course of study.
The standard period of study is six semesters. The number of ETCS points required for successful completion – the organization of studies and examinations is based on the European Credit Transfer and Accumulation System – is 180 ECTS points in the Bachelor’s degree program.
The degree program is divided into modules, which are assessed with ECTS points. A module is a teaching and learning unit that is continuous and self-contained. The modules conclude with a module examination during the course of study. ECTS points are only awarded for successful participation in modules, which is determined on the basis of independent, definable performance in a module examination. The exact examination regulations can be found in the study and examination regulations: Study and Examination Regulations.
Important prerequisites for CE studies are enjoyment
Also recommended are
As a CE student in Erlangen, you will be trained to solve problems flexibly, think analytically, and deal with logical-mathematical and scientific contexts. This makes you a sought-after employee as a graduate. With the methods you have learned, you will be able to develop new ways of thinking and working in almost all areas of industry and business. This qualification opens up a wide range of professions, activities and sectors for you, e.g.
30.09.
The application deadline for the winter semester for international applicants is July 15th.
In addition to the general qualification for university entrance (Abitur), there are other access options for studying at FAU.
Our Student Advice and Career Service (IBZ) is the central point of contact for all questions about studying and starting a degree programme. Our Student Service Centres and subject advisors support you in planning your studies.

Degree: Bachelor of Science (B.Sc.)
Duration of studies in semester: 6
Start of degree program: Winter semester
Study location: Erlangen
Number of students: 50-150
Subject group: Engineering sciences
Special ways to study: 1-subject Bachelor
Teaching language: completely in German
Admission Requirements: No Admissions Restrictions
Admission requirements (first semester): No Admissions Restrictions
Application deadline winter semester: 30.09.
German language skills for international applicants: DSH 2 or equivalent
Details and notes: The application deadline for the winter semester for international applicants is July 15th.
In addition to the general qualification for university entrance (Abitur), there are other access options for studying at FAU.