Course-specific structure

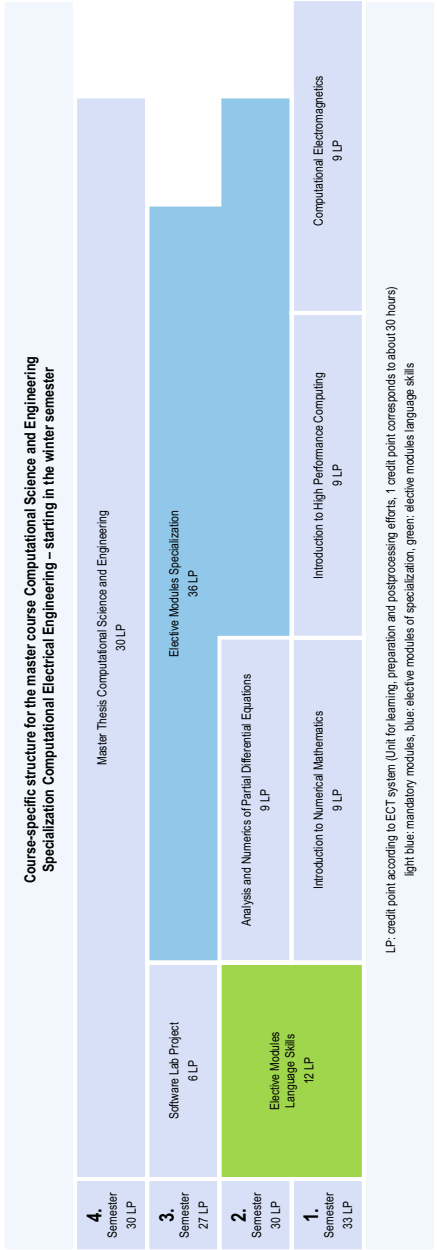


Figure: Course overview for the specialization Computational Electrical Engineering (starting in the winter semester)

Further course overviews for the specialization Computational Electrical Engineering (starting in the summer semester) as well as the specializations Computational Mechanical Engineering (starting in the winter or summer semester) and Computational Physics (starting in the winter semester) can be found on the web at www.ief.uni-rostock.de/cse-msc

Universität Rostock Traditio et Innovatio

University of Rostock

FACULTY OF COMPUTER SCIENCE
AND ELECTRICAL ENGINEERING

Study Counselor
Albert-Einstein-Straße 26
D 18059 Rostock
Fon + 49 (0)381 498 7004
Fax + 49 (0)381 498 7008
cse.ief@uni-rostock.de
www.ief.uni-rostock.de

GENERAL STUDENT'S ADVISORY
SERVICE & CAREERS SERVICE

Parkstraße 6
D 18057 Rostock
Fon + 49 (0)381 498 1230
studium@uni-rostock.de

www.uni-rostock.de

11th edition

Universität Rostock Traditio et Innovatio

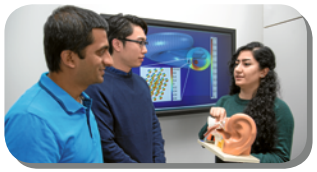
Computational Science and Engineering

(Master of Science)

FACULTY OF COMPUTER SCIENCE
AND ELECTRICAL ENGINEERING

Degree
Master of Science (M.Sc.)

Type of Program
graduate (with a second academic degree)
one major subject degree (not combinable)
language: English, single modules in German
The entire course may be completed in English language.



Duration
4 semesters

Start Date
in winter semester (Oct. 1st) and in summer semester (Apr. 1st); specialization CP: start only in winter semester, specializations CEE and CME: start recommended in winter semester

Start-up support
Assistance during the start of studies and orientation in Germany with the help of mentoring from students for students

Fields of Study
Engineering / Electrical Engineering / Mechanical Engineering
Natural Sciences / Physics

Formal Requirements
- Completion of a first academic degree in Computational Science and Engineering, Electrical Engineering, Information Technology, Mechanical Engineering, Physics with at least 180 credit points or another equivalent qualification; with at least 85 % of the CGPA (Cumulative Grade Point Average) or a comparable grade or Graduate Aptitude Test in Engineering (GATE) with at least score 500
- Native language English or English proficiency TOEFL IBT with at least score 90 or IELTS with at least score 6.5 (the

certificate should not be older as two years)
- solid knowledge in mathematics: especially linear algebra, calculus (integral, vector ...), numerics and stochastics
- solid skills in a programming language, e.g. C/C++, Fortran, Java, Python and solid knowledge in computer architecture, operating systems and computer networks
- proof of profound knowledge: CEE: Electromagnetic Fields and Waves (at least 3 credit points), Mathematics (at least 18 credit points), Programming / Practical Computer Science (at least 6 credit points) / CME: Mathematics (at least 18 credit points), Technical Mechanics (at least 18 credit points), Thermodynamics (6 credit points), Fluid Mechanics (6 credit points) and Programming (at least 9 credit points) / CP: Quantum Mechanics (at least 9 credit points), Electrodynamics and Optics (at least 6 credit points), Statistical Physics (at least 6 credit points) and Mathematics (at least 18 credit points)

Advanced Qualification Options
graduate to Dr.-Ing. or Dr. rer. nat.

Purpose and Objective
Computational Science and Engineering is a new, rapidly growing field that is, in addition to the major subject, based on Applied Mathematics and Computer Science. The aim of the course is the acquisition of skills to carry out computer simulations of technical and natural systems in Electrical or Mechanical Engineering as well as Physics based on a sound knowledge of numerical methods. Numerical simulations allow the work on fields that are inaccessible to conventional tests and investigation methods. As computers get more powerful, the scope for modeling and simulation is constantly expanding. In many cases, the design process is already happening only inside the computer.

Three specializations offered:
- Computational Electrical Engineering (CEE)
- Computational Mechanical Engineering (CME)
- Computational Physics (CP)

Premises for the Study
You have completed your bachelor's degree with good results, have a good knowledge of English and have a particular interest in scientific, technical and engineering issues, software development and research-oriented work.

Content of the Master Program
In the first three semesters, you deepen your knowledge in numerical analysis, partial differential equations, as well as high-performance computing and your classes from the respective module catalog. There are compulsory language courses for all majors. German-speaking students select another language. The 4th semester is for the master thesis.

Special Features
The course is offered in English language and is therefore equally suitable for English-speaking international students and for German-speaking students who want to develop and apply their English language skills intensively.

Career Prospects
Within this course, you will acquire a broad range of skills that is indispensable for engineers and physicists with a focus on simulation and numerical computing methods. The university master's degree offers best possibilities for a leading or researcher position in the field of engineering in Germany and abroad, or to enter a doctoral program. The ever-growing demand for engineers and physicists with profound knowledge of computational mathematics opens up prospects for the future with excellent career opportunities.