
Photo: Serge Kräutle

Why Erlangen-Nürnberg?

- The University Erlangen-Nürnberg (FAU): founded in 1743, it is one of the top research universities in Germany.
- From start-up to global player: many companies – innovative and strong in research – are located in the metropolitan area.
- A wide variety of recreational offerings: the university town Erlangen, the metropolitan area Nuremberg and the Franconian Switzerland represent attractive surroundings and a high quality of life.

Application

- via www.campo.fau.de
- deadline: July 15th for the subsequent winter semester
- see studium.math.fau.de/cam

$$\partial_t u - \nabla \cdot (a \nabla u) = f$$

$$\int_{Q_T} \partial_t u \varphi \, d(t,x) + \int_{Q_T} a \nabla u \cdot \nabla \varphi \, d(t,x) = \int_{Q_T} f \varphi \, d(t,x) \; \forall \varphi$$

$$\frac{1}{2} \int_{Q_T} \partial_t u^2 d(t,x) + \int_{Q_T} a |\nabla u|^2 d(t,x) = \int_{Q_T} f u \, d(t,x)$$

$$\|u(\tau)\|^2_{L^2(\Omega)} + c \|\nabla u\|^2_{L^2(Q_T)} \leq \|u_0\|^2_{L^2(\Omega)} + k_\epsilon \|f\|^2_{L^2(Q_T)} + \epsilon \|u\|^2_{L^2(Q_T)}$$

$$\|u\|_{L^\infty(0,T;L^2(\Omega))} \leq c(u_0, f), \quad \|\nabla u\|_{L^2(Q_T)} \leq c(u_0, f)$$

Contact

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FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

NATURWISSENSCHAFTLICHE
FAKULTÄT

International Master's Programme

Computational and Applied Mathematics (CAM)

Cover-Photo: istockphoto.com/PeopleImages; Grafik: zur gestaltung; 1. Auflage 06/2017

www.math.fau.de

Computational and Applied Mathematics (CAM): Mathematics – Innovative and International

If you

- are interested in mathematics and its applications in sciences and in engineering,
- are looking for the challenges and perspectives coming along with an anglophone Master's programme,
- wish to apply mathematical analysis or scientific computing to predict phenomena or to optimize processes in the sciences and in engineering,

then CAM might be a programme tailored for you.

CAM aims at making students familiar with current research topics in applied mathematics. CAM is open to applicants from all over the world. Students acquire the mathematical knowledge and the cultural and communicative skills which are needed on international job markets.

Innovative Teaching Concept

- Students acquire a firm grounding in mathematical modeling, applied analysis, and high-performance computing.
- Every student specializes in two of the three fields
  – Modeling and Applied Analysis,
  – Numerical Analysis and Simulation,
  – Optimization
  and makes his/her selection from the large basket of courses especially designed for CAM.
- Some courses (up to 15 ECTS) may even be chosen from the entire portfolio of master level courses offered at the university to follow up individual interests beyond mathematics or in other fields of mathematics.
- All mandatory and mandatory elective courses are given in English.

Research and Teaching

The subjects of the mandatory elective courses reflect the mathematical research pursued at the Friedrich-Alexander Universität Erlangen-Nürnberg (FAU).
They range from modelling, analysis of partial differential equations (pde) and numerical simulation in mathematical continuum mechanics (transport processes in complex multi-phase flow, fluid-structure interactions) over multiscale analysis and mathematics in the life sciences to various fields of mathematical optimization, including shape optimization, optimization with pde and discrete optimization.

Requirements

- A Bachelor's degree in mathematics or in a closely related programme with a substantial content of mathematical modules.
- Basic knowledge in functional analysis and, depending on the aspired specialization, in optimization or in numerics of partial differential equations is recommended.
- English language skills are required:
  – CEFR 'English level B2 (vantage or upper intermediate)', or
  – the higher education entrance qualification or a university degree was acquired in English, or
  – 6 years of English study at a German grammar school ('Gymnasium').

Excellent career prospects

The degree programme prepares graduates for a broad spectrum of professional tasks, including the analysis of complex processes, their mathematical modelling, their computer-based solution by mathematical methods, and the development of mathematical software. Graduates are able to perform research-oriented and application-oriented projects in business, industry and universities. Typical employment fields are research and development in business and industry (automotive industry, electrical industry, machine building industry) the software industry, consulting, banking and financial industry, and academia.