The University of Koblenz-Landau is a young and modern university in the upswing, located in the west of Germany. The new M.Sc. program Mathematical Modeling of Complex Systems is just one prominent example of the innovative study programs offered. Mathematical Modeling of Complex Systems is taught at the Campus of Koblenz—an emerging focus point of outstanding research and excellent education.

At the campus in Koblenz, about 7,500 highly-motivated students experience the modern, open-minded environment and benefit from excellent technical equipment, short distances, and a large variety of cultural and sports activities.

This new program is set up by the Faculty of Mathematics and Natural Sciences and the Faculty of Computer Science. While the former focuses on mathematical simulation and optimization as well as materials and environment, the latter concentrates on mobile systems engineering.

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MATHEMATICAL MODELING OF COMPLEX SYSTEMS

Complex, cross-linked systems pervade our daily life e.g. in natural sciences, engineering, life sciences, or logistics. The key to tackle the challenges imposed by these systems is mathematical modeling in a broad sense which is based on a profound knowledge of

- mathematics
- physics
- computer science.

The goal of this program is to train talented graduate students to become experts capable of mastering a repertoire of modern mathematical and computer based methods for modeling, simulation, and optimization of complex systems. In its structure, the program mirrors many of the demands imposed by complex systems. As a result, graduates are well prepared for upcoming tasks.

THE CURRICULUM

The two-year M.Sc. program Mathematical Modeling of Complex Systems is the first of its kind in Germany. During the first and second semester, dedicated courses in applied mathematics, physics, and computer science needed for advanced modeling, simulation and optimization of complex systems are taught. In the third semester, students start focussing on some area and subject by choosing from modules of interests. A project seminar reinforces specialization and prepares for the master thesis then in the fourth semester. This thesis is an individual research work which is typically embedded in some larger up-to-date research project and prepared under thorough supervision. Besides technical excellence in multiple disciplines such as mathematics, physics, and computer science, the program fosters a bandwidth of secondary skills thus shaping comprehensively trained graduates.

JOB PROSPECTS

Having experienced this unique program in mathematical modeling, graduates will be generalists rather than specialists: with a wide spectrum of knowledge and skills, they will be the versatile and conjunctive backbone of interdisciplinary teams coping with future challenges. Consequently, they find interesting positions in major companies addressing e.g. engineering, consulting, or finance.

Alternatively, a Ph.D. degree in mathematics, physics, or computer science in Koblenz, in Germany, or abroad may be pursued.

WHY KOBLENZ?

The university has well established contacts to major companies providing opportunities for internships or collaboration in applied projects. Several exchange programs embed the activities in an international framework. Koblenz is a lively and pretty city with a rich history. It is located in one of the most attractive regions in Germany, right where Moselle and Rhine meet. Its surrounding landscape, the Upper Middle Rhine Valley, is honored as a UNESCO World Cultural Heritage. Together with the neighboring Metropolitan areas of Frankfurt and Cologne, it features many cultural attractions and recreational offerings in combination with moderate living costs making Koblenz an ideal place for studying.