



University of Koblenz
Universitätsstraße 1
56070 Koblenz
Phone: +49 261 287-0
uni-koblenz.de

Overview of the degree program
uni-ko.de/mammsoen

Uniblog - The online-magazine
uni-koblenz.de/blog

Testimonials from students
uni-ko.de/was-studieren



QR-Code : University social media channels

Apply now!

Application deadline for the winter semester is 15 June for non-EU students and 15 July for EU students. Application deadline for the summer semester is 15 December for non-EU students and 15 January for EU students. Applicants with a non-German degree should apply via www.uni-assist.de

➤ Contact

Information and support
Welcome Center Koblenz
Ines Tobis
E-mail: welcome@uni-koblenz.de
Phone: +49 261 287-2973
uni-ko.de/welcome

Academic counseling
Prof. Dr. Thomas Götz
E-mail: mmso@uni-koblenz.de

Imprint

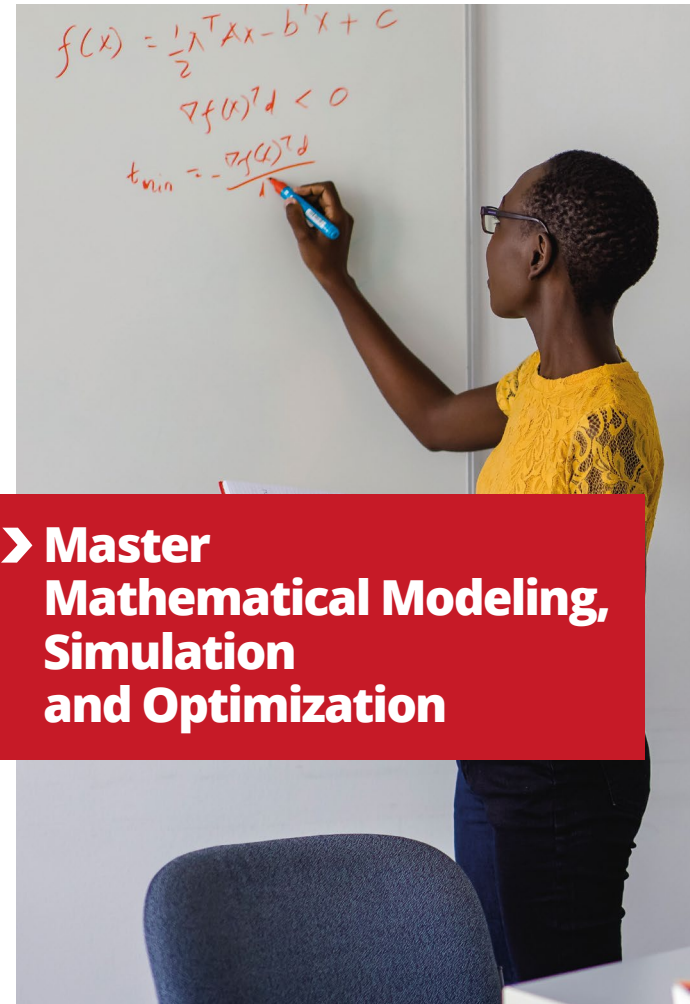
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Photo Credits: Thomas Götz, Katharina Hein, Hans-Georg Merkel (University of Koblenz)
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The **University of Koblenz** is one of the youngest universities in Germany—and yet looks back on a long-established scholarly tradition. Four profile areas are linked in a unique way: “Education”, “Computer Sciences”, “Culture and Mediation” as well as “Material and Environment”. These profile areas also provide important impulses for teacher education, which plays a pivotal role at our university. Interdisciplinary cooperation and short distances on campus characterize everyday university life and enable exciting collaboration and continuous innovation in scholarship.

The University of Koblenz offers a broad range of high-quality study programs to its 9,000-plus students. The university sees itself as a driving force in the development of a vibrant economic and academic hub that is both internationally visible and connected at the same time.

The university has taken as its maxim “continue discovering”. This reflects the incentive and aspiration of all members of the university to constantly question the familiar and the customary in order to arrive at new insights and findings. To this end, the university offers its members the required resources to enable them to further improve their studies, teaching and research and to break new ground in transferring ideas, knowledge and technology.

The University of Koblenz will be launched as an independent university on 1 January 2023.



➤ Master Mathematical Modeling, Simulation and Optimization



➤ Profile

The master's program "Mathematical Modeling, Simulation and Optimization" (MSc MMSO) is deliberately designed as an English study program as it intends to prepare students for the entry into a highly internationalized working and research field. In addition to lectures on mathematical modeling, simulation and optimization of complex systems, elective modules allow an individual focus. An application- and research-oriented project seminar concludes the study program, in addition to the master's thesis. The degree program will qualify you as an expert mastering a repertoire of modern mathematical and computer-aided methods. These methods are flexibly applied in order to solve problems arising in various thematic fields such as engineering, consulting and finance.

➤ Studies

The two-year MSc MMSO program is the first of its kind in Germany. During the first and second semester, you will take courses in applied mathematics, physics, and computer science and acquire the knowledge needed for advanced modeling, simulation, and optimization of complex systems. In the third semester, you will begin focusing on a specific area and subject by choosing modules related to your individual interests. A project seminar will reinforce your specialization and prepare you for the master's thesis in the fourth semester. This thesis is an individual research work which is typically embedded in a larger current research project within the university or prepared in collaboration with external partners.

Study contents	
Mandatory courses	
Project seminar	
Elective courses	
Master thesis	
Mathematics	<ul style="list-style-type: none"> Applied Differential Equations Numerics of Partial Differential Equations Applied Optimization Stochastic Models
Physics	<ul style="list-style-type: none"> Physics in Applications Solid State Physics Surface Science
Computer Science	<ul style="list-style-type: none"> Machine Learning Web Science Network Theory

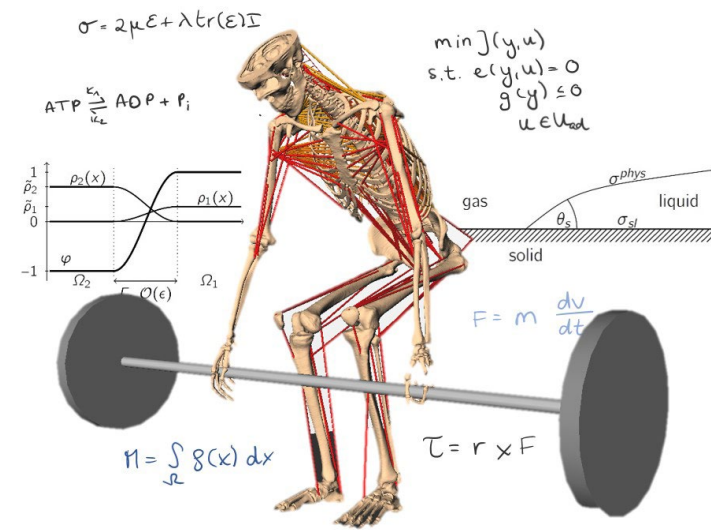
Practical and research orientation

A key component of the MSc MMSO study program is the project seminar. In this seminar, students will work on current research topics—either individually or in small groups. These topics may arise from research projects carried out at the university and its affiliated institutes or originate from cooperations with companies. The participants will learn to utilize computing and/or experimental facilities for modeling, analyzing simulations, and optimizing complex systems. Working in peer groups will enable them to practice their teamwork as well as communicative and social skills.

Typically, the problems dealt within the project seminar are the nucleus of the upcoming master's thesis.

Semester abroad

The first two semesters of the master's program are designed in such a way that they include a mobility window for a semester abroad for German students. The master's program is part of the European network ECMI (European Consortium for Mathematics in Industry). The network offers a large number of international collaborations with partners in other European countries as well as the opportunity for a semester at a European partner university. The intensive exchange of information within the framework of the ECMI network ensures that targeted and tailored advice can be provided to students when planning their semester abroad. The stay abroad is not a mandatory part of the course, but it is recommended and actively supported.



➤ Career prospects

Graduates of the MSc program „Mathematical Modeling, Simulation and Optimization“ will be generalists rather than specialists—with broad knowledge and skills. You will be the versatile and connecting backbone of interdisciplinary teams coping with future challenges. Consequently, interesting positions in major

companies working in the fields of, e.g. engineering, consulting or finance would be possible career prospects for you.

Alternatively, you have the opportunity to pursue a PhD degree in mathematics, physics or computer science at the University of Koblenz or abroad.

➤ Faculty of Mathematics and Natural Sciences

The Faculty of Mathematics and Natural Sciences includes all the disciplines of the natural sciences, mathematics, and sport science. The Mathematical Institute combines scientific and didactic research; the thematic focus is on mathematical modeling, simulation, and optimization of applied scientific issues.

Mathematical Modeling, Simulation and Optimization	
Degree	Master of Science (MSc)
Course requirements	<ul style="list-style-type: none"> Bachelor degree in mathematics, physics or computer science English language skills that are at least equivalent to Level B2 (equivalent to TOEFL of at least 72 points or IELTS of at least 5.0 points)
Local admission restrictions	Only candidates with a final grade of at least 2.5 (German grading system) awarded in a bachelor degree program will be accepted.
Start of studies	Summer and winter semester
Duration of studies	4 semesters
Language of teaching	English