MATERIALS SCIENCE & SIMULATION

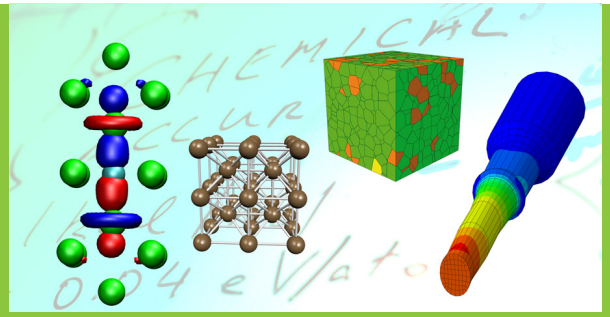
KNOWLEDGE DRIVEN MATERIALS DESIGN

Maintaining and expanding societies' industrial and economic capacity has become increasingly dependent on the rapid availability of sophisticated materials designed for extreme conditions. At the same time, the life-cycles of materials have become shorter due to frequent adaptation to, or even new design for, specific requirements and environments.

Advanced computer simulation as a key tool for increasing the speed of materials development at reduced costs will therefore gain a wider importance in academic and industrial research and development. Theoretical and practical knowledge in numerical methods has proven to be one of the most decisive key qualifications of nationally and internationally successful materials scientists, and this development is still to continue.

The Ruhr-University Bochum meets this need for material scientists trained in numerical simulation and experimental characterization and processing techniques by establishing the Master of Science programme "Materials Science and Simulation".

The programme focuses on providing you with a thorough knowledge in materials science and hands-on experience with state-of-the-art numerical methods. Furthermore, it will enable you to apply your practical skills and knowledge in experimental settings already during your studies.



ADMISSION AND APPLICATION

THE REQUIREMENTS FOR ADMISSION TO THE MASTERS COURSE ARE:

- Bachelor (B. Eng. / B. Sc. / B. Tech.) or comparable degree in one of the following or related disciplines: Materials Science, Mechanical Engineering, Physics, Chemical Engineering, Chemistry, Nanotechnology, Mathematics.
- Adequate English language skills, verified by TOEFL, IELTS

ONLINE APPLICATION

The first step to apply for the Masters Course Materials Science and Simulation is to file an online application at https://mss.rub.de/onlineapplication/

APPLICATION DEADLINES

	No visa required (e.g. EU citizens)	Visa required
Winter Term starting in October	September 15	March 15 June 15

Further information can be found on the MSS website: https://mss.rub.de

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RUHR-UNIVERSITÄT BOCHUM

RUB

INTERNATIONAL MASTERS COURSE

MATERIALS SCIENCE AND SIMULATION

MSS
MATERIALS SCIENCE AND SIMULATION

MATERIALS SCIENCE & SIMULATION

THE COURSE IN BRIEF

The Master of Science programme will provide you with:

- comprehensive knowledge in materials science, physics and numerical methods
- practical experience and the necessary theoretical background in applying modern numerical and experimental methods on all relevant scales
- the competence to plan and conduct key experiments with modern characterization and processing techniques
- the ability to apply advanced modelling and simulation methods
- the build-up of research competence by planning and conducting student research projects
- a thorough understanding of the interrelation between processing, structure and properties of materials
- hands-on experience in project-oriented teamwork, project management skills and interdisciplinary communication.

The course combines compulsory lectures in materials science, physics, numerical methods on different length and time scales, and programming. In the specialization areas, lectures can be selected from the fields “modelling and simulation” or “processing and characterization”. The schedule is given in the table, a complete list of all lecures can be downloaded from https://mss.rub.de.

Semester I	Semester II	Semester III	Semester IV
Programming Concepts in Materials Science	Quantum Mechanics in Materials Science	Continuum Methods in Materials Science	Master Thesis and Seminar
Elements of Microstructure	Microstructure and Mechanical Properties	Atomistic Simulation Methods	
Basic Lectures (Theoretical Physics or Materials Science)	Advanced Characterization Methods	Free Specialization Module I	
	Module Modelling & Simulation	Free Specialization Module II	
General Optional Lecture	Module Processing & Characterization	Optional Scientific Lecture	
Soft Skills I (e.g. Scientific Writing)	Soft Skills II (e.g. Language Course)	Research Project and Seminar	

Basic Lectures | Compulsory | Specialization | Research Project and Master Thesis | Optional Lectures