

Scientific Environment

The Master program »Nanoscience« is jointly offered by the **School of Biology/Chemistry** and the **School of Physics**, both with a long standing commitment to interdisciplinary research and teaching, and newly linked in the profile line Integrated Science of the Osnabrück University. In addition to state-of-the-art facilities at both departments, the new joint **Center for Cellular Nanoanalytics Osnabrück (CellNanOs)** provides a unique research environment for exciting developments at the intersection of biology, chemistry and physics.

Career Perspectives

Graduates of the Nanoscience Master's program will be ideally qualified as PhD candidates for all inter-disciplinary and international research programs within the natural sciences in Osnabrück, such as the Collaborative Research Center »Physiology and dynamics of cellular micro-compartments« (SFB 944) and many other initiatives within the framework of the Integrated Science profile line.

The nanotechnology sector is one of the fastest-growing markets in the world. Applied and technology-oriented career options are plentiful in the rapidly developing fields of drug discovery, nanomaterials, advanced materials science, as well as polymer electronics; especially with an appropriate PhD degree.



Osnabrück University

Osnabrück University (UOS) is a modern university founded in 1974, offering programs in the Humanities, Social Sciences, Law and Business and in the Natural Sciences.

UOS offers an ideal learning and research environment to 11,000 full-time students (including >900 Ph.D. candidates). Our ambition is to provide high standards of research, well-structured PhD programs as well as modular and interdisciplinary study programs with internationally recognized degrees.

The natural sciences are located on the modern Westerberg campus, equipped with brand-new infrastructure (library, computer center, restaurant), state-of-the-art laboratories, and in close proximity to the engineering faculties of the University of Applied Sciences. The campus is 10 min away from the historical city center by bike.



City of Osnabrück

- 155,000 inhabitants – mostly relaxed and friendly
- Historic (> 800 years) city center
- Short distances, easy orientation
- High quality of life, low cost of living
- Central location – 2 h to Hamburg or Cologne, 3 h to Berlin or Amsterdam
- Charming landscape, perfect for outdoor activities

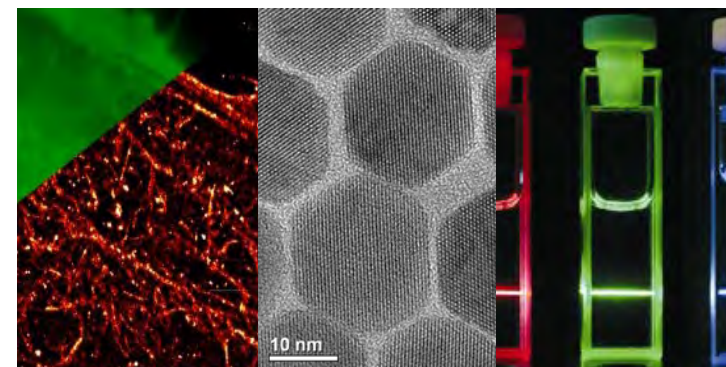
Imprint

Publisher The President of Osnabrück University
Editing Dr. Dominique Remy *Photo* Manfred Pollert
Design Communication and Marketing Office
Issued Juni 2019

International and Interdisciplinary Master Program

Nanosciences

Materials, Molecules and Cells



Background

Interdisciplinary cooperation between biology, physics and chemistry has traditionally fueled new discoveries as highlighted by numerous shared Nobel Prizes – a famous example being the discovery of the DNA double-helical structure by Watson (biologist), Crick (physicist), Wilkins (physicist), and Franklin (chemist).

A variety of fruitful new research fields has since emerged at the interfaces of biology, chemistry and physics, such as Biophysics, Biochemistry, Nanobiophotonics, Nanoscale Material Science, Functional Polymers and Nanoelectronics.

The overarching theme in these disciplines is to understand and quantify both the structure and the dynamic processes occurring at the nanoscale, in order to improve materials and molecular properties for potential applications, e.g., in biomolecular medicine, energy harvesting and storage, or information processing.

This comprehensive nanoscale quest is at the focus of the new Master program.

Profile

The international and interdisciplinary Master program »Nanoscience – Materials, Molecules and Cells« offers unique qualifications for a scientific career at the increasingly fruitful and important interfaces within the natural sciences.

Recognizing the rapidly growing importance of nanoscience and -technology within many branches of life and advanced material sciences, our Master program is designed to comprehensively cover these topics by a rich variety of courses taking the perspectives from biology, chemistry, and physics.

For graduates of Bachelor programs in biology, physics or chemistry, the Master program »Nanoscience« offers the combination of this discipline as major discipline with one of the two other disciplines as minor.

Study Program

Students create their individual, fully modular programs based on an catalogue offering numerous courses. The teaching language is English.

1st and 2nd term	60 CP
Major subject (3-4 modules)	28-42 CP
Minor subject (2-3 modules)	18-32 CP
3rd and 4th term	60 CP
Professional specialization I/II	12 CP
Research Course	18 CP
Master Thesis	30 CP

Biology

- Molecular Cell Biology
- Microbiology
- Molecular Plant Developmental Biology
- Regulation of Plant Metabolism
- Neurobiology
- Biological Spectroscopy and Microscopy
- Structural Biology

Chemistry

- Functional Polymers
- Physical Chemistry of Polymers
- Self Organisation
- Nanomaterials
- Bioorganic Materials
- Crystallography and X-Ray-diffraction

Physics

- Biophysics
- Carbon nanomaterials and spintronics
- Surfaces and ultrathin layers
- Nanophysics
- Ultrafast laser physics
- Stochastic dynamic systems
- Computer simulations of (nano-)materials
- Theoretical modelling of nanoscale processes

Application Procedures and Deadlines

Graduates of Bachelor programs in biology, chemistry and physics may be admitted to this study program. The teaching language is English. Coordinators from the different disciplines are available for further questions and information regarding your application, as well as for admission requirements.

Students select two of the three disciplines, one as »major« and one as »minor« subject. Bachelor students with the combination Biology/Chemistry or Biology/Physics or Chemistry/Physics are highly welcome and free to choose their major subject.

The Master program commences each winter semester (starting in October). The application deadline is July 15th. Applications and enrolment are handled by the Admissions Office (Studierendenservice): www.uos.de/universitaet/organisation/zentrale_verwaltung/studentische_angelegenheiten/studierendenservice (German)

International students find special support at the International Office: www.uni-osnabrueck.de/en/services/international_office (English)

Further Information on application procedures can be found here: www.uni-osnabrueck.de/studieninteressierte/bewerbung (German)

www.uni-osnabrueck.de/en/prospective_students/degree_seeking_students/application.html (English)

International applicants with foreign certificates may have different application deadlines and addresses. Further information is available at: www.uni-osnabrueck.de/en/studies/admission