



## AIMS AND AUDIENCE

The programme highlights the key role of organic chemistry in understanding biological processes and how this relates to drug discovery strategies. It addresses the principles of protein structures from a chemical standpoint and identifies the modes of interaction of small molecules with biological targets. Based on a strong expertise in organic synthesis the students will be able to use this knowledge to better identify and synthesise biologically and pharmacologically active molecules. Applicants should hold a BSc in Chemistry or related disciplines.

## STARTING DATES

Studies may be taken up in winter or summer term.

## APPLICATION / ADMISSION / FEES

Application forms for admission must be submitted between 15. March and 1. October for the winter term and no later than 1. April for the summer term. Eligibility will be assessed by an aptitude test. Tuition fees are 500 Euros per semester.

## CONTACT

Programme Advisor  
Professor Dr. Rainer Schobert

Tel.: +49 (0)921 / 55-2679  
Fax: +49 (0)921 / 55-2671  
Rainer.Schobert@uni-bayreuth.de

## FURTHER INFORMATION

[www.wirkstoffchemie.master.uni-bayreuth.de](http://www.wirkstoffchemie.master.uni-bayreuth.de)

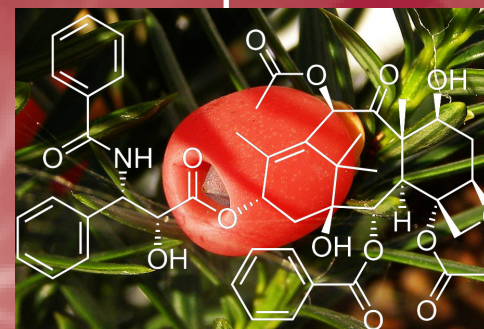
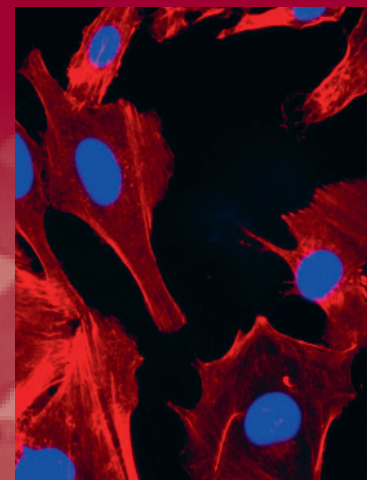
Molecular Bioscience at The University Bayreuth:  
[www.uni-bayreuth.de/profilfelder/molekulare-biowiss/](http://www.uni-bayreuth.de/profilfelder/molekulare-biowiss/)

Graduate School of Natural Science (BayNAT):  
[www.baynat.uni-bayreuth.de](http://www.baynat.uni-bayreuth.de)

Elite Programme „Macromolecular Science“:  
[www.chemie.uni-bayreuth.de/macromolecules](http://www.chemie.uni-bayreuth.de/macromolecules)

Bayreuth Centre for Molecular Bioscience BZMB  
<http://www.bzmb.uni-bayreuth.de/home.html>

# MSc Programme NATURAL PRODUCTS AND DRUG CHEMISTRY



PROGRAMME PROFILE

COURSE OVERVIEW

JOB OUTLINE

Effective: 12/2011

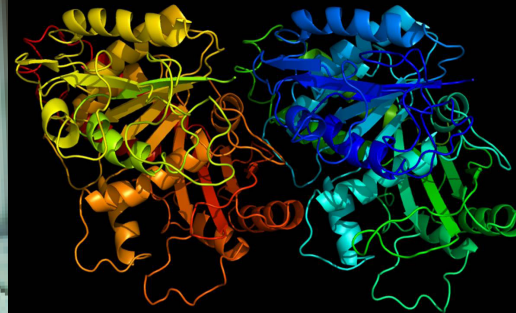
MSc in Natural Products and Drug Chemistry



UNIVERSITÄT  
BAYREUTH

## Graduate Programmes at The University Bayreuth

- research based
- job and career oriented
- international



## MSc in „NATURAL PRODUCTS AND DRUG CHEMISTRY“

### Course Overview

#### CHEMISTRY – THE LIVELY SCIENCE

Chemistry is at the very heart of the so-called life sciences touching all aspects of our daily life and growing in importance for the future knowledge-based economy. Smart tailor-made chemicals are indispensable for the production of high-quality food, pharmaceuticals and all those other amenities we are so habituated to. The MSc in „Natural Products and Drug Chemistry“ programme at the University Bayreuth teaches the interdisciplinary skills and knowledge to actively contribute to the exciting developments in this field. The emphasis of the course is on the synthesis and analytics of natural products, drugs and functional compounds and on their interactions with biological systems.

#### JOB AND CAREER OPPORTUNITIES

The programme meets the requirements of professional bodies in the fields of classical organic chemistry, and in the interdisciplinary areas of Life and Agro Science and Health Care. Typical employers are the Chemical Industry, research institutes and civil service. The MSc degree gives access to postgraduate research (Doctoral) programmes.

#### THE FOCUS IS ON RESEARCH

The MSc in “Natural Products and Drug Chemistry” programme is strictly research oriented. Each module is comprised of lectures, seminars and practical courses. In the first year the latter are carried out by the side of

experienced PhD students or postdocs working at the forefront of the chemical research. In the second year the students work on individual projects mainly on their own. The modules cover all aspects of low-molecular natural products and drugs (“ligands”) and of biomacromolecular “targets”. The students learn to employ computer based methods for the optimisation of drugs and also get to know the methods for the analytics and evaluation of drug candidates. The Bayreuth campus offers excellent opportunities with its modern, spacious laboratories, a staff-to-student ratio second to none in Germany and with optimally vested libraries. Successful graduates of this MSc programme may study towards a doctoral degree as members of the PhD programme „Molecular Bioscience“ under the umbrella of the Graduate School BayNAT in Bayreuth. There is a fast-track option in place for the best 10% MSc students saving them a semesters time.

#### INTERNATIONAL PROFILE

The MSc programme is part of the prestigious research field „Molecular Bioscience“ yet also shares modules with its sibling MSc course „Materials Chemistry and Catalysis“. Links to international partner universities and collaborations with research groups and industrial institutions worldwide provide the students with ample opportunity to go abroad and to study and work in an internationally competitive environment.

#### Modules Winter Term

##### 1./2. Semester

Winter beginners choose any 4 of 7 modules, summer beginners any 3 of 7 (with long practical course)

Chemistry of Natural Products: Biosyntheses and Structures 7/9 cp	Chemistry of Drugs 7/9 cp	Stereoselective Organic Synthesis 7/9 cp	Metal Mediated Catalysis 7/9 cp
Molecular Modelling 7 cp	Biomacromolecules 7/9 cp	Inorganic Materials: Nano chemistry 7/9 cp	

#### Modules Summer Term

##### 2./1. Semester

Winter beginners choose any 3 of 7 modules, summer beginners any 4 of 7. (with short practical course)

Advanced Chemistry of Natural Products 9/7 cp	Bioorganic Chemistry 9/7 cp	Bioinformatics 9/7 cp	Analytics and Screening of Natural Compounds and Drugs 9/7 cp
Computer Chemistry 9/7 cp	Structural Analysis of Biomacromolecules 9/7 cp	Proteins – Structure, Dynamics and Analytics 9/7 cp	

#### 3. and 4. Semesters

Research Proposal 5 cp	Research Modules I and II* 2 x 15 cp	Master Project and Dissertation 30 cp	* optionally abroad or in industry.
---------------------------	---	--	-------------------------------------

Degree:  
Master of Science

Duration:  
4 Semesters

Credit Points (cp):  
total 120