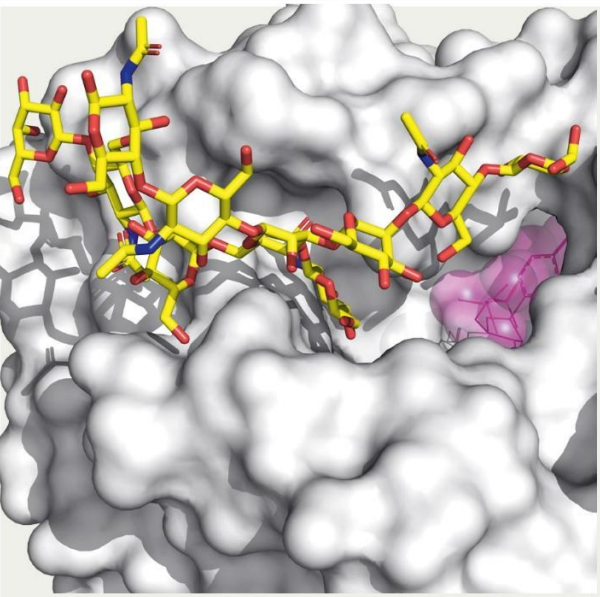
UNIVERSITÄT BAYREUTH

Master of Science

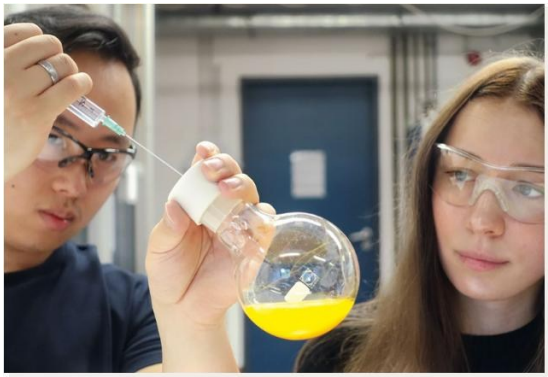
Natural Products & Drug Chemistry

Basic and applied research.





This master's programme at the University of Bayreuth, which is unique in Germany, provides students with interdisciplinary skills that enable them to advance innovative developments in natural products and drug research.



You will gain first-hand insights into research and at the same time benefit from the personal and intensive support provided by instructors.

When natural products become drugs.

Are you interested in modern synthetic chemistry and biotechnology? Are you fascinated by the interactions between molecules and biological systems? Do you wish to help shape innovative developments in the field of natural products and drugs, and will you be seeking a position of responsibility in companies, universities, or research institutes?

Then the master's course in *Natural Products and Drug Chemistry* at the University of Bayreuth, which is unique in Germany, is the right choice for you. The programme covers both basic and applied research, and offers exciting doctoral prospects in Bayreuth after successful completion. Particularly talented students have the option of fast-track access to doctoral studies.

Study independently at the forefront of research.

The ability to develop tailor-made new drugs is crucial in advancing medical care. Consequently, in the master's course *Natural Products and Drug Chemistry*, you will deal intensively with modern methods in the synthesis and analysis of bioactive natural compounds.

We are particularly interested in synthesizing low-molecular weight natural products and drugs (ligands), and their interaction with macromolecular targets. You will learn to study these substances in biological systems at the molecular level. You will work on the chemical and biotechnological methods needed for the development of optimised drugs, and employ the techniques currently used in the analysis and evaluation of bioactive small molecules.



There is an option for fast-track access to the doctoral programme.

Your ticket to the world of science.

The master's programme in *Natural Products and Drug Chemistry* is embedded in the focus area of *Molecular Biosciences* at the University of Bayreuth. This means rubbing shoulders with the international science community already in your master's programme.

Moreover, the University's central scientific facilities promote interdisciplinary cooperation on campus. Upon successful completion of your master's programme, you have the option of participating in the *Molecular Biosciences* doctoral programme. The *Bayreuth Graduate School of Mathematical and Natural Sciences (BayNAT)* offers exciting topics for doctoral studies, and in meeting doctoral students from various disciplines, enables you to broaden your horizons.

Programme Overview – period of study: 4 semesters.

Modules	Sem.*	CH**	CP***
Low-molecular-weight Natural Products & Drugs			
Biosynthesis of Natural Products	WS	6	7
Catalysis and Sustainable Synthesis	WS	6	7
Stereoselective Organic Synthesis	WS	6	7
Homogenous Catalysis	WS	6	7
Fundamentals of Advanced Organic Laboratory****	WS	6	7
Instrumental Bioanalytics and Food Analysis	WS	6	7
Alkaloids – Biosynthesis & Total Synthesis	SS	8	9
Drug Design	SS	8	9
Analytics & Screening of Natural Products & Drugs	SS	8	9
Fundamentals of Advanced Organic Laboratory****	SS	8	9
Catalyst Design	SS	8	9
Macromolecular Targets & Structures			
Molecular Modelling	WS	6	7
Chemometrics	WS	5	7
Solid-State Inorganic Materials: Nanochemistry	WS	6	7
Biophysical chemistry – Multidimensional NMR Spectroscopy of Biomacromolecules	SS	7	9
(Bio-)Analytics: QM & Metrology in the Chemical Laboratory	SS	7	9
Research Proposal	2nd		5
Research Module I in 3rd/4th semester	3rd/4th		15
Research Module II in 3rd/4th semester	3rd/4th		15
Master's Thesis	3rd/4th		30
Total			120

*Sem. Semester (WS = Winter semester, SS = Summer semester)
**CH Contact hours
***CP Credit points awarded in accordance with *ECTS*
**** Only one of the two Fundamentals modules can be chosen

The *European Credit Transfer System (ECTS)* facilitates the international comparability of coursework completed at European higher education institutions.



In this research and practice-oriented study programme, students have access to fully-equipped, state-of-the-art laboratories.



Our campus has everything you need right on your doorstep. In contrast to larger universities, everyone knows almost everyone here. Moreover, there is a lot on offer besides your studies.

A master's degree that opens doors.

After completing your master's degree, you will be fully qualified to use your skills for innovative developments in a wide range of areas. For instance, you may choose to work in the traditional areas of chemistry, but you will also have the skills to enter interdisciplinary professional fields in life sciences, agro-sciences, and health care.

Corporations and SMEs, as well as universities and research institutes, all offer attractive career prospects in these fields of the future. By completing your doctorate, interesting leadership positions will be open to you there and in many other places.

A study environment deserving of its top rankings.

The University of Bayreuth has around 13,500 students. It is characterized by its friendly campus. Everything you need is right on your doorstep, and you'll soon meet students from other subject areas. Student life features plenty of variety outside the lecture halls.

You can become involved in number of student organisations, or take advantage of the extensive range of university sports. The campus regularly hosts film screenings, art exhibitions, theatre performances, numerous music events, and the annual "Uni Open Air"festival.

In addition, the town of Bayreuth boasts plenty of accommodation, reasonable rents, and a low cost of living in general. The leisure options in town, in the nearby Fichtelgebirge, and in the Franken Jura are also extremely tempting.

UNIVERSITÄT BAYREUTH

An attractive course of studies awaits.
We are pleased that you are interested in the master's programme *Natural Products and Drug Chemistry*. To be admitted, you will need to have passed one of the bachelor's degree programmes in *Chemistry, Polymer & Colloid Chemistry* or *Biochemistry* at the University of Bayreuth or hold an equivalent degree. A written application is required.

You can apply for the winter semester from 15 March to 1 October, and for the summer semester from 15 November to 1 April. All applicants take part in an aptitude test.

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Additional information:
Master's programme Natural Products & Drugs Chemistry:
https://www.uni-bayreuth.de/en/master/natural-products-and-drug-chemistry#0cdccd1d

Molecular Biosciences at the University of Bayreuth:
www.profilfelder.uni-bayreuth.de/de/advanced-fields/molekulare-biowissenschaften

Bayreuth Graduate School of Mathematical and Natural Sciences (BayNAT)
www.baynat.uni-bayreuth.de

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