

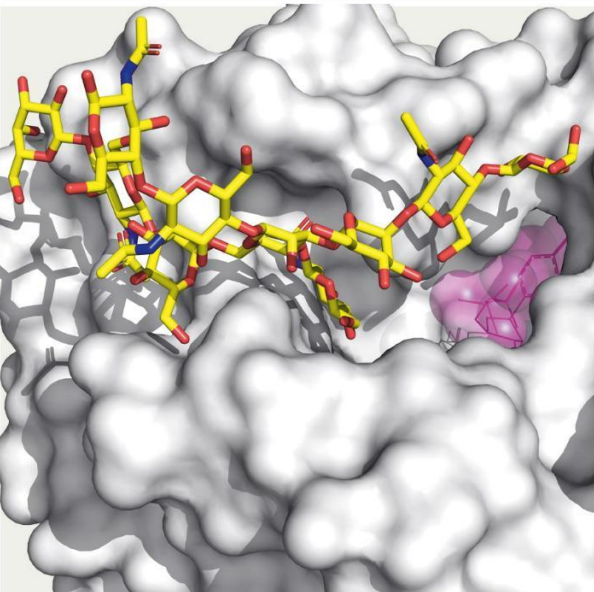


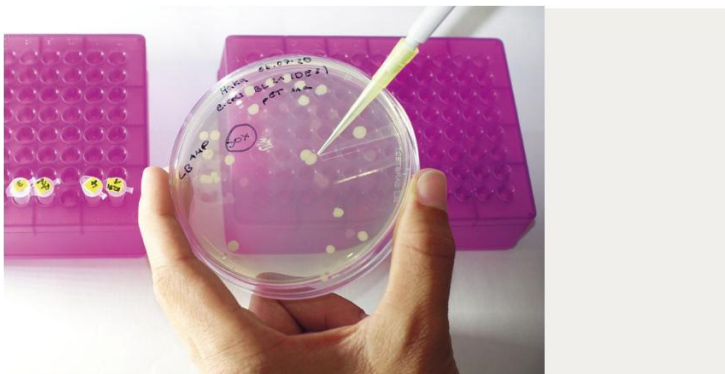
UNIVERSITÄT  
BAYREUTH

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.*

## 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.

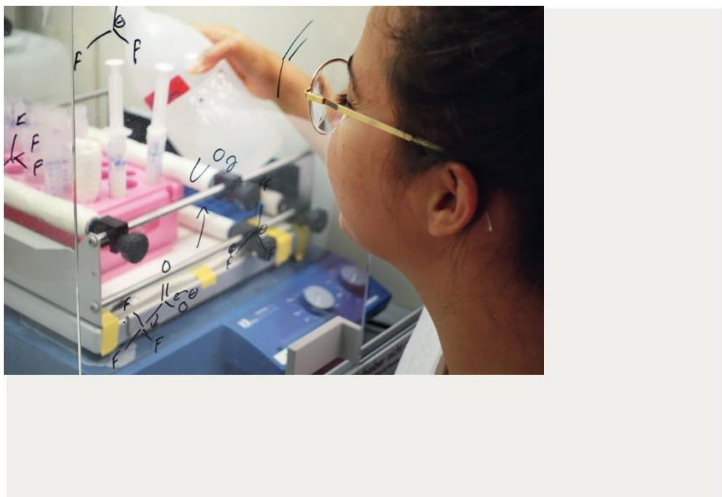


*You will gain first-hand insights into research and at the same time benefit from the personal and intensive support provided by instructors.*

## 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 drug candidates.



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***
<b>Low-molecular-weight Natural Products &amp; Drugs</b>			
Biosynthesis of Natural Products	WS	6/8	7/9
Catalysis and Sustainable Synthesis	WS	6/8	7/9
Stereoselective Organic Synthesis	WS	6/8	7/9
Homogenous Catalysis	WS	6/8	7/9
Alkaloids – Biosynthesis & Total Synthesis	SS	6/8	7/9
Drug Design	SS	6/8	7/9
Analytics & Screening of Natural Products & Drugs	SS	6/8	7/9
Applied Computational Chemistry	SS	6/8	7/9
<b>Macromolecular Targets &amp; Structures</b>			
Molecular Modelling	WS	6	7
Chemometrics	WS	5/7	7/9
Solid-State Inorganic Materials: Nanochemistry	WS	6/8	7/9
Basics of Bioinformatics	SS	6/8	7/9
Biophysical chemistry – Multidimensional NMR Spectroscopy of Biomacromolecules	SS	5/7	7/9
(Bio-)Analytics: QM & Metrology in the Chemical Laboratory	SS	5/7	7/9
Reserch Proposal	2 <sup>nd</sup>		5
Research Module I in 3 <sup>rd</sup> /4 <sup>th</sup> semester	3 <sup>rd</sup> /4 <sup>th</sup>		15
Research Module II in 3 <sup>rd</sup> /4 <sup>th</sup> semester	3 <sup>rd</sup> /4 <sup>th</sup>		15
Master's Thesis	3 <sup>rd</sup> /4 <sup>th</sup>		30
<b>Total</b>			<b>120</b>

\*Sem. Semester (WS = Wintersemester, SS = Sommersemester)

\*\*CH Contact hours

\*\*\*CP Credit points awarded in accordance with ECTS

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.*

## 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.



*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 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.



### **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.

### **Programme Coordinator:**

Prof. Dr. René Königs

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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](http://www.profilfelder.uni-bayreuth.de/de/advanced-fields/molekulare-biowissenschaften)

*Bayreuth Graduate School of Mathematical and Natural Sciences (BayNAT)*  
[www.baynat.uni-bayreuth.de](http://www.baynat.uni-bayreuth.de)