Modulbezeichnung:	**Bio(in)organic chemstry (CME3)** (Bio(in)organic chemstry)	**15 ECTS**
Modulverantwortliche/r:	Nicolai Burzlaff	
Lehrende:	Nicolai Burzlaff, Andriy Mokhir, Frank Wilhelm Heinemann, Norbert Jux, Ivana Ivanovic-Burmazovic, Carola Kryschi, Olaf Prante, Karsten Meyer	

Startsemester: WS 2015/2016	Dauer: 2 Semester	Turnus: halbjährlich (WS+SS)
Präsenzzeit: 195 Std.	Eigenstudium: 255 Std.	Sprache: Englisch

Lehrveranstaltungen:

A) Bioinorganic chemistry 1, metalloenzymes and metals in medicine (2L, 1S)

Bioinorganic Chemistry I, Metalloenzymes and Metals in Medicine (WS 2015/2016, Vorlesung, 2 SWS, Nicolai Burzlaff)

Seminar Bioinorganic I, Bioinorganic Reaction Mechanisms (WS 2015/2016, Seminar, 1 SWS, Nicolai Burzlaff et al.)

B) Advanced Bioinorganic Chemistry (2L)

choice of 1 course from

Bioanorganische Chemie III (WS 2015/2016, Vorlesung, 2 SWS, Nicolai Burzlaff et al.)

Bioanorganische Chemie II, Chemie des oxidativen Stresses, Spektroskopie und Elektrochemie an Bioanorganischen Systemen (SS 2016, Vorlesung, 2 SWS, Ivana Ivanovic-Burmazovic et al.)

Metallic Nanoparticles in Medicine (SS 2016, Vorlesung, 2 SWS, Carola Kryschi)

Modern X-ray structure determination of single crystals/Einführung i. d. Kristallstrukturbestimmung von Molekülverbindungen (WS 2015/2016, Vorlesung mit Übung, 2 SWS, Frank Wilhelm Heinemann et al.)

Modern X-ray structure determination of single crystals/Einführung i. d. Kristallstrukturbestimmung von Molekülverbindungen (SS 2016, Vorlesung mit Übung, 2 SWS, Frank Wilhelm Heinemann et al.)

C) Special aspects in bioinorganic chemistry (1S)

Seminar Special Aspects of Bioinorganic Chemistry (WS 2015/2016, Seminar, 1 SWS, Nicolai Burzlaff et al.)

Special aspects in bioinorganic chemistry - Seminar (SS 2016, Seminar, 1 SWS, Nicolai Burzlaff et al.)

D) Lab course bioinorganic chemistry (7LAB)

Lab Course Bioinorganic Chemistry (WS 2015/2016, Praktikum, 7 SWS, Nicolai Burzlaff et al.)

Bioinorganic Chemistry - Lab Course (SS 2016, Praktikum, 7 SWS, Nicolai Burzlaff et al.)

Empfohlene Voraussetzungen:

Admission to the M. Sc. program Molecular Science or Chemistry

Admission to the M. Sc. program Chemistry or Molecular Science

Inhalt:

Recommended choices (based on mandatory elective modules):

For **Molecular Life Science**: (5 L, 7 Lab, 3 S) or (8 L, 0 Lab, 1 S*)

- Molecular biology or
- Medicinal chemistry A or
- Medicinal Chemistry B
- Molecular synthesis
- Bioinorganic chemistry (from M.Sc. Chemistry)

For **Molecular Nanoscience**: (5 L, 7 Lab, 3 S) or (8 L, 0 Lab, 1 S*)

- Molecular synthesis
- Theory
- Physical chemistry (or parts of the respective modules)

(*= Elective module without a LAB Course)

The student

- is lead to recent research goals and achievements in the field of bioinorganic chemistry.

- evaluates and assesses the basic theories, principles and concepts of bioinorganic chemistry in compliance with a research oriented master course.
- deepens his knowledge in special topics of bioinorganic chemistry that are in the research focus of the involved research groups of the department depending on its own choice.
- performs practical studies and small research projects regarding topics of the preparative, mechanistic or more biological bioinorganic chemistry in an advanced level.

Lernziele und Kompetenzen:

The students
- extend their knowledge in special research focused topic
- gain Soft skills.

übernommen aus Prüfungsordnungsmodul *Wahlmodul Molecular Science*

The student
- can explain and apply basic theories and principles, as well as specialized and in-depth knowledge in the fields of metalloenzymes and the interaction of metals with DNA and RNA.
- can explain, apply and reflect upon the inorganic chemistry aspects in medicinal chemistry and toxicology.
- can explain, apply and reflect upon the theories, terminology, specialities, boundaries and different schools of bioinorganic chemistry critically and in depth.
- can manage the preparation of bioinorganic models, their characterization as well as their application in mechanistic studies.
- can carry out bioinorganic research projects largely independently using a wide range of bioinorganic theories and is able to reflect upon the gained results.

Literatur:

Depending on chosen modules/lectures (contact lecturer or lecturers web site or UnivIS)
An updated list is given by the lecturer at the beginning of each course

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Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

Das Modul ist im Kontext der folgenden Studienfächer/Vertiefungsrichtungen verwendbar:

[1] **Molecular Science (Master of Science): 1-3. Semester**
(Po-Vers. 2013 | Wahlmodul Molecular Science)

Dieses Modul ist daneben auch in den Studienfächern "Chemie (Master of Science)" verwendbar.

Organisatorisches:

Frequency of offer: Annually (for details, see description of the Mandatory elective modules)
Workload: 450 hours (including 240 hours private study)
Intended stage in the degree course: Semester 1 + 2

Bemerkungen:

Courses of study for which the module is acceptable: M. Sc. Chemie/ M. Sc. Molecular Science (Elective Module)