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| <b>Modulbezeichnung:</b> Bio(in)organic chemistry (CME3)<br>(Bio(in)organic chemistry) |                                                                                                                                             | <b>15 ECTS</b>               |
| Modulverantwortliche/r:                                                                | Nicolai Burzlaff                                                                                                                            |                              |
| Lehrende:                                                                              | Olaf Prante, Carola Krysch, Karsten Meyer, Nicolai Burzlaff, Frank Wilhelm Heinemann, Norbert Jux, Ivana Ivanovic-Burmazovic, Andriy Mokhir |                              |
| Startsemester: SS 2018                                                                 | 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 2018/2019, Vorlesung, 2 SWS, Nicolai Burzlaff)

Seminar Bioinorganic I, Bioinorganic Reaction Mechanisms (WS 2018/2019, Seminar, 1 SWS, Nicolai Burzlaff et al.)

##### **B) Advanced Bioinorganic Chemistry (2L)**

choice of 1 course from

**B1:** Bioinorganic chemistry II, oxidative stress, spectroscopy and electrochemistry (2L)

**B2:** Metallic nanoparticles in medicine

**B3:** Crystal structure determination

**B4:** Bioinorganic chemistry III, electron transfer, photochemistry, PDT, diagnostics and metal DNA interactions

Bioanorganische Chemie II, Chemie des oxidativen Stresses, Spektroskopie und Elektrochemie an Bioanorganischen Systemen (SS 2018, Vorlesung, 2 SWS, Ivana Ivanovic-Burmazovic)

Metallic Nanoparticles in Medicine (SS 2018, Vorlesung, 2 SWS, Carola Krysch)

Modern X-ray structure determination of single crystals/Einführung i. d. Kristallstrukturbestimmung von Molekülverbindungen (SS 2018, Vorlesung mit Übung, 2 SWS, Frank Wilhelm Heinemann et al.)

Bioanorganische Chemie III (WS 2018/2019, Vorlesung, 2 SWS, Nicolai Burzlaff et al.)

##### **C) Special aspects in bioinorganic chemistry (1S)**

Special aspects in bioinorganic chemistry - Seminar (SS 2018, Seminar, 1 SWS, Nicolai Burzlaff et al.)

Seminar Special Aspects of Bioinorganic Chemistry (WS 2018/2019, Seminar, 1 SWS, Nicolai Burzlaff et al.)

##### **D) Lab course bioinorganic chemistry (7LAB)**

Attendance in lab course is compulsory!

Bioinorganic Chemistry - Lab Course (SS 2018, Praktikum, 7 SWS, Nicolai Burzlaff et al.)

Lab Course Bioinorganic Chemistry (WS 2018/2019, Praktikum, 7 SWS, Nicolai Burzlaff et al.)

#### Inhalt:

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 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.

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**Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:**

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

**[1] Chemie (Master of Science): 1-2. Semester**

(Po-Vers. 2009 | NatFak | Chemie (Master of Science) | Wahlpflichtmodul | Bioanorganische Chemie)

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**Studien-/Prüfungsleistungen:**

Bioanorganische Chemie (Prüfungsnummer: 65501)

(englische Bezeichnung: Oral Examination or Examination (Klausur) on Bioinorganic Chemistry)

Prüfungsleistung, mündliche Prüfung, Dauer (in Minuten): 45

Anteil an der Berechnung der Modulnote: 100%

weitere Erläuterungen:

O45, 2 examiners (PL)

EX (SL)

EX (SL)

LAB (SL)

Grading procedure: Result of the oral examination (100%)

Prüfungssprache: Englisch

Erstablingung: WS 2018/2019, 1. Wdh.: SS 2019

1. Prüfer: Nicolai Burzlaff

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**Bemerkungen:**

Module compatibility: M. Sc. Chemie/ M. Sc. Molecular Science (Elective Module)