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**Modulbezeichnung:** Drug discovery (MSM-life) 30 ECTS  
 (Drug discovery)

Modulverantwortliche/r: Peter Gmeiner

Lehrende: Markus Heinrich, Peter Gmeiner, Andreas Burkovski, u.a., Jürgen Schatz, Harald Lanig, Jutta Eichler

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Startsemester: SS 2018	Dauer: 2 Semester	Turnus: halbjährlich (WS+SS)
Präsenzzeit: 450 Std.	Eigenstudium: 450 Std.	Sprache: Englisch

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### Lehrveranstaltungen:

**Mandatory courses: Seminars:**

Drug Discovery-Seminar (7SEM)

Drug Discovery-Laboratory course (23LAB):

10 week block lab project in one of the participating research groups (Profs. Burkovski, Burzlaff, Eichler, Gmeiner, Heinrich, Ivanovic-Burmazovic, Koch, Lanig, Muller, Nitschke, Schatz, Stadler, Winkler, Zahn)

with

Seminar Research projects (1S): oral presentation (20 min, plus discussion)

Seminar Journal club (group seminar in one of the re- search groups)(2S)

Drug Discovery Praktikum (SS 2018, Praktikum, 23 SWS, Peter Gmeiner et al.)

Drug Discovery Seminar (SS 2018, Seminar, 7 SWS, Andreas Burkovski et al.)

Drug Discovery Praktikum (WS 2018/2019, Praktikum, 23 SWS, Peter Gmeiner et al.)

Drug Discovery Seminar (WS 2018/2019, Seminar, 7 SWS, Andreas Burkovski et al.)

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### Empfohlene Voraussetzungen:

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

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### Inhalt:

#### Drug Discovery-SEMINAR

Genomics, transcriptomics, proteomics; in-vitro assay systems, assay technology; target screening and drug production in plants, drug screening and production in yeast; experimental structural biology; chemoinformatics; molecular modeling: molecular dynamics simulation, force-fields, modeling of proteins, proteinligand docking; drug synthesis and combinatorial chemistry; redox-active metal complexes, metalloenzyme inhibitors; stereochemistry in drug design; organic reactions in medicinal chemistry; drug metabolism; peptidomimetics;

#### LAB Course

Project course: Lab projects focusing on the modern research issues in one of the participating research groups. Seminar research projects: students reports on lab projects. Discussions on recent publications in the field of drug discovery (within the respective research units).

### Lernziele und Kompetenzen:

The students are able

- to understand the basic and advanced principles of medicinal chemical, molecular biological and computer
- chemistry based applications in the field of modern drug design research
- to utilize modern experimental techniques to prepare and characterize various samples with in the lab project
- to apply modern simulation techniques for the modeling of proteins
- to interpret and to critically summarize experimental results in written form (lab report), and to present and discuss these results within the research group or in front of a student audience
- to participate in planning, developing and executing of experimental routes for the synthesis of drugs
- to judge and to discuss in oral form their research results in the field of drug discovery in comparison to recent publications.

### Literatur:

Manuscripts are available on **StudON**,

additional reading, e.g. G. Klebe, Drug Design: Methodology, Concepts, and Mode-of-Action, Springer 2013

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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)**

(Po-Vers. 2007 | NatFak | Molecular Science (Master of Science) | alte Prüfungsordnungen | Masterprüfung | Pflichtmodul Molecular Science)

[2] **Molecular Science (Master of Science)**

(Po-Vers. 2013 | NatFak | Molecular Science (Master of Science) | Pflichtmodul Molecular Science)

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### Studien-/Prüfungsleistungen:

Drug Discovery (Prüfungsnummer: 30702)

(englische Bezeichnung: Drug Discovery)

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

Anteil an der Berechnung der Modulnote: 100%

weitere Erläuterungen:

Assessment and examinations Portfolio: PL Oral examination (O 45min, 3 examiners) LEC (PL) LAB (PL, AP) Lab course protocol (without explicit mark) + oral presentation of research project (20 min + discussion);

Calculation of the grade for the module: PL: O45 (66 %) LEC (PL) (17 %) LAB (PL, AP) (17 %)

Prüfungssprache: Englisch

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

1. Prüfer: Peter Gmeiner

1. Prüfer: Jürgen Schatz

1. Prüfer: Jutta Eichler

1. Prüfer: Markus Heinrich

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### Organisatorisches:

**Intended stage in the degree course:** Mandatory module for M.Sc. Molecular Lifescience semester 1 and 2

**Frequency of offer:** Annually / start of studies is strongly recommended in winter term

**Workload:** 900 hours (includes 450 hours private studies and 50 contact hours)

### Bemerkungen:

Courses of study for which the module is acceptable: M.Sc. Molecular **Lifescience**