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

Modulverantwortliche/r: Peter Gmeiner

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

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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 research 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

Erstabllegung: 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**