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

Modulverantwortliche/r: Peter Gmeiner

Lehrende: Christian Koch, Markus Heinrich, Peter Gmeiner, Andreas Burkovski, u.a., Harald Lanig, Jutta Eichler, Ivana Ivanovic-Burmazovic, Nicolai Burzlaff

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Startsemester: SS 2020

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)

*Please note: attendance in lab course is compulsory!*

Drug Discovery Praktikum (SS 2020, Praktikum, 23 SWS, Peter Gmeiner et al.)

Drug Discovery Seminar (SS 2020, Seminar, 7 SWS, Andreas Burkovski et al.)

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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:

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 | Gesamtkonto | 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: O45 (PL) (45min, 3 examiners), LEC (PL), LAB (PL)\*

\*Lab course protocol (without explicit mark) + oral presentation of research project (20 min + discussion);

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

Prüfungssprache: Englisch

Erstablesung: WS 2020/2021, 1. Wdh.: SS 2021

1. Prüfer: Peter Gmeiner (070604)

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**Organisatorisches:**

Manuscripts are available on **StudON**

**Bemerkungen:**

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

Start of studies is strongly recommended in winter term!