

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

Modulverantwortliche/r: Peter Gmeiner

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

Startsemester: WS 2017/2018

Dauer: 2 Semester

Turnus: jährlich (WS)

Präsenzzeit: 450 Std.

Eigenstudium: 450 Std.

Sprache: Englisch

### 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)

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

Drug Discovery Praktikum (WS 2017/2018, Praktikum, 23 SWS, Peter Gmeiner et al.)

Drug Discovery Seminar (WS 2017/2018, Seminar, 7 SWS, Andreas Burkovski et al.)

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

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

### 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

### 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. 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:** PL Oral examination (O 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:** PL: O45 (66 %), LEC (PL) (17 %), LAB (PL) (17 %)

Prüfungssprache: Englisch

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

1. Prüfer: Peter Gmeiner

1. Prüfer: Jürgen Schatz

1. Prüfer: Jutta Eichler

1. Prüfer: Markus Heinrich

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**Organisatorisches:**

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

**Bemerkungen:**

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