Modulbezeichnung:	**Biological and Synthetic Molecular Switches and Machines (MolSwitch)** (Biological and Synthetic Molecular Switches and Machines)	**5 ECTS**
Modulverantwortliche/r:	Henry Dube	
Lehrende:	Henry Dube	

Startsemester: SS 2021	Dauer: 1 Semester	Turnus: jährlich (SS)
Präsenzzeit: 45 Std.	Eigenstudium: 105 Std.	Sprache: Englisch

Lehrveranstaltungen:

Seminar (1UE): time and place by agreement

Biological and Synthetic Molecular Switches and Machines (SS 2021, Vorlesung, 2 SWS, Henry Dube)

Inhalt:

Examination of molecular triggers, switches and machines in biology and in synthetic systems as foundation of nanotechnology; working mechanisms; types of systems; design principles; seminal contributions; historical backgrounds are given. The material is ordered in introduction and context, basic principles, triggers, switches, machines, integrated systems, future prospective. The course will be updated to implement the newest developments yearly

Lernziele und Kompetenzen:

The Students ...

- acquire a fundamental understanding in the working mechanisms and design principles of molecular triggers, switches, and machines.
- will be able to develop strategies for implementing responsiveness into nanostructured biological or synthetic systems and will be equipped with an exhaustive overview of historical developments and current state of the art in the field by discussing representative examples in depth.
- will therefore be educated in one of the most prominent fields of modern (bio)chemistry and nanosciences.

Compulsory attendance will be necessary. The skills will be appropriate for Master's level and will partially repeat and build on knowhow from supramolecular, biological, and photochemistry as well as on fundamental physical organic chemistry, biochemistry, nanotechnology, and spectroscopy.

Literatur:

- "Molecular Switches", edited by Ben L. Feringa, Wiley-VCH
- "From Non-Covalent Assemblies to Molecular Machines", Edited by Jean-Pierre Sauvage & Pierre Gaspard, Wiley-VCH
- "Molecular Machines and Motors - Recent Advances and Perspectives" edited by Alberto Credi, Serena Silvi, Margherita Venturi, Springer

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

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

[1] **Chemistry (Master of Science)**

(Po-Vers. 2020w | NatFak | Chemistry (Master of Science) | Wahlmodule | Biological and Synthetic Molecular Switches and Machines)

Dieses Modul ist daneben auch in den Studienfächern "Molecular Science (Master of Science)" verwendbar.

Studien-/Prüfungsleistungen:

Biological and Synthetic Molecular Switches and Machines (Prüfungsnummer: 65621)

Studienleistung, Übungsleistung, Dauer (in Minuten): 20

weitere Erläuterungen:

Assessment: 20 min oral examination in the form of a seminar talk presenting the content of a seminal original publication (Non-graded seminar presentation)

Prüfungssprache: Englisch

Erstablegung: SS 2021, 1. Wdh.: keine Angabe

1. Prüfer: Henry Dube

Organisatorisches:

Please note:

- Online course during SS 2021
- Students have to register for this module (check registration periods)!
- Registration/further information via StudOn!

Bemerkungen:

Module compatibility:

- as Elective Module in MSc Molecular **Life** Science (not applicable for Molecular **Nano**science), 5 ECTS/not graded
- as Elective Module in MSc Chemistry, 5 ECTS/not graded