Modulbezeichnung: **Semiconductor Materials for Energy Applications (EnMat-3)** **5 ECTS**
(Semiconductor Materials for Energy Applications)

Modulverantwortliche/r: Dirk Guldi
Lehrende: u. Mitarbeiter, Julien Bachmann

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

Lehrveranstaltungen:

Semiconductor Materials for Energy Applications (SS 2021, Vorlesung mit Übung, 2 SWS, Julien Bachmann)

Semiconductor Materials for Energy Applications - Seminar (SS 2021, Seminar, 1 SWS, Julien Bachmann et al.)

Inhalt:

- Fundamentals of semiconductors: Crystal structure, Electronic structure, Electrical transport, Interaction with light
- Semiconductor devices: Tunnelling, The pn junction, The transistor
- Photovoltaics: Principles, Types of solar cells
- The interface to a solution: Charged electrolytic interfaces, Electrocatalysis and photoelectrocatalysis

Lernziele und Kompetenzen:

The students

- are familiar with the fundamentals and modern developments in semiconductor science and applications
- understand theoretical and practical aspects in state-of-the-art semiconductor devices
- can present, communicate and discuss scientific results with experts in English.

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. 2020w | NatFak | Molecular Science (Master of Science) | Compulsory elective module | Advances in Energy Materials | Semiconductor Materials for Energy Applications)

[2] **Molecular Science (Master of Science)**
(Po-Vers. 2020w | NatFak | Molecular Science (Master of Science) | Elective modules | Semiconductor Materials for Energy Applications)

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

Studien-/Prüfungsleistungen:

Semiconductor Materials for Energy Applications (Prüfungsnummer: 65411)
Prüfungsleistung, elektronische Prüfung, Dauer (in Minuten): 60
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
W60 (PL): electronic written examination (60 minutes) according to FAU Corona Statutes!
Prüfungssprache: Englisch

Erstablegung: SS 2021, 1. Wdh.: WS 2021/2022
1. Prüfer: Julien Bachmann

Organisatorisches:

Please note:

- "Semiconductor Materials for Energy Applications"will be taught only
- Students have to register for the module on StudOn (check registration periods)!
- Registration/further information via StudOn

Bemerkungen:

Module compatibility:

- within the Compulsory Elective Module "Advances in Energy Materials" in M. Sc. Chemistry or M. Sc. Molecular Science (20 ECTS)
- part of the Elective Module in M. Sc. Chemistry or M. Sc. Molecular Science (5 ECTS, not graded)