Modulbezeichnung: **Advanced electrochemistry (CE7)** **15 ECTS**
(Advanced electrochemistry)

Modulverantwortliche/r: Dirk Guldi
Lehrende: Christian Ehli, Dirk Guldi

Startsemester: WS 2019/2020	Dauer: 2 semester	Turnus: jährlich (WS)
Präsenzzeit: 200 Std.	Eigenstudium: 250 Std.	Sprache: Englisch

Lehrveranstaltungen:

A. Advanced Electrochemistry (2L/1S)
Advanced Electrochemistry (WS 2019/2020, Vorlesung, 2 SWS, Dirk Guldi et al.)
Seminar Advanced Electrochemistry (WS 2019/2020, Seminar, 1 SWS, Christian Ehli et al.)

B. Energy-related Advanced Electrochemistry (2L/1S)
Energy-related Advanced Electrochemistry (SS 2020, Vorlesung, 2 SWS, Christian Ehli et al.)
Seminar Energy-related Advanced Electrochemistry (SS 2020, Seminar, 1 SWS, Dirk Guldi et al.)

C. Lab Course Electrochemistry (8Lab)

- Attendance in lab course is compulsory!

Lab Course Electrochemistry (WS 2019/2020, Praktikum, 8 SWS, Christian Ehli et al.)
Lab Course Electrochemistry (SS 2020, Praktikum, 8 SWS, Christian Ehli et al.)

Inhalt:

A./B. lectures on advanced theoretical principles in electrochemistry, e.g. fundamental concepts, physicochemical aspects of electrolytes, transport phenomena on electrode surfaces, kinetics, cyclic voltammetry, pulsed techniques, spectro electrochemistry, electrochemical impedance spectroscopy, nano electrochemistry.
Electrochemical synthesis and procedures on industrial scale, prevention of corrosion.
Modern energy relevant topics applying electrochemistry, e.g. fuel cells and batteries, solar cells, electrocatalysis.
C. Electrochemistry lab course (7 experiments, 1-2 days each)

Lernziele und Kompetenzen:

Students
- apply advanced knowledge in theoretical and experimental electrochemistry
- explain technological and industrial processes
- discuss the experimental fundamentals of modern electrochemical measurement processes
- review current research topics
- evaluate the results of electrochemical measurements

Literatur:

Allen J. Bard: "Electrochemical Methods: Fundamentals and Applications"

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

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

[1] **Chemie (Master of Science)**
(Po-Vers. 2009 | NatFak | Chemie (Master of Science) | Wahlmodul | Advanced Electrochemistry)

Studien-/Prüfungsleistungen:

Advanced Electrochemistry (Prüfungsnummer: 67401)
(englische Bezeichnung: Notes or Seminar Presentation: Advanced Electrochemistry)
Prüfungsleistung, mehrteilige Prüfung
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
O30 (PL): oral examination, 30 min* + LAB (SL);
*Oral examination (30 min) or alternative examination according to FAU Corona Statutes!
Prüfungssprache: Englisch

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

1. Prüfer: Christian Ehli

Organisatorisches:

Module frequency:
A./B. annually
C. March/April (mandatory registration via **StudOn**)
Please note: module starts only in **winter term**!
Grading procedure: W90 100%

Bemerkungen:

Module compatibility: M.Sc. Chemie / M.Sc. Molecular Science (Elective module)