

COURSE DETAIL

HETEROGENEOUS CATALYSTS FOR SUSTAINABLE ENERGY APPLICATION

Country

Germany

Host Institution

Technical University Berlin

Program(s)

Technical University Berlin

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Chemical Engineering

UCEAP Course Number

110

UCEAP Course Suffix**UCEAP Official Title**

HETEROGENEOUS CATALYSTS FOR SUSTAINABLE ENERGY APPLICATION

UCEAP Transcript Title

CAT SUST ENERGY

UCEAP Quarter Units

5.50

UCEAP Semester Units

Course Description

In this course, students learn and apply core principles and concepts in heterogeneous catalysis. Students learn the most important catalytic materials and how to describe their functions, including important applications of heterogeneous catalysts in sustainable energy conversion. Course topics include the scope of future energy supply and its significance for industry and society as well as the environment and various synthetic methods for the preparation of heterogeneous catalysts using various solid-state, solution-and molecular-based approaches. Students learn how to define crystalline and amorphous materials and thin-film technology and gain a basic understanding of the characterization techniques and systematic evaluation of catalysts/thin films using diffraction, microscopic, and analytics. The course covers fundamentals of electrochemistry and how to correlate and explain activity parameters to differentiate catalyst's performances in catalytic oxidation and reduction processes in the rapidly growing fields of water electrolysis, fuel cells, CO₂ activation, biomass reforming, and paired electrolysis. Course readings include relevant scientific literature and key publications of leading female and male scientists of the field.

Language(s) of Instruction

English

Host Institution Course Number

#20781 / #1

Host Institution Course Title

HETEROGENEOUS CATALYSTS FOR SUSTAINABLE ENERGY APPLICATION

Host Institution Course Details

<https://moseskonto.tu-berlin.de/moses/modultransfersystem/bolognamodule/beschre...>

Host Institution Campus

Host Institution Faculty

Host Institution Degree

Host Institution Department

Institut für Chemie

Course Last Reviewed

2024-2025

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