
Modulbezeichnung: Bioreaction and Bioprocess Engineering (CBI, MAP, MT) (BRT_E) **3 ECTS**
(Bioreaction and Bioprocess Engineering)

Modulverantwortliche/r: Ronald Gebhardt
Lehrende: Ronald Gebhardt

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|-----------------------------|-----------------------|-----------------------|
| Startsemester: WS 2016/2017 | Dauer: 1 semester | Turnus: jährlich (WS) |
| Präsenzzeit: 30 Std. | Eigenstudium: 60 Std. | Sprache: Englisch |

Lehrveranstaltungen:

Bioreaction and Bioprocess Engineering (CBI, MAP, MT) (WS 2016/2017, Vorlesung, 2 SWS, Ronald Gebhardt)

Inhalt:

See "Vorlesung Bioreaktions- und Bioverfahrenstechnik (nur CBI)"

- Basics of reaction kinetics (micro-heterogen catalysis, enzyme reactions, enzyme and substrate inhibition, growth kinetics)
- Biotechnological production processes (batch culture, conti culture, product formation/cultivation)
- Classical processes (fermented nutrients, amino acids, polysaccharides, antibiotics)
- Modern processes (GVO, protein synthesis, immobilization)
- Balancing, modeling (model parameter, carbonate balance, elementary balances)
- Mass transfer (models, bubble formation, coalescence)
- Reactor models, retention time behaviour; reactors for use in biotechnology (bubble columns, stirring vessel)
- Stirring and degasing (stirrers, performance requirement, mixed characteristics)
- Rheology of fermentation solutions
- Scaling methods
- Sterilization
- Fermenter design (process measuring and control technology).

Lernziele und Kompetenzen:

The lecture enables the students to apply reaction kinetics to biological processes as well as to understand production processes of biological products. Further the students shall be enabled to design bioreactors under consideration of mass transfer and mixing behaviour.

Literatur:

- Chemical Reactor Omnibook
- Vorlesungsskript (StudOn)

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

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

[1] **Advanced Materials and Processes (Master of Science with Honours)**

(Po-Vers. 2014w | TechFak | Advanced Materials and Processes (Master of Science with Honours) | Masterprüfung | Grundlagenfächer)

Studien-/Prüfungsleistungen:

Bioreaction and Bioprocess Engineering (Prüfungsnummer: 1705)

(englische Bezeichnung: Bioprocess and Bioreactionengineering)

Studienleistung, mündliche Prüfung, Dauer (in Minuten): 30 Minuten Prüfungssprache: Englisch

Erstablingung: WS 2016/2017, 1. Wdh.: SS 2017

1. Prüfer: Ronald Gebhardt

Organisatorisches:

Please sign in at StudOn (obligatory):

http://www.studon.uni-erlangen.de/crs1028724_join.html

Link for downloading lecture notes (join StudOn):

http://www.studon.uni-erlangen.de/crs297993_join.html

For further information concerning laboratory course, etc., please, also refer to StudOn. Preparatory course (Sicherheitseinweisung - safety instructions) is also obligatory for lab course.