Modulbezeichnung	Produktionsbasierte Biotechnologie
Modulbezeichnung (eng.)	Production-based Biotechnology
Semester (Häufigkeit)	null (jedes Wintersemester)
ECTS-Punkte (Dauer)	3 (1 Semester)
Art	BBT: Pflichtmodul / Compulsory module BBTPV: Pflichtmodul / Compulsory module
Studentische Arbeitsbelastung	30 h Kontaktzeit + 60 h Selbststudium
Voraussetzungen (laut BPO)	Keine, N/A
Empf. Voraussetzungen	Keine, N/A
Verwendbarkeit	DEL
Prüfungsform und -dauer	Klausur 1,0 h oder mündliche Prüfung (Prüfungsleistung) / Written exam 1.0 h or oral exam (academic assessment)
Lehr- und Lernmethoden	Vorlesung / Lecture
Modulverantwortliche(r)	R. Habermann

Qualifikationsziele
At the end of the semester, the students will be able to ...

- describe the history and the development of the modern biotechnology
- know different fields of biotechnology and modern production processes for biotechnological processes that impact the daily life
- estimate challenges of biotechnological production processes and trends in biotechnology,
- develop processes for biotechnological products on a basic level

by ...

- using, applying and bringing together the knowledge provided in previous lectures
- having an idea in how many areas biotechnology impacts peoples life's
- deepening the knowledge based on current literature and being up to date with the trends in production facilities, research and development

in order to ...

- gather basic knowledge for activities in the biotechnological industry
- be able to contribute concepts and ideas from different fields of biotechnology to industry, research and development

Lehrinhalte
History of biotechnology with the different color codes, biotechnological products in our daily life, biotechnological production processes with examples (e.g. beer, insulin, single cell protein, active pharmaceutical ingredients), large scale production facilities, administration for production facilities, product changeovers, process analytical technology (PAT), trends in biotechnological industry (e.g. personalized medicine, additive manufacturing, artificial intelligence)

Literatur

Script and material of the lecture
Current literature
J. Schüler: Die Biotechnologie-Industrie, Springer Spektrum, Berlin, 2016
R. Rennenberg, D. Süßbier, V. Berkling, V. Loroch: Biotechnologie für Einsteiger, Springer Spektrum, Berlin, 2018
G. Gstraunthaler, T. Lindl: Zell- und Gewebekultur; Springer, 2021
R. Eibl, D. Eibl, R. Pörtner, G. Catapano, P. Czermak: Cell and Tissue Reaction Engineering, Springer, 2009
V. Hass, R. Pörtner: Praxis der Bioprozesstechnik mit virtuellem Praktikum, Spektrum, 2011
H. Chmiel: Bioprozesstechnik, Springer Spektrum, Berlin, 2018
K. Muttzall, Einführung in die Fermentationstechnik, Behr's Verlag 1993

Lehrveranstaltungen

Dozenten/-innen	Titel der Lehrveranstaltung	SWS
I. de Vries	Production-based Biotechnology (Lecture)	2