

Batch Process Operation					AR-311
Rota	Duration	Semester	SWS	Credit Points	Workload
annually WS	1 Semester	3rd (Semester)	3 SWS	4	135 h
1	Modul structure				
	Course (Abbreviation)	Type/ SWS	Presence	Self study	Credits
	a) Batch Process Operation (BPO)	Lecture / 2 SWS	30 h	60 h	3
	b) Batch Process Operation (BPO)	Tutorial / 1 SWS	15 h	30 h	1
2	Language English				
3	Content Many chemical and most biochemical production processes are performed as batch processes where finite quantities of material undergo a sequence of production steps in one or several pieces of equipment. Batch processes differ from continuous processes as they are transient (non-stationary) in nature and often different products are produced in the same equipment, leading to scheduling problems. The course extends the knowledge of the students in the field of operation and control of batch processes. It covers the current standards for batch automation as well as the monitoring, control and optimization of individual batch runs. Literature: <ul style="list-style-type: none"> • Handouts • Slides 				
4	Goals After the course, the students understand the fundamental differences between batch and continuous operation. They know the standards for batch automation and can interact with automation engineers in this domain. They are able to apply state-of-the-art monitoring, control and optimization techniques in industrial batch processes.				
5	Examination Requirements The final exam will be an oral (20 minutes) or written (1.5 hours) exam, depending on the number of participants (form will be announced in the second week of the course). In addition, there will be a graded homework.				
6	Formality of Examination <input checked="" type="checkbox"/> Module Finals <input type="checkbox"/> Accumulated Grade				
7	Module Requirements (Prerequisites) Basic knowledge of mathematical modeling, dynamic systems, and control, as e.g. provided by the course Control Theory and Applications.				
8	Allocation to Curriculum: Program: Automation & Robotics, Field of study: Process Automation				
9	Responsibility/ Lecturer <i>Prof. Dr. S. Engell/Prof. Dr. S. Engell</i>				