

Course code																																							
Type and description	Background Course																																						
ECTS credit	2																																						
Course name	Introduction to Chemical Reactor and Bioreactor Engineering																																						
Course name in Polish	Wprowadzenie do inżynierii reaktorów chemicznych i bioreaktorów																																						
Language of instruction	English																																						
Course level	8 PRK																																						
Course coordinator	Prof. dr hab. inż. Marcin Bizukojć																																						
Course instructors	Prof. dr hab. inż. Marcin Bizukojć																																						
Delivery methods and course duration	<table><tr><th></th><th>Lecture</th><th>Tutorials</th><th>Laboratory</th><th>Project</th><th>Seminar</th><th>Other</th><th>Total of teaching hours during semester</th></tr><tr><td>Contact hours</td><td>15</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>15</td></tr><tr><td>E-learning</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td></td></tr><tr><td>Assessment criteria (weightage)</td><td>0,00</td><td></td><td></td><td></td><td></td><td>0,00</td><td></td></tr></table>								Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester	Contact hours	15	0	0	0	0	0	15	E-learning	No	No	No	No	No	No		Assessment criteria (weightage)	0,00					0,00	
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Course objective	<div>1. Acquisition of knowledge concerning the stoichiometry and kinetics of chemical reactions</div> <div>2. Acquisition of knowledge on the balances of chemical reactors</div> <div>3. Acquisition of knowledge concerning microbial growth kinetics</div> <div>4. Acquisition of knowledge on the balances of bioreactors</div>																																						
Learning outcomes	<div>After the course a PhD student we be able to:</div> <div>1. understand and apply the balances of chemical reactors and bioreactors: effects W1, U3, K2;</div> <div>2. understand and study problems concerning chemical reaction kinetics and microbial growth kinetics – effects W4, U1, K1-K2</div> <div>3. . understand and apply the acquired knowledge about chemical reactors and bioreactors to select the appropriate equipment for the given process : effects W1, U2, K2</div> <div>4. apply the acquired knowledge to study the experimental data from reactor and bioreactor processes: effects U3, K1-K2</div>																																						
Assessment methods	<div>Effects W1, W4, U3, K1, K2 - written examination</div> <div>The final evaluation is based on:</div> <div>Exam -100%</div>																																						

Prerequisites	None
Course content with delivery methods	<p>Lecture</p> <ul style="list-style-type: none"> - types of chemical reactors and bioreactors - basic hydrodynamic balance of a bioreactor and a chemical reactor - operational modes of bioreactors and chemical reactors: batch, fed-batch and continuous - kinetics of chemical reactions - biological models to be used in the bioreactor balance: - determination of selected parameters of a biological model and chemical reactions - mixing and aeration in bioreactors - oxygen uptake and transfer rate in bioreactors <p>-</p>
Basic reference materials	<ol style="list-style-type: none"> 1. Perry R.H. PERRY'S CHEMICAL ENGINEERS' HANDBOOK McGraw-Hill 1997 2. Aiba Sh., Humphrey A.E., Millis N.F. "Biochemical Engineering", Academic Press 1973 3. Bailey J.E., Ollis D.F. "Biochemical Engineering Fundamentals" McGraw-Hill 1994 4. Doran P. M "Bioprocess Engineering Principles" Academic Press, 1995
Other reference materials	
Average student workload outside classroom	35 h
Comments	
Last update	