

CODE : <b>BIOHUM0 2</b>		COURSE TITLE: <b>BIOPROCESS ENGINEERING</b>		ECTS: <b>5</b>	
COORDINATOR: <b>TOMASZ JANKOWSKI</b>			DEPARTMENT: <b>FOOD SCIENCE AND NUTRITION</b>		
Course Category					
VOLUME (H) <b>60</b>			PERSONAL WORK (H)		
LECTURE: (H) <b>30</b>	PRACTICALS /LAB (H) <b>30</b>	PLACEMENT: (H)	PROJECT: (H)	OTHER MODALITIES: (H)	
EVALUATION:		OTHER MODALITIES:	LECTURER(S)		
EVALUATION MODALITIES			<b>TOMASZ JANKOWSKI</b> <b>RADOSLAW DEMBCZYNSKI</b> <b>WOJCIECH BIALAS</b>		
ORAL INDIVIDUAL REPORT					
WRITTEN INDIVIDUAL REPORT					
FINAL ORAL EXAM					
FINAL WRITTEN EXAM	<b>X</b>				
COMMENTS OF EVALUATION:			TEACHING METHODS: <b>LECTURES &amp; LABS</b>		
SEMESTER: <b>WINTER</b>			LANGUAGE: <b>ENGLISH</b>		
PERIOD: <b>15 WEEKS</b>			YEAR OF STUDY: <b>THIRD</b>		
OBJECTIVES					
To familiarize students with technical aspects of microbial mass conversion in various types of bioreactors.					
CONTENTS					
<ul style="list-style-type: none"> <li>▪ Bioreactor design and operation;</li> <li>▪ Stirred vessel, bubble column air-lift, membrane, and immobilized reactors;</li> <li>▪ Instrumentation and control of bioprocesses;</li> <li>▪ Sterilization of biomedica and equipment;</li> <li>▪ Mass transfer in bioreactors;</li> <li>▪ Gas solubility in biomedica. Scaling-up of bioreactors;</li> <li>▪ Rheology of fermentation broth;</li> <li>▪ Mechanical stress and microbial production. Kinetic models of bioprocesses.</li> </ul>					
GROUP SIZE: <b>LAB: 15</b>		PRE-REQUISITES: <b>BASICS OF MICROBIOLOGY, MATHEMATICS AND PHYSICS</b>			