

MODUL	FOOD 1.3	COURSE TITLE	Bioprocess technology		ECTS	7
FACULTY COORDINATOR		prof.dr hab.. Z.Krejpcio	DEPARTMENT	Food Science and Nutrition		
TEACHER			prof.dr hab. G.Lewandowicz (15); dr. E. Celińska (15); mgr Piotr Kubiak (15)			
VOLUME (H)		45		PERSONAL WORK (H)	105	
LECTURE (H)	LAB (H)	PLACEMENT (H)	PROJECT (H)	OTHER MODALITIES (H)		
15	30					
EVALUATION			TEACHING METHODS			
EVALUATION MODALITIES			Multimedial lectures adressed to all participants,			
ORAL INDIVIDUAL REPORT		50%	Participation in lab training			
WRITEN INDYVIDUAL REPORT			Participation in discussions			
FINAL ORAL EXAM						
FINAL WRITTEN EXAM		50%				
COMMENTS OF EVALUATION						
SEMESTER (WINTER/SUMMER)			LANGUAGE			
WS			ENGLISH			
OBJECTIVES						
The aim of the course is to get information about physicochemical cahracteristics of bioproducts and method for their processing and storage						
Acquire knowledge regarding the correlation between structure of bioproducts (including molecular mass) and their properties in solutions						
Learn about about major factors influencing activity of enzymes and survival of microorganisms by processing and storage						
Students should get more knowledge and basic lab skills regarding freezing, drying, lyophilisation, concentrartion and separation of bioproducts						
CONTENTS						
Types of bioproducts						
Enzymes, separation from fermentation broth, and purification						
Drying of bioproducts: concepts of water activity, and osmolality; xerostability and theromostability of microorganisms; contact-sorption drying.						
Freezing of bioproducts: phase diagrams of freezing; vitrification concept; cryoprotectants.						
Lyophilisation: methods; survival rate of microorganisms by lyophilisation						
Concentration: evaporation and cryoconcentration.						
ical fluids extration						
PRE-REQUISES		basis of physical chemistry, general process engineering, basics of microbiology				