

CODE : BIOHUM19		COURSE TITLE: FOOD PROCESS ENGINEERING		ECTS: 8	
COORDINATOR: DR INŻ. ANNA PRUSKA-KĘDZIOR			DEPARTMENT: FOOD SCIENCE AND NUTRITION		
COURSE CATEGORY					
VOLUME(H) 30				PERSONAL WORK (H)	
LECTURE: (H) 30		PRACTICALS / LAB : (H)	PLACEMENT: (H)	PROJECT: (H)	OTHER MODALITIES: (H)
EVALUATION:		OTHER MODALITIES:		LECTURER(S)	
EVALUATION MODALITIES				DR INŻ. ANNA PRUSKA-KĘDZIOR DR HAB. INŻ. ANTONI RYNiecki	
ORAL INDIVIDUAL REPORT					
WRITTEN INDIVIDUAL REPORT					
FINAL ORAL EXAM					
FINAL WRITTEN EXAM		x			
COMMENTS OF EVALUATION:			TEACHING METHODS: LECTURES		
SEMESTER: WINTER			LANGUAGE: ENGLISH		
PERIOD: 15 WEEKS			YEAR OF STUDY: THIRD		
OBJECTIVES					
<ul style="list-style-type: none"> ▪ FUNDAMENTALS OF THE FLUID FLOW AND RHEOLOGY IN FOOD PROCESSING ▪ HEAT TRANSFER IN FOOD PROCESSING ▪ - MASS TRANSFER AND DRYING IN FOOD PROCESS ENGINEERING 					
CONTENTS					
<ul style="list-style-type: none"> ▪ Introduction. Fluid Flow in Food Processing. Liquid Transport Systems. Handling Systems for Newtonian Liquids. ▪ Bernoulli Equation. Energy Equation for Steady Flow of Fluids. Pump Selection and Performance Evaluation. ▪ Flow Measurement. Measurement of Viscosity. Flow Characteristics of Non-Newtonian Fluids. ▪ Heat Transfer in Food Processing. Steady-State Heat Transfer. Design of a Heat Exchanger. ▪ Unsteady-State Heat Transfer. Systems for Heating and Cooling Food Products. Microwave Heating. ▪ Thermal Preservation Processes. Microbial Survivor Curves. Thermal Death Time F. General Method for Process Calculation. ▪ Commercial Sterilization and Pasteurization. Food Freezing Systems. Freezing Time and Freezing Rate. ▪ Evaporation. Types of Evaporators. Design of a Single-Effect Evaporator. Design of a Multiple-Effect Evaporator. ▪ Mass Transfer. The Diffusion Process. Convective Mass Transfer. Heat and Mass Transfer. ▪ Convective Drying. Properties of Air-Vapor Mixtures. The Mollier Psychrometric Chart. Use of Mollier Chart to Evaluate Complex Air-Conditioning Processes. ▪ Design of a Convective Dryer Using the Mass and Energy Balance. Use of Mollier Chart to Design Drying Processes. ▪ Drying-Rate and Drying-Temperature Curves. Drying Time. Basic Dehydration Systems. Spray and Fluidized-Bed Drying. ▪ Membrane Separation. Electrodialysis Systems. Reverse Osmosis Membrane Systems. Ultrafiltration Membrane Systems. 					
GROUP SIZE:			PRE-REQUISITES:		