Republic of Iraq Fhe Ministry of Higher Education & Scientific Research



University:Al Muthana College:Science Department:Biology Stage:Fourth Lecturer name:Maitham abas makei Academic Status:.Lacturer Qualification:Msc Place of work: Al Muthana University/ College of Science.

Teaching	plan for	• the semester	form2018-2019
I cuching	plan IVI		

Maitham abas Makei						
Maitham_abas@yahoo.com						
Industrial microbiology.						
(15) week, two hours per week (theoretical part).						
(15) week, two hours per week (practical part).						
explain relationship between Microorganism and Industrial food						
Production of Metabolites, Industrial enzymes, Amino acid, Organic acids, Antibiotics, Vitamins and Single Cell Proteins						
 -Riegel ER and Bissinger HG (2003) Industrial fermentation: Principles, processes and products; Vitamin B₁₂ (Cyanocobalamin). -Gupta R, Beg QK and Lorenz P (2002) Bacterial alkaline proteases: molecular approaches and industrial applications. <i>Applied Microbiology and Biotechnology</i>. 						
Term Tests	Laboratory	Quizzes	Project	Final Exam		
27%	10%	3%		60%		
Type here g	eneral notes r	egarding the	course			
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49 Teaching plan for the semester form2018-2019									
week	Date	Topics Covered	Lab. Experiment Assignments	Notes					
1		Principles of overproduction of primary and secondary metabolites, Fermentation media	Culture media using for growth of industrial microbes.						
2		Industrial enzymes – Amylase, Protease, Cellulase	Ethanol production (Lab. Method) .						
3		Amylases	Ethanol production (Lab. indicator) .						
4		Proteases	Acetic acid production						
5		Cellulases	Methods of Acetic acid production.						
6		Amino acid production: L-Glutamic acid and L-Lysine	Acetic acid filtration.						
7		Organic acids – Citric acid and Lactic acid <i>Citric acid</i>	Citric acid production from Dates.						
8		Lactic acid	Exam						
9		Production of Antibiotics: Penicillin and Streptomycin	Microbial enzymes production.						
10		Penicillin	Isolating microorganisms producing amylase.						
11		Streptomycin	Dates and production of yeast (yeast bread, the leaven of the feed)						
12		Vitamins - Riboflavin, Cyanocobalmin	The production of antibiotics by microorganisms						
13		Riboflavin	Production of penicillin						
14		Cyanocobalamin	The production of beer						
15		Single Cell Proteins (SCP)	Factors that affect the The production of beer spoilage.						

Instructor Signature: Maitham A.Makei

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