## Department of Microbiology

## St. Aloysius College Autonomous Jabalpur, M.P

## **B.Sc. III Semester**

# Industrial Microbiology: Paper 1

## Session 2023-24

### Format For Syllabus of Theory Paper

Part A Introduction						
Program: Diploma	Class: B.Sc.	Year: III Semester	Session: 2023-2024			
Subject: Industrial Microbiology						
1	Course Code	S2INMB1T				
2	Course Tittle	Application of Industrial Microbiology				
3	Course Type [Core Course / Elective/ Generic Elective / Vocational /]	Core MAJOR 1				
4	Pre-requisite [if any]	To study this course, a student must h Biology In class /12 <sup>th</sup> /certificate/.	ave had the subject			
5	Course Learning outcomes [CLO]	<ul> <li>On successfully completing the module-</li> <li>CO1-Students will be able to understand working and design of a fermenter, its uses, and its different types.</li> <li>CO 2-Students will be able to demonstrate the knowledge and understanding of basic fermentations processes.</li> <li>CO 3- Students will be able to select industrially important microbes for economical use.</li> <li>CO 4-Students will be able to screen and identify organism of potential industrial importance</li> <li>CO 5-Students will be able to describe various separation techniques and downstream processing different metabolites.</li> </ul>				
6	Credit Value	4				

7	Total Marks	Max. Marks: 40+60	Min. passing marks: 35				
Part B-Content of the Course Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P:							
1	General concept of in scope. Exploitation of strain development media, raw material immobilization metho	pplications, history & 15 products, screening, ration, fermentation antifoaming agents, essing					
2	Fermentation equipr fermenters and ferm surface, submerged a Harvesting and recover	er design, Types of 10 ontinuous, multiple, scale down process. Ilular product.					
3	Industrial products from Antibiotics: production Enzymes from microbo Organic acids: Citric a Amino acids: Glutami	om microorganisms- on of Penicillin, Streptomycin. es: Amylase, Protease. cid, Acetic acid c Acid, Lysine.	10				
4	Production of Interfer Production of <b>alcohol</b> <b>Biofuels</b> : Ethanol, Me	on, Vaccines, Hormones, Vitan <b>ic</b> beverages: Beer and wine, thane, Biogas.	nins. 10				
5 Keyword	Ethics and law of indu (SOP), Good manufact environmental hazard management procedu ls/Tags: Fermenters In	strial production: standard op turing practices (GMP), patent I from fermentation industry, i ure and environmental safety n dustrial Production, microbes	erating procedure 15 and copyrights, ndustrial waste neasures				

### Text Books, Reference Books, Other resources

1. A.H. Patel. Industrial Microbiology, Laxmi Publications; Second edition

2. K. R. Aneja. A Textbook of Basic and Applied Microbiology, New Age International.

3. Whitaker and Stanbury. Principles of Fermentation Technology.

4. Casida. Industrial Microbiology. Tata McGraw Hill.

S. Biotechnology- Industrial Microbiology, Crueger W and Crueger A 2<sup>nd</sup> edition (Panima publication

New Delhi).

6. Industrial -Microbiology, Prescott SC & Dunn CG, 4<sup>th</sup> edition (Agrobios publication, Jodhpur)

7, Industiabrnicrobiology : An Introduction , Waites MJ, Margan NL, Rockey JS, Higton G, 1" edition

(Blackwell Science Ltd. UK ).

B. Books Poblisbed by M.P Hindi Granth Academy, Bhopal.

Suggested equivalent online courses:

http://ecoursesonline.iasri.res.in/coursc/view.php?id=461

https://nptel.ac.in/courses/102/105/102105058/

htps://nptel.ac.in/courses/ 102/104/102104063/

https://nptel.ac.in/courses/102/106/102106022

Part D – Assessment and Evaluation

Suggested Continuous Evaluation Methods:						
Maximum Marks: 100						
Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks						
Internal Assessment:	40					
Continuous Comprehensive						
Evaluation (CCE):						
External Assessment :	60					
University Exam :						