

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART – A: Introduction			
Program: Bachelor in Life Science (Degree/Honors)		Semester - V	Session: 2024-25
1	Course Code	MBSE-03 T	
2	Course Title	Food and Dairy Microbiology	
3	Course Type	Discipline Specific Elective (DSE)	
4	Prerequisite (If Any)	As per Program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to – <ul style="list-style-type: none"> ➤ define the significance and activities of microorganisms in food ➤ relate the principles in traditional food preservation techniques ➤ identify the starter cultures of different microbial food products ➤ explain the types of food intoxications ➤ examine the food born infections 	
6	Credit Value	03 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Minimum Passing marks: 40

PART – B: Content of the Course

Total No. of Teaching-Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)

Unit	Topics (Course contents)	No. of Period
I	Introduction to food and dairy Microbiology: Importance of studying food and dairy microbiology, Traditional and ayurvedic foods of Indian origin, Classification of food in relation to shelf life. Microbial spoilage: principles, Intrinsic and extrinsic factors that affect growth and survival of microbes in foods, natural flora and source of contamination of foods in general.	12
II	Principles and methods of food preservation: Physical methods of food preservation: temperature, Pasteurization, canning, drying, High pressure and Irradiation; chemical methods of food preservation: salt, sugar, organic acids, SO ₂ and antibiotics.	11
III	Microbiology of fermented milk and fermented food: Starter lactic cultures, fermented milk products- yogurt, butter and cheese, other fermented foods- idly, bread. Microorganisms as food- Mushroom. Prebiotics and Probiotics- definition and uses.	11
IV	Food borne diseases: food poisoning, food infections and intoxications. Causative agents, symptoms and preventive measures. Food intoxications: Clostridium botulinum and mycotoxins; Food infections: <i>Bacillus cereus</i> , <i>Escherichia coli</i> , <i>Shigella</i> , <i>Listeria monocytogenes</i> .	11
Key Words	Preservation, Food borne diseases, Food intoxications, Microbial spoilage, Prebiotics, Probiotics	

Name and Signature of Convener and Members of CBoS

P. Pall 20/6/24 Jun. 10.6.24 Rashmi 10.6.24 D. 10.6.24 ENCA
 Anand 10.6.24 Anurag 10/6/24 Sachin 10.6.24 Dr. Nelson Xels

Part – C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

1. Biochemistry of milk products: Andrews AT, Varley J. (1994). Royal Society of Chemistry.
2. Food microbiology: Banwart GJ. (1989)
3. A textbook of Microbiology: R. C. Dubey and Maheshwari, S Chand publications.
4. Food Microbiology, 5th Edition; William C. Frazier, Dennis C. Westhoff and N.M. Vanitha

Reference Books:

1. Basic food microbiology: Chapman & Hall, New York.
2. Modern Food Microbiology: Jay JM, Loessner MJ and Golden DA. (2005).7th edition, CBS Publishers and Distributors, Delhi
3. Food Microbiology: Adams MR and Moss MO. (1995)., Cambridge.

Online Resources – e-Resources/ e-Books and e- learning portals

- <https://bookarchive.net/pdf/industrial-microbiology-by-i-e-casida-ir/>
- <http://foodhaccp.com/foodsafetymicro/onlineindex.html>
- https://sist.sathyabama@ac.in/sist_coursematerial/uploads/SMB2203.pdf
- <http://www.cpe.rutgers.edu/courses/current/If0401wa.html>
- <https://www.classcentral.com/course/swayam-food-microbiology-and-food-safety-17609>

Part – D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

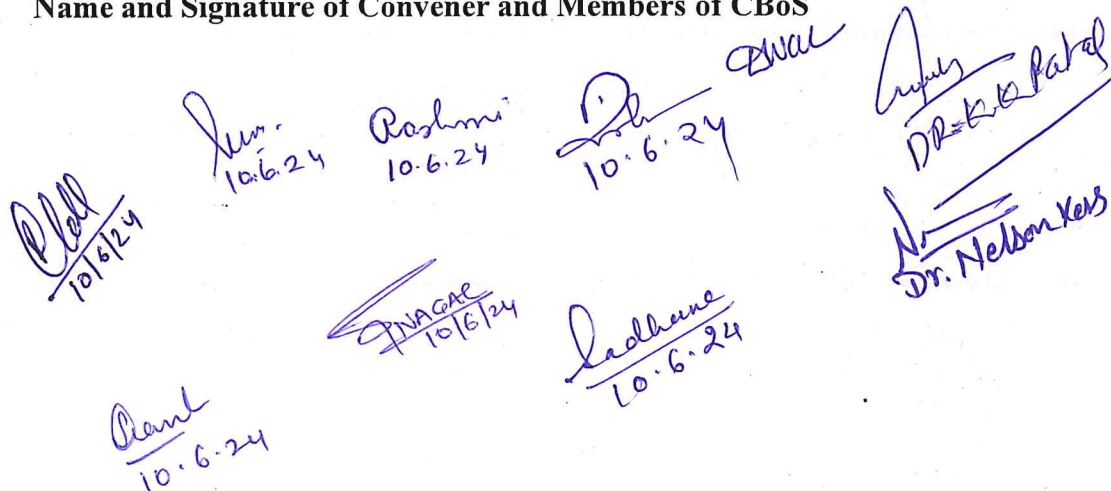
Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz – (2): 20+20	Better marks out of the two Test/ Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment/ Seminar – 10	
	Total Marks – 30	

End Semester Exam (ESE):	Two Section – A & B
	Section A: Q1. Objective 10 X 1 = 10 Mark; Q2. Short answer type – 5X4= 20 Marks
	Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4X10 = 40 Marks

Name and Signature of Convener and Members of CBoS


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PART – A: Introduction			
Program: Bachelor in Life Science (Degree/Honors)		Semester - V	Session: 2024-25
1	Course Code	MBSE-03 P	
2	Course Title	Lab. Course - MBSE-03	
3	Course Type	Laboratory Course	
4	Prerequisite (If Any)	As per Program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to – <ul style="list-style-type: none"> ➤ illustrate methods for isolation, detection and identification of microorganisms from food samples ➤ outline the spoilage microorganisms of food ➤ compare the effect of temperature on the spoilage of food products ➤ relate the parts of mushrooms 	
6	Credit Value	1 Credit	<i>Credit = 30 Hours. Laboratory or Field learning/ Training</i>
7	Total Marks	Max. Marks: 50	Min. Passing marks: 20
PART – B: Content of the Course			
Total No. of learning-Training/ Performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)	No. of Period	
Lab./ Field Training/ Experiment contents of Course	1. Isolation of spoilage microorganisms from bread. 2. MBRT of milk samples and their standard plate count. 3. Isolation of bacteria and fungi from food products. 4. Microbiological examination of canned foods. 5. Isolation of spoilage bacteria from fruits and vegetables. 6. Effect of temperature on the spoilage of food products. 7. Microbiological examination of mushrooms. 8. Microbiological examination of packaged food.	30	
Key Words	Spoilage microorganisms, Food borne bacteria, Food borne fungi, Canned food		
PART – C: Learning Resources			
Text Books, Reference Books and Others			
Text Books Recommended:			
1. Practical Microbiology: Dubey and Maheshwari. D.K., S. Chand & Company, Pvt. Ltd., New Delhi. 2. Laboratory experiments in Microbiology: Gopal Reddy 3. Microbiology Laboratory Manual: Cappuccino, Sherman, Pearson Education.			
Online Resources:			
<ul style="list-style-type: none"> • http://www.onlinelabs.in • http://www.vlab.co.in • http://www.vlab.amrita.edu 			
PART – D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Maximum Marks:		50 Marks	
Continuous Internal Assessment (CIA):		15 Marks	
End Semester Exam (ESE):		35 Marks	
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test/ Quiz – (2):	10 & 10	Better Marks out of the two Test/ Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/ Seminar + Attendance:	05	
	Total Marks:	15	
End Semester Exam (ESE):	Laboratory/ Field Skill Performance: On spot Assessment		Managed by course teacher as per lab. status
	A. Performed the Task based on lab. work –		20 Marks
	B. Spotting based on tools & technology (written) –		10 Marks
	C. Viva-voce (based on principle/ technology) –		05 Marks

Name and Signature of Convener and Members of CBoS

Convener: *[Signature]* 10/6/24
 Members: *[Signatures]* 10/6/24