

AC – 20/04/2024

Item No. – 6.6 Sem. II (12b)

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE	
Board of Studies in Microbiology	
UG First Year Programme	
Semester 1 and 2	
Title of Paper	Credits 2/ 4
I) Microbes in Food	2
II)	
From the Academic Year	2024-25

Title of Paper: Microbes in Food

Sr. No.	Heading	Particulars
1	Description the course : Including but Not limited to :	The aim of the course <i>Microbes and Food</i> is to understand the role of microorganisms in the food that we consume. Food microorganisms could be either beneficial or harmful. The learner will gain knowledge about important genera of microorganisms associated with fermented foods. Fermented foods have tremendous potential to provide sustainable, nutritious and delicious food for a growing world population.
2	Vertical :	Open Elective
3	Type :	Theory
4	Credit:	2 credits (1 credit = 15 Hours for Theory in a semester)
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: CO1. To introduce cross faculty students to Food Microbiology CO2. To impart knowledge about the important groups of microorganisms associated with fermented foods. CO3. To acquaint the learners with causative agents of common food borne diseases. CO4. To enable them to understand the significance of the human gut microbiome. CO5. To give the learner an overview of prebiotics and probiotics.	
8	Course Outcomes: On completion of this course learner will be able to: OC1. Recollect the beneficial and harmful groups of microorganisms associated with food. OC2. Comprehend the significance of fermented foods. OC3. Apply the knowledge gained to identify foodborne diseases and organisms associated with them. OC4. Analyze the role of probiotics on human health. OC5 . Evaluate the association of prebiotics and probiotics. OC6 . Plan meals to derive the benefits of fermented foods	
9.	Modules	

Course code		SEMESTER II	Credits
		Open Elective Course (Microbes in Food)	Credits 2 (30 L/hr)
Module 1		Fermented foods	15L
	1.1	Introduction to Microbiology Microorganisms used in food fermentation : Lactic acid bacteria and Yeast	2L
	1.2	Fermented Dairy products: Yogurt and Cheese	4L
	1.3	Fermented fruits and vegetables: Types of pickles	3L
	1.4	Fermented cereals: Idli	3L
	1.5	Fermented Millets (Bajra, Raji)	3L
Module 2	2.	Microbes in food: Beneficial and Harmful	15L
	2.1	Food and Human gut Microbiome	2L
	2.2	Probiotics: sources and benefits	2L
	2.3	Prebiotics: examples and importance	2L
	2.4	Food borne diseases-Typhoid, Dysentery, Amoebiasis	6L
	2.5	Spoilage of food: Tabulation of common spoilage causing organisms (fruits , vegetables, bakery and dairy products)	3L
References			
1.	Prescott and Dunn , Industrial Microbiology, 2nd Edition , CBS publishers and distributors.		
2.	James Jay, Martin Loessner, David Golden, Modern Food Microbiology, 7th edition, Food Science text series.		
3.	William Frazier and Dennis Westhoff, Food Microbiology, 5th edition, McGraw Hill Education.		
4.	Kechagia, Health benefits of Probiotics Review, 481651, ID Article 2013, Volume , Hindawi Publishing Corporation https://www.hindawi.com/journals/isrn/2013/481651/		
5.	Semih Ötleş, Probiotics and Prebiotics in Food, Nutrition and Health, CRC Press, Taylor and Francis group, International Standard Book Number-13: 978-1-4665-8624-6 (eBook - PDF)		

6.	Yuan Kun Lee, Seppo Salminen, Handbook of Probiotics and Prebiotics, Second Edition, Wiley publication
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Guidelines for examination and evaluation (External and Internal)

Evaluation Pattern for OE courses (Microbiology)

Semester 1 and 2

Theory	Credits	No. of Hours	Marks
Theory Paper	2	30	50

Theory courses

Internal Continuous Assessment: 40% (20 Marks)	Semester End Examination: 60% (30 Marks)	Duration for End semester examination
Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.	As per paper pattern*	1hour

***Paper Pattern for 30 marks :**

30 Marks per paper Semester End Theory Examination:

Duration - These examinations shall be of one hour duration

Question	Option	Marks	Questions Based on
Q1A	Attempt any two out of four (5 marks each)	10	Based on Module 1
Q1B	Attempt any five out of ten objective (MCQ type only) questions (1 marks each)	5	Based on Module 1
Q2A	Attempt any two out of four (5 marks each)	10	Based on Module 2
Q2B	Attempt any five out of ten objective (MCQ type only) questions (1 marks each)	5	Based on Module 2
	Total	30	

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