Department of Liberal Education
Era University, Lucknow
Course Outline
Effective From: 2023-24

Name of the Program	**B.A. / B.Sc. (LIBERAL EDUCATION)**			**Year/ Semester:**	**3rd / 5th**
Course Name	**Food Microbiology**	**Course Code:**	**NH303**	**Type:**	**Theory**
Credits	**04**			**Total Sessions Hours:**	**60 Hours**
Evaluation Spread	**Internal Continuous Assessment:**	**50 Marks**		**End Term Exam:**	**50 Marks**
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	1. Firm understanding of Food Microbiology, Specifically the role of different microorganism in food spoilage. Food fermentation and food borne diseases. 2. To obtain the knowledge about important genera of microorganisms associated with food and their characteristics; 3. To learn various techniques for enumeration and control of microorganisms in food. 4. To understand current national and international food safety rules and regulations.				
Course Outcomes(CO): *After the successful course completion, learners will develop following attributes:*					
Course Outcome (CO)	**Attributes**				
CO1	Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.				
CO2	Necessity of microbiological quality control programmes in food production.				
CO3	The microbiology of different types of food commodities.				
CO4	Using the current information for leading healthy life.				
Pedagogy	Interactive, discussion-bases, student-centered, presentation.				
Internal Evaluation Mode	Mid-term Examination: 20 Marks Activity: 10 Marks Class test: 05 Marks Online Test/Objective Test: 05 Marks Assignments/Presentation: 05 Marks Attendance: 05 Marks				
Session Details	**Topic**			**Hours**	**Mapped CO**
Unit 1	**Food Microbes:** Microorganisms in foods, Factor affecting multiplication and survival of microorganisms, Control of microbial growth in foods. Characteristics of moulds, yeasts and bacteria, useful and pathogenic organisms. **Activity:** Preparation and presentation of assignment on different types of microbes present in food and methods to control the growth of microorganisms			15	CO1

Unit 2	**Spoilage of different groups of Foods:** Contamination and micro – organisms in the spoilage of different kinds of foods and their preservation. Cereal and cereal products, Meat, egg and poultry, Milk and milk products, canned foods, Fish and Sea food. **Activity:** Collect different types of food items and store for some time and listing the changes occurring in the food items	15	CO2, CO4
Unit 3	**Food borne illnesses:** Types of food borne illnesses, Types of food borne illnesses. Microbes used in food biotechnology, fermented foods and their benefits. **Activity:** Visit nearby restaurant/dhaba/ street food vending shop and prepare a report mentioning the cleaning and hygiene and suggest measures for improvement.	15	CO3
Unit 4	**Food Safety management system:** Concept and importance of safe foods, Importance of sanitation and hygiene in foods, Integrated approach to food safety – Good hygiene practice (GHP), Good manufacturing practice (GMP), Hazard analysis critical control point (HACCP), Quality management ISO series, Total quality management. **Activity:** Conduct a survey in your locality and assess they awareness on food safety (whether they check quality standard: AGMARK, ISI etc.) before purchasing any food item.	15	CO4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	2							1					
CO2			2						2					
CO3		1										2		
CO4							3				2		2	

Strongcontribution-3,Averagecontribution-2, Lowcontribution-1,

Suggested Readings:

Text- Books	**Note: A reading material will be provided by the faculty member well in time.** Frazier, W. and Westhoff, D., 2014. *Food microbiology*. Chennai: McGraw Hill Education (India) Prt. Ltd.
Reference Books	1. Adams, M., Moss, M. and McClure, P., 2018. *Food Microbiology*. Cambridge: Royal Society of Chemistry. 2. Ray, B. and Bhunia, A., n.d. *Fundamental food microbiology*.
Para Text	**Unit 1:** https://www.youtube.com/watch?v=eksagPy5tmQ **Unit 2:** https://www.youtube.com/watch?v=Absrge44uJg https://www.youtube.com/watch?v=BlKP35bct2o **Unit 3:** https://www.youtube.com/watch?v=pNnWgs9zxxk https://www.fda.gov/food/people-risk-foodborne-illness/foodborne-illness-videos https://www.youtube.com/watch?v=2QQvhFPZedM **Unit4:** https://www.youtube.com/watch?v=9bTppRQRKNE

Recapitulation & Examination Pattern		
Internal Continuous Assessment:		
Component	**Marks**	**Pattern**
Mid Semester	20	**Section A:** Contains **10** MCQs/Fill in the blanks/One Word Answer/ True-False type of questions. Each question carries **0.5 marks.** **Section B:** Contains **07** descriptive questions out of which **05** questions are to be attempted. Each question carries **03 marks**.
Activity	10	Will be decided by subject teacher.
Class Test	05	Contains **05 descriptive questions.** Each question carries **01** mark.
Online Test/ Objective Test	05	Contains **10 multiple choice questions.** Each question carries **0.5** marks.
Assignment/ Presentation	05	Assignment to be made on topics and instruction given by subject teacher.
Attendance	05	As per policy.
Total Marks	**50**	

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Signature:

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Signature: