

<b>B.Sc. Biotechnology: Semester-IV</b>	
<b>BST-406 : FOOD BIOTECHNOLOGY</b>	
<b>Teaching Scheme</b> Lectures: 3 hrs/Week Tutorials: 1 hr/Week  Credits: 4	<b>Examination Scheme</b> Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks

**Course Objectives:**

1. To impart knowledge about the innovations in food processing technologies and their applications. To understand changes in the composition of food and comparison with conventional cooking methods.
2. To know packaging materials, their need according to different foods and to food quality parameters and their maintenance during storage.

**Course Outcome:**

After completing the course, students will be able to:


CO1: Identify the conditions under which the important pathogens are commonly inactivated, killed or made harmless in foods

CO2: Understand the principles involving food preservation via irradiation.


CO3: Understand the principles that make a food product safe for consumption

CO4: Understand the principles and current practices of processing techniques and the effects of processing parameters on product quality

**Detailed Syllabus:**



Head  
Department of Biotechnology  
Invertis University, Bareilly (U.P.)



Dean  
Faculty of Science  
Invertis University, Bareilly (U.P.)



Registrar  
Invertis University  
Bareilly

**UNIT 1 History of Microorganisms**

History of Microorganisms in food, Historical Developments. Role and significance of microorganisms in foods. Intrinsic and Extrinsic parameters of Foods that affect microbial growth. Basic principles, unit operations, and equipment involved in the commercially important food processing methods and unit operations

**Microorganisms**

Microorganisms in fresh meats and poultry, processed meats, seafood's, fermented dairy products and miscellaneous food products. Starter cultures, cheeses, beer, wine and distilled spirits, SCP, medical foods, probiotics and health benefits of fermented milk and foods products. Brewing, malting, mashing, hops, primary & secondary fermentation: Biotechnological improvements: catabolic repression, High gravity brewing, B-glucan problem, getting rid of diacetyl. Beer, wine and distilled spirits

**UNIT 2 Nutritional boosts and flavor enhancers**

Emerging processing and preservation technologies for milk and dairy products. Microbiological Examination of surfaces, Air Sampling, Metabolically Injured Organisms. Enumeration and Detection of Food-borne Organisms and indicators. Bioassay and related Methods

**Food Preservation-Food Preservation Using Irradiation, Characteristics of Radiations of Interest in Food Preservation. Principles Underlying the Destruction of Microorganisms by Irradiation, Processing of Foods by Irradiation, Application of Radiation, Radappertization, Radicidation, and Radurization of Foods. Legal Status of Food Irradiation, Effect of Irradiation of Food constituents**

**UNIT 3 Storage Stability Food**

Preservation with Low Temperatures, Food Preservation with High Temperatures, Preservation of Foods by Drying, Other Proven and Suspected Food-borne Pathogens, Rheology of Food Production

**Reference Books:**

1. Frazier, W.S. and Weshoff, D.C., 1988. Food Microbiology, 4th Edn., McGraw Hill Book Co., New York.
2. Mann & Trusswell, 2007. Essentials of human nutrition. 3rd edition .oxford university press.
3. Jay, J.M., 1987. Modern Food Microbiology, CBS Publications, New Delhi.
- 4 Lindsay, 1988. Applied Science Biotechnology. Challenges for the flavour and Food Industry. Willis Elsevier.
5. Roger, A., Gordon, B. and John, T., 1989. Food Biotechnology



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