

Subject Code: 2SC1020402	Subject Title: Food And Dairy Microbiology
COURSETYPE: CORE COURSE	

Course Objective:

Learning the core functions of a Food and Dairy Microbiology unit is very important as it affects the quality and productivity of not only such units but the entire organization that is built up on the fundamental aspects of these microbiological processes. This course teaches the processes that affect the shelf life ,storage ,spoilage and preservation of dairy and other food items affected by produced by fermented by such microorganisms.

Teaching scheme (hours) per week		Credit			Theory Marks		Practical Marks		Total
Theory	Practical	Theory	Practical	Total	Uni. Assessment	Cont. Assessment	Uni. Assessment	Cont. Assessment	
3	--	3	--	3	70	30	--	--	100

Unit	Content	Lectures	Weightage
1	A) Foods as a Substrate for Microorganisms ✓ Intrinsic and extrinsic factors that affect growth and survival of microbes in foods, natural flora and source of contamination of foods in general. B) Microbial Spoilage of various Foods ✓ Principles, Spoilage of vegetables, fruits ,meat, eggs, milk, bread, canned Foods C) Foodborne diseases (causative agents , foods involved ,symptoms and preventive measures) ✓ Food borne intoxications: <i>Staphylococcus aureus</i> & <i>Clostridium botulinum</i> ✓ Foodborne infections: <i>Escherichia coli</i> , Salmonellosis, Shigellosis, <i>Campylobacter jejuni</i>	15	34%
2	Principles and Methods of Food Preservation ✓ Principles, physical methods of food preservation: temperature (low, high, canning, drying), irradiation, hydrostatic pressure, high voltage pulse, microwave processing and aseptic packaging ✓ Chemical methods of food preservation :salt, sugar, organic acids, SO ₂ , nitrite and nitrates, ethylene oxide, antibiotics	15	33%
3	Fermented Foods ✓ Concept of Starter culture in Dairy Industry. ✓ Fermented dairy products: yogurt, acidophilus milk ,kumiss, kefir, dah iand cheese ✓ Other fermented foods: dosa, sauerkraut, soysauce and tampeh ✓ Probiotics: Health benefits, types of microorganisms used, probiotic foods available in market. ✓ An introduction to prebiotic, postbiotics and synbiotic	15	33%

Learning Outcome:

Students will learn about the spoilage of foods, preservation of foods, shelf life and storage of foods. They will learn different fermentation techniques that are used in the manufacture of fermented food and dairy products. Students will thoroughly understand the principles for the preservation of food products.

Reference Books:

1. Adams MR and Moss MO.(1995). Food Microbiology. 4th edition, New Age International (P) Limited Publishers, New Delhi, India.
2. Banwart JM.(1987).Basic Food Microbiology. 1st edition.CBS Publishers and Distributors, Delhi ,India.
3. Davidson PM and Brannen AL.(1993).Antimicrobials in Foods. Marcel Dekker, New York.
4. Dillion VM and Board RG.(1996).Natural Antimicrobial Systems and Food Preservation.CAB International, Wallingford, Oxon.
5. Frazier WC and Westhoff DC. (1992). Food Microbiology. 3rd edition .Tata Mc Graw-Hill Publishing Company Ltd, New Delhi, India.
6. Gould GW. (1995).New Methods of Food Preservation. Blackie Academic and Professional, London.
7. Jay JM, Loessner MJ and Golden DA.(2005).Modern Food Microbiology. 7th edition , CBS Publishers and Distributors, Delhi, India.
8. Lund BM, Baird Parker AC, and Gould GW.(2000).The Microbiological Safety and Quality of Foods.Vol.1-2,ASPENPublication,Gaithersberg, MD.
9. Tortora GJ , Funke BR, and Case CL.(2008). Microbiology: An Introduction .9th edition. Pearson Education.