SRM University

Department of Biotechnology

School of Bioengineering

LESSON PLAN

Subject: Food Microbiology and Contamination
Semester:VI

Subject Code:FP0364 Year :2011
FP0364 FOOD MICROBIOLOGY AND CONTAMINATION

S.NO.	TOPICS	unit	Authuor	LEARNING OUTCOME
1	Types of micro organisms in food like meat.	1	1	**MICROBIAL SPOILAGE IN FOODS** Contamination, preservation and spoilage of various food products and assessment of microbial population.
2	Types of micro organisms in food like poultry,	1	1	
3	Types of micro organisms in food like fish sea foods	1	1	
4	Types of micro organisms in food like dairy products	1	1	
5,6	Types of micro organisms in food like fruits and vegetables.	1	1	
7	Egg and egg products	1	1	
8	Cereals and cereal products	1	1	
9	Assessing microbial population in food products	1	1	
10,11	Preservation by Moist Heat-Heat Resistance of microorganisms and spores.	2	1	**FOOD PRESERVATION** Various food preservation methods such as physical,
12	Decimal reduction time (Dvalues), 12D concept, Thermal Death Time curves. Unit of lethality,	2	1	

	determination of process lethality requirements, effective F values			chemical methods.
13,14	Preservation by low temperature. Growth and lethal effects of low temperature treatments on microorganisms in raw and processed foods.	2	1	
14	The behavior of microorganisms under freezing and refrigeration environment.	2	1	
15,16	Preservation by drying. The survival of microorganisms after drying. The microbiology of dried foods	2	1	
17,18	Chemical preservation	2	1	
19,20	Food-borne diseases - food infection and food intoxication - symptoms, causes and control	3	1	**HARMFUL MICRO ORGANISM AND BENEFICIAL MICRO ORGANISM** Bacterial food borne diseases Non Bacterial food borne diseases Various beneficial microorganisms used in the fermented food products.
21, 22	Food-borne diseases - food infection and food intoxication – symptoms.	3	1	
23	Micro organisms as food- single cell protein	3	1	
24	Fermented food- pickles	3	1	
25	Sauerkraut	3	1	
26	Vinegar	3	1	
27	Lactic acid.	3	1	
28,29	Basic principles of food plant sanitation	4	1	**FOOD SANITATION** Bacteriology of water supplies, sewage and waste treatment and
30	cleaning chemicals and sanitizers in the food industry	4	1	

31	Indicator organism, coli form bacteria-	4	1&2	disposal. Microbiology of food products- ingredients, packing materials, equipment and employees. MPN and enterobacteria analysis. HACCP GMP Microbiological specifications.
32, 33	Hazard Analysis and Critical Control Point (HACCP) Program	4	1	
35	Good manufacturing Practices(GMP's)	4	1&2	
36	Microbiological standards	4	1	
37	Metal contaminants- Sources of health hazard of metallic contaminants	4	1&2	**METAL CONTAMINANTS AND ADDITIVES** Various metal contamination and food additives and assessment of food safety.
38	Assessment of food safety - General and acute toxicity	5	1&2	
39	Mutagenicity and carcinogenicity.	5	1&2	
40	Indirect and direct Additives	5	1&2	
41	Food allergy	5	1&2	
42	Food intolerance,	5	1&2	
43	Contaminants of processed foods	5	1&2	
44	Solvent residue,	5	1&2	
45	Contaminants of smoked foods.	5	1&2	

TEXT BOOKS

1. Frazier, W.C. and Westhoff. *Food Microbiology*. Tata McGraw Hill Publishing Co. Ltd., New Delhi
2. Jay, J.M. *Modern Food Microbiology*. CBS Publishers& Distributors, New Delhi
3. Pelczar,M.J., E.C.S. Chan and N.R. Krieg, "*Microbiology*", McGraw-Hill New York, 1988
4. Birch, G. and Campbell-Platt, G. (Eds.). 1993. *Food Safety - the Challenge Ahead*. Intercept Ltd., Andover, England
5. Finley, J., Robinson, S. and Armstrong, D. (Eds.). 1992. *Food Safety Assessment*. American Chemical Society, Washington D.C.

REFERENCE BOOKS

1. Banwart, G.J. *Basic Food Microbiology*. Van No Strand Reinhold Publishers, New York
2. King, R.D. and P.S.J. Cheethame. *Food biotechnology*. Elsevier Applied Science, New York. 1986. Gould, G.W. New methods for food preservation. Blackie Academic & professional Chennai. 1996.

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