21BICM300 PRINCIPLES OF FOOD SCIENCE AND NUTRITION

Hours Per Week :

L	T	P	C
2	-	-	2

Total Hours :

L	T	P
30	-	-

Source:

https://images.app.goo.gl/HUaWupo2Y5SiR3vX7

COURSE DESCRIPTION AND OBJECTIVES:

The course is aimed at offering the knowledge regarding the physical and chemical properties of the food constituents, food processing and spoilage, principles of food preservation and methods of preservation

COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes
1	Can practice and adopt
2	The basic principles and practices of cleaning and sanitation in food preparation operation
3	Preservation of food and processing of fruits and vegetables which will enable to start agro based processing units
4	Advocating the importance nutrient foods for maintaining health
5	Learn about the food science, food composition and chemistry of water, carbohydrates, proteins, fats, vitamins, minerals, flavours, colours, miscellaneous bioactive components and important reactions

SKILLS:

- ✓ *Quality analysis of edible fats and oils*
- ✓ *Identity and recommended micro and macro nutrients profile for balanced diet and health*
- ✓ *Enzyme activity measurement and determining the mechanism of the reaction*
- ✓ *Separation and molecular weight estimation of proteins*

ACTIVITIES:

- *Practice preservation of food by using different methods*
- *Assess quality of the food*
- *Visit to Agro-Industry*
- *Estimation of water, carbohydrates, proteins, fats, vitamins and minerals etc. in food material*
- *Depth understanding of preservatives and additives used in food preservation*

UNIT - 1

Concepts of Food Science: Introduction to Food science: Definitions, measurements (SI units: length, volume and weight, temperature); Physico-chemical properties of food: pH, boiling point, evaporation, melting point, smoke point, surface tension, osmosis, humidity, freezing point and specific gravity; Colloidal systems in foods: sol, gel, emulsion, foam

UNIT - 2

Food Consumption and Chemistry: Water, carbohydrates, proteins, fats, vitamins, minerals, flavors, colors, miscellaneous bioactives, important reactions

UNIT - 3

Food Microbiology and Food Safety: Classification of microorganism: Bacteria, yeast & moulds; Bacterial growth curve; Factors influencing microbial growth in food; Spoilage of fresh & processed foods; Microorganisms used in food fermentation. Food Safety – Sanitary and Phyto-Sanitary (SPS) measures – Hazard Analysis and Critical Control Points (HACCP)

UNIT - 4

Principles and Methods of Food Processing and Preservation: Heat preservation techniques, Cold preservation techniques, Preservation using chemicals, radiation, drying etc

UNIT - 5

Food and Nutrition, Malnutrition: Over and under nutrition, nutritional disorders; Energy metabolism - carbohydrate, fat, proteins; Balanced/modified diets, menu planning, new trends in food science and nutrition

REFERENCES:

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2. P. Fellows. 2000. Food Processing Technology: Principles and Practice, 2nd Ed. CRC Press, Boca Raton, FL, USA
3. Marcus Karel and Darvl B. Lund. 2003. Physical Principles of Food Preservation, 2nd Ed. Marcel Dekker, Inc., NY, USA
4. Sumati R. Mudambi, Shalini M. Rao and M.V. Rajagopal. 2006. Food Science, 2nd Ed. New Age International (P) Limited, New Delhi
5. Martin Eastwood. 2003. Principles of Human Nutrition. Blackwell Science Ltd., Oxford
6. Norman N. Potter. 1998. Food Science, 5th Ed. Springer Science+ Business Media, New York
7. William C. Frazier and Dennis C. Westfoff. 1987. Food Microbiology, 4th Ed. Tata McGraw-Hill Education, New Delhi
8. L.E. Casida Jr. 1968. Industrial Microbiology. New Age International Publishers, New Delhi
9. Gerald Wiseman. 2002. Nutrition and Health. Taylor & Francis, London