DEPARTMENT OF MICROBIOLOGY				*Certificate Course*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
IV	Certificate Course - II		Food Processing and preservation	2	2	50	50	100

Course Objectives:

1. To know the principle and methods involved in the processing of perishable foods
2. To familiarize the students about the processing and preservation techniques of variety of foods
3. To develop skills in handling the perishable food processing equipment
4. To study the need for processing foods composition and nutritive value of plant and animal foods and storage

Course Learning Outcomes:

On successful completion of the programme, the students will be able to

1. Understand the principles and methods involved in the processing of Perishable foods
2. Discuss the processing and preservation techniques of variety of foods
3. Handle skillfully the various food processing equipment
4. Explore the need for processing foods, composition and nutritive value of plant and animal foods and storage

Unit	Description	Hours
I	**Introduction of food preservation** Definition and scope of food preservation, principles of preservation, preservatives and its types, shelf life of food products, Food Preservation by high temperature, Drying and dehydration, Low temperature.	6hrs
II	**Cereals, Millets and Pulses** Nutritive value, Composition and structure of Cereals, Millets and Pulses - Milling and processing of Cereals, Millets and Pulses for value added products - puffs, flakes, extruded products and pasta.Flour Fortification to Improve Nutritive Value, Specialty Corn for Value Addition. Malting Technology. Germination, decortication and splitting of pulses. Elimination of toxic factors in fermented and Non-fermented soya products.	6hrs
III	**Fruits and Vegetables** Nutritive value, Composition and Classification of fruits and vegetables. Processing and preservation of Fruits-Controlled atmosphere storage of perishables (frozen, canned) Dry storage of fruits and vegetables - dehydration and sun drying. Ohmic Processing , Extrusion technology, High pressure technology- Ozonation. Value added products -Jams, Jellies, Pickles, Purees, Powders, Crush, Squash, Juices, Fruit Wine).	6hrs

IV	**Meat, Poultry and Sea foods** Meat and poultry processing - smoking and curing, Meat products- fermented meat, sausage, bacon, kebabs, dehydrated powders, frozen meat and chicken. Storage and Packaging of meat products. Sea Food Processing – Types, Pre-Processing, Processing & Preservation. Dielectric, Ohmic and Infra-red heating. Nutritional losses during Processing and Storage.	6hrs
V	**Milk and Milk Products** Pasteurization, Homogenization and Standardization. Manufacture of condensed milk, milk powder, cheese, ice-cream, fresh cream, butter, ghee, Khoa, Curd and Paneer. Evaluation of quality parameters. Defects encountered during production, packaging and storage. Substitutes for milk and milk products.	6hrs

Total 30 Hours

Books for Study

1. Srilakshmi, B. (2002). Food science, New Age Publishers, New Delhi.
2. Meyer. (2004). Food Chemistry. New Age, New Delhi.
3. Bawa. A.S., and Chauhanetal. O.P. (2013). Food Science. New India Publishing agency, New Delhi.
4. Frazier,W.C.,Westh off, D.C. (2004). Food Microbiology. TMH Publication, New Delhi.

Web resources

1. https://www.scitechnol.com/scholarly/food-processing-and-preservation-journals-articles.
2. http://www.fao.org/3/x5573E/x5573e0e.htm
3. https://www.eufic.org/en/food-production/article/processed-food-qa
4. https://www.streetdirectory.com/food_editorials/meals/food/common_methods_of_processing_and_preserving_food.html
5. https://www.highspeedtraining.co.uk/hub/food-preservation-methods/

Course designers

1. **Dr. A. P. Ashakannan**