## DSC 06 : FRUITS, VEGETABLES & PLANTATION CROPS PROCESSING TECHNOLOGYDSC 04 PRINCIPLES OF FOOD PROCESSING

### CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

| Course title & Code | Credits | Credit distribution of the course | | | Eligibility criteria | Pre-requisite of the course (if any) |
|---|---|---|---|---|---|---|
| | | Lecture | Tutorial | Practical/ Practice | | |
| FRUITS, VEGETABLES & PLANTATION CROPS PROCESSING TECHNOLOGY | **4** | **3** | 0 | **1** | XII with PCM/PCB | NIL |

### Learning Objectives

The Learning Objectives of this course are as follows:

- To impart knowledge of different methods of fruits and vegetables processing.
- To learn about processing of various spices, tea, coffee and cocoa.

### Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the concept of quality of fruits and vegetables for developing good quality end products.
- Understand the processing and preservation of fruits and vegetables using various techniques.
- Understand processing of plantation crops.

### SYLLABUS OF DSC-06

**Unit1: Introduction to Fruits and Vegetables (6 Hours)**

Importance of Fruits & Vegetables
History & need of preservation
Reasons of spoilage, method of preservation (Short & Long Term)
Post harvest physiological & biochemical changes in fruits &vegetables

**Unit2: Canning & Dehydration (11 Hours)**

Process of canning, factors affecting the process- time and temperature
Containers of packing, lacquering, syrups and brines for canning.
Spoilage in canned foods.
Sun drying & mechanical dehydration
Process variation for fruits and vegetables packing and storage. Case hardening

**Unit3:Fruits Beverages & Tomato Products (13 Hours)**

Introduction & Processing of fruit juices (selection, juice extraction, deaeration, straining, filtration and clarification)

Preservation of fruit juices (pasteurization, preservation with chemical, sugar & salt, freezing, drying, tetra-packing, carbonation)
Processing of squashes, cordials, nectars, concentrates and powder
Tomato Products : processing of tomato juice, tomato puree, paste, ketchup, sauce and soup

**Unit4: Products preserved with class I & class II preservatives (7 Hours)**

Processing & Technology of Jam, Jelly, Marmalade & Pickles (Essential constituents, Role of pectin), Theory of jelly formation, defects in jelly,
Marmalade - Types, defects.
Pickles-- Processing , Types, Causes of spoilage in pickling

**Unit5: Technology of Plantation Crops (8 Hours)**

Spices
Processing and properties of major and minor spices
Essential oils & oleoresins, adulteration Tea, Coffee and Cocoa
Processing, Variety and Products

**Practical Exercises: 30 Hours**

The learners are required to:

- Estimation of total soluble solids (TSS), pH, acidity of various products.
- Estimation of brix: acidity ratio of various products.
- Estimation of ascorbic acid and effect of heat treatment on it.
- To study the steps of can making process.
- Preparation & evaluation of pectin based product. (Jam)
- Preparation & evaluation of tomato puree.
- Dehydration of fruits and vegetables
- Rehydration of fruits and vegetables
- Extraction & estimation of polyphenols from fruit & Vegetable wastes.

**Essential/recommended readings**


- Girdharilal., Siddappaa, G.S and Tandon, G.L.(2009). Preservation of fruits & vegetables. ICAR, New Delhi.
- Thompson, A.K., (2003). Fruits and vegetables; Harvesting, handling and storage. Blackwell Publishing.
- Verma L.R. & Joshi VK. 2000. Post Harvest Technology of Fruits & Vegetables. Indus Publication.
- Crusess, W.B. (2004). Commercial Unit and Vegetable Products. W.V. Special Indian Edition. Agrobios India.
- Manay, S. and Shadaksharaswami, M. (2004). Foods: Facts and Principles. New Age Publishers.
- Ranganna S.(2007). Handbook of analysis and quality control for fruits and vegetable products. Tata Mc Graw-Hill publishing company limited, Second edition.
- Srivastava, R.P. and Kumar, S. (2006). Fruits and Vegetables Preservation-Principles and Practices. 3rd Ed. International Book Distributing Co.
- Somogyi, L.P., Ramaswamy, H.S. and Hui, Y.H. (1996). Biology, Principles and Applications. Volume 1. Technomic Publishing Company, Inc.


- **Note: Learners are advised to use the latest edition of readings.**
- **Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**