



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3171407

Semester – VII

Subject Name: Horticultural Produce Processing

**Type of course: Professional Elective Course**

**Prerequisite: Nil**

**Rational:**

The subject Horticultural Produce Processing is aimed to develop an understanding in processing techniques and skills in handling equipment/machines used for preservation and value addition of perishables like fruits and vegetables.

### Teaching and Examination Scheme:

| Teaching Scheme |   |   | Credits<br>C | Examination Marks |       |                 |           | Total<br>Marks |
|-----------------|---|---|--------------|-------------------|-------|-----------------|-----------|----------------|
| L               | T | P |              | Theory Marks      |       | Practical Marks |           |                |
|                 |   |   |              | ESE<br>(E)        | PA(M) | ESE (V)         | PA<br>(I) |                |
| 3               | 0 | 2 | 4            | 70                | 30    | 30              | 20        | 150            |

### Content:

| Sr. No. | Content  | Total Hrs |
|---------|--|-----------|
| 1       | <b>Physiology:</b> Maturity/harvesting indices, Post-harvest plant processes like respiration, photosynthesis and ripening, Physicochemical changes during ripening. | <b>10</b> |
| 2       | <b>Canning:</b> Canning process of fruits and vegetable, precautions in canning operations, Spoilage of canned foods.  | <b>09</b> |
| 3       | <b>Fruit juice &amp; beverages:</b> Methods of fruit juice extraction, types of fruit beverages, regulatory specifications, preservation.                            | <b>08</b> |
| 4       | <b>Tomato Processing:</b> Juice, concentrate, puree and ketchup.   | <b>07</b> |
| 5       | <b>Processing in the form of sugar base products:</b> Process of Jam, Jelly and Marmalade. Defects and remedies.   | <b>08</b> |

### Suggested Specification table with Marks (Theory):

| Distribution of Theory Marks |           |           |           |           |         |
|------------------------------|-----------|-----------|-----------|-----------|---------|
| R Level                      | U Level   | A Level   | N Level   | E Level   | C Level |
| <b>20</b>                    | <b>20</b> | <b>18</b> | <b>20</b> | <b>22</b> |         |

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)**

### Reference Books

1. Post Harvest Physiology of Perishable Plant Products. By Stanley J. Kays. C B S.
2. Preservation of Fruits and Vegetables. By Girdharilal, Sidhappa G.S. and G.L. Tondon.
3. Commercial Fruits and Vegetables Products, By Cruess W.V.
4. Technology of Juice Manufacture, By Tressler.



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**Course Outcomes:** At the end of this module, the student will be able to:

| Sr. No. | CO statement  | Marks % weightage |
|---------|---|-------------------|
| CO-1    | Understand the morphology and physiology of the fruits and vegetables.  | 10                |
| CO-2    | Define processes employed in the manufacture of fruit and vegetable based products and beverages through construction of Process Flow Diagrams. | 30                |
| CO-3    | Understand the properties of fruit and vegetable based products in terms of raw material properties, formulation, processing and storage.       | 30                |
| CO-4    | Identify the problems in processing of jams, jelly, marmalade, ketchup and beverages.   | 20                |
| CO-5    | Understand the methods of control process   | 10                |
|         |   |                   |

## List of Practicals

1. To determine quality of brinjal
2. Determine blanching adequacy of fruits and vegetables
3. Waste index
4. Preparation of fruit jam
5. Preparation of fruit jelly
6. Preparation of beverages
7. Preparation tomato ketch up
8. Preparation of fruit sauce
9. Preparation of fruit toffee
10. Preparation of pickles
11. Preparation of tutti fruity

## Major Equipments:

1. Jacketed kettles
2. Pulper
3. Blacher
4. Peelers

## List of Open Source Software/learning website:

- a. <http://www.fao.org/>
- b. [www.agricoop.nic.in](http://www.agricoop.nic.in)
- c. [www.apeda.gov.in](http://www.apeda.gov.in)