**Syllabus for B.Sc. (Hons) Agriculture Year – I (Sem. II)**

**Subject Code:** 16AS0216

**Subject Short Name:** SEC. 2.4

**Subject Name:** Post Harvest Processing Technology

**Objective:**

1. To gain knowledge on various management technologies on pre-harvest and post-harvest of fruits and vegetables.
2. To provide basic understanding of postharvest processing methods and processes involved in post-harvest loss reduction.
3. To provide technical know-how on value addition of fruits/vegetables through different methods and to design storage structures for freshly harvested agricultural products in the field.

**Credits Earned:** 2 Credits (0+2)

**Course Outcomes:** After completion of this course, Students will be able to

- Define the fundamentals application of post and pre harvest technologies in agricultural commodities and post-harvest management and novel packaging techniques.
- Identify various problems (storage, shelf life of food product spoilage etc.) faced by the farmers.
- Design and development of various products related to food processing or prevent the food from microorganism or enzymatic spoilage, *i.e.*, self-decomposition of the food by naturally occurring enzymes within it.
- Design and development of various products related to food processing.

| Teaching Scheme (Hours) | | | Credits | Theory Marks | | | Tutorial/ Practical Marks | | Total Marks |
|---|---|---|---|---|---|---|---|---|---|
| Theory | Tutorial | Practical | | ESE (E) | Mid Sem. (M) | Progressive Assessment (PA) | Viva (V) | Term work (TW) | |
| 0 | 0 | 4 | 2 | 0 | 30 | 20 | 25 | 25 | 100 |

**Practical Content:**

| Unit | Topics | Contact Hours |
|---|---|---|
| 1 | Applications of different types of packaging containers for shelf life extension | **2** |
| 2 | Effect of temperature on shelf life and quality of produce | **2** |
| 3 | Demonstration of heat, chilling and freezing injury in vegetables and fruits | **2** |
| 4 | Extraction and preservation of pulps and juices | **2** |
| 5 | Preparation of jam, jelly, RTS, nectar, squash, osmotically dried products, fruit bar and candy and tomato products, canned products | **4** |
| 6 | Quality evaluation of products: physical, chemical and sensory | **2** |
| 7 | Storage (ZECC, cold storage, CA, MA, and hypobaric) | **2** |
| 8 | Value addition concept | **2** |
| 9 | Principles and methods of preservation | **2** |
| 10 | Intermediate moisture food: Jam, jelly, marmalade, preserve, candy- Concepts and Standards | **4** |
| 11 | Fermented and non-fermented beverages | **4** |
| 12 | Tomato products: Concepts and Standards | **2** |
| 13 | Drying/ Dehydration of fruits and vegetables: Concept and methods, osmotic drying | **2** |
| 14 | Canning: Concepts and Standards, packaging of products | **4** |
| 15 | Visit to processing unit/ industry | **4** |
| | **Total** | **40** |

**Reference Books:**


- A Handbook on Post Harvest management of Fruits and Vegetables, A Handbook on Post Harvest management of Fruits and Vegetables, John, P. J., Daya Publishing House. Delhi., 2008
- Postharvest Technology of Horticultural Crops, Postharvest Technology of Horticultural Crops, Kader, A. A., UCUCANR Publications, 2002

- Post-harvest management and processing of fruits and vegetables-Instant Notes, Sharma, S. K., New India Publishing Agency, New Delhi, 2010
- Postharvest technology of fruits and vegetables-General concepts and principles. Vol I & II, Verma, L. R. and Joshi, V. K., Indus Publishing Co., New Delhi, 2000

**Suggested Theory distribution:**

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process.

| Distribution of Theory for course delivery and evaluation | | | | | |
|---|---|---|---|---|---|
| Remember | Understand | Apply | Analyze | Evaluate | Create |
| 25% | 25% | 20% | 10% | 10% | 10% |

**Instructional Method:**

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by white board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the class-rooms.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory/ field.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.