Certificate course on

Post harvest management and marketing of fruits and vegetables

Objectives:

This course is intended to impart knowledge on post harvest management of fruits and vegetables, methods of processing and preservation, value added products and basics of establishing a small scale processing unit. It also deals with the workforce requirements of the food processing industries.

Justification

The main problem of unemployment in the present situation can only be alleviated with self employment. There are lot of areas in agriculture to take up an enterprise and one of it is post harvest management and processing. The food technology sector requires huge skilled human resource. The number of educated but untrained youth who have passed VHSE/Plus two or above is increasing. These youth lack technical skill to start an enterprise. This course provides theoretical and applied knowledge on post harvest management, processing and preservation of fruits and vegetables. It also covers guidelines to set up a small scale processing unit and basics of marketing of processed products.
Details of the proposed programmes

Duration :  6 months
Total Credits :  17
Location :  Centre for E-learning, Kerala Agricultural University
            College of Horticulture, Vellanikkara, Thrissur

Major areas of teaching

Major areas:

<table>
<thead>
<tr>
<th>No</th>
<th>Module</th>
<th>Hours</th>
<th>Credit</th>
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<tr>
<td>a</td>
<td>Concepts of post harvest management</td>
<td>12</td>
<td>1+0</td>
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<tr>
<td>b</td>
<td>Processing and preservation techniques - I</td>
<td>36</td>
<td>1+1</td>
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<td>c</td>
<td>Processing and preservation techniques – II</td>
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<td>d</td>
<td>Post harvest management as an enterprise</td>
<td>36</td>
<td>1+1</td>
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<td>e</td>
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<td>f</td>
<td>Entrepreneurship Development</td>
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<td>1+0</td>
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<tr>
<td>g</td>
<td>Case study &amp; project report</td>
<td>48</td>
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<td>h</td>
<td>Major project work</td>
<td>96</td>
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<td>348</td>
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Selection process : On-line registration and Online screening

Eligibility for admission : Candidate should have a minimum qualification of
pass in VHSE (Agriculture & allied subjects)/ pass in +2

Implementing team :

Institutional Head :  Associate Dean, College of Horticulture

Supervising Head :  Director
                   Centre for E-learning

Course Director :  Institutional Co-ordinator (Agriculture)
                   Centre for E-learning

Principal Faculty :  1. From Dept. of Processing technology
                    2. From Dept. of Home Science

Collaborating Centres /Units (proposed) :  1. Department of Processing technology, College of Horticulture
                                          2. Department of Home Science, College of Horticulture
3. Department of Microbiology, College of Horticulture
4. Department of Olericulture, College of Horticulture
5. Department of Pomology, College of Horticulture
Department of Agrl. Economics, College of Horticulture

Course fee: Rs. 3,000/- per student

Syllabus

I Concepts of post harvest management

1. Importance of fruits and vegetables
2. Foods and nutrition: an overview
3. History, need and scope of post harvest management
4. Physiology of maturity, ripening and senescence
5. Causes of pre and post harvest losses
6. Importance of micro organism in food industry
7. Food poisoning, food borne disease, food intoxication, food infection
8. Safe chemicals and microbial limits for different foods

II Processing and preservation techniques – I

1. Techniques to prevent deterioration
2. Procedures of fruits and vegetable preservation
3. Principles underlying general methods of preservation
4. Post harvest management
5. Methods of preservation
6. Minimal processing of fruits and vegetables
7. Food additives and food colours

III. Processing and preservation techniques – II

1. Introduction to products and production methods
2. Varieties suitable for processing
3. Fried products, process of frying
4. Dried fruits and vegetables
5. Juices, squashes and cordials
6. Sauces
7. Wines
8. Chutneys
9. Jam, jellies and marmalade
10. Pickles and salted vegetables
11. Pastes and purees
12. Bottled fruits
13. Crystallized fruits, fruit leathers and cheeses
14. By-product and waste utilization
IV Post harvest management as an enterprise

1. Processing sector in India and Kerala: An overview
2. Food laws and regulations
3. Setting up a processing unit
4. Fruit and Vegetable Processing Equipments
5. Quality assurance and legislation
6. Planning and managing production
7. Production Planning
8. Planning and managing finances
9. Guidelines for setting up of unit under FPO
10. Institutional support in the fruit and vegetable processing sector

V Marketing management

1. Indian food market
2. Marketing function, market information and market research
3. Demand supply analysis of important Fruit and Vegetables
4. Market potential of various Fruit and Vegetables products
5. Transportation of Fruit and Vegetables
6. Domestic and international markets
7. Market regulations and condition
8. Marketing channels
9. Marketing strategy (product strategy and pricing strategy) & Market infrastructure
10. Important marketing agencies and institutions
11. Importance of cooperative marketing

VI. Entrepreneurship Development

1. Entrepreneurship – Concept, characteristics, approaches, need for entrepreneurship
2. Traits of an entrepreneur – Risk taking, leadership, decision making, planning, organising, coordinating and marketing; Types of entrepreneurs
3. Agri-Enterprises- Stages of establishing enterprise, Project Identification, Step to be considered in setting up an enterprise, Feasibility Report, Product selection
4. Project management and appraisal – market, technical, social, financial analysis
5. Market Management – concept planning for marketing target marketing and competitive strategy

VII. Case study & project report

VIII. Major project work
## TIME SCHEDULE AND CREDIT

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Code</th>
<th>Module</th>
<th>Credit</th>
<th>Hour</th>
<th>Theory</th>
<th>Practical class</th>
<th>Field work</th>
<th>Project Work</th>
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<td>18</td>
<td>348</td>
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Note: One theory session is for 1 hour. Sessions of practical, field work, project work and assignments are for 2 hours.

### Mode of delivery

- **Theory**: Blend of online tutorials and class room sessions
- **Practical**: Illustrated online labs and hands on practical sessions

### Scheme of Evaluation:

The performance of the student will be evaluated through internal assessment. The internal assessment will be through online mid-term examination, assignments, project works and a written final examination.

#### Theory paper (Maximum – 100 & Minimum for pass – 40 Marks)

<table>
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<th>Assignments</th>
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<td>20 Marks</td>
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#### Practical paper (Maximum – 100 & Minimum for pass – 40 Marks)

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<td>10 Marks</td>
<td>60 Marks</td>
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Score card

< 40 % = Failed
40 - 59 = Second Class
60 - 79 = First Class
80 and above = First class with distinction

Absence from Examination

A student who could not attend the online midterm examination will get two more chances to write the exam at monthly intervals. A student has to complete the midterm examination before appearing the final examination. Those who miss/fail in the final examination will get two supplementary chances within the maximum period of one year.

Facilities

Existing facilities of the Centre for E-learning and the collaborating departments of College of Horticulture will be utilized

List of major equipments & infrastructural facilities existing, including laboratory

a) At Centre for E-learning

1. Online plat form for online tutorials and delivery of materials
2. IT technical support
3. Media Centre
4. DV Camcorder
5. Handy cam
6. DLP Projection System
7. Computer and computer room
8. Class rooms
9. A.V. Lab
10. SLR and Digital cameras
11. Document projection system
12. Interactive digital board.
13. Webinar and web conferencing system
14. OS Virtualisation for multi session management
15. Online learning management system

b) At Collaborating Departments

1. Processing lab and Production unit, Dept. of Processing technology
2. Dept. of Home Science
3. Microbiology laboratory
4. Cocoa Processing Unit