Certificate course on

Plant Propagation and Nursery Management

Objectives:

This course aims to develop a basic understanding of the principles of plant propagation, an overview of propagation techniques, a general knowledge of the methods of propagation of the more commonly cultivated plants and the basic knowledge on entrepreneurial skills required to run a small scale commercial nursery.

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 plant propagation. 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 aims to give applied knowledge on basics of plant propagation, nursery management and basics of entrepreneurship development. In a state like Kerala where horticulture crops dominate, require more specialist propagators for successful management of the nursery industry.
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>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Basics of nursery management</td>
<td>12</td>
<td>1+0</td>
</tr>
<tr>
<td>b</td>
<td>Seed propagation</td>
<td>36</td>
<td>1+1</td>
</tr>
<tr>
<td>c</td>
<td>Vegetative propagation-I</td>
<td>36</td>
<td>1+1</td>
</tr>
<tr>
<td>d</td>
<td>Vegetative propagation-II</td>
<td>36</td>
<td>1+1</td>
</tr>
<tr>
<td>e</td>
<td>Commercial nursery management</td>
<td>72</td>
<td>2+2</td>
</tr>
<tr>
<td>f</td>
<td>Entrepreneurship Development</td>
<td>12</td>
<td>1+0</td>
</tr>
<tr>
<td>g</td>
<td>Case study &amp; project report</td>
<td>48</td>
<td>0+2</td>
</tr>
<tr>
<td>h</td>
<td>Major project work</td>
<td>96</td>
<td>0+4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>348</td>
<td>8+10=18</td>
</tr>
</tbody>
</table>

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 (Extension)
                    Centre for E-learning
Principal Faculty : 1. From Dept. of Pomology and Floriculture,
                    2. From Dept. of Olericulture
Collaborating Centres /Units (proposed) : 1. Department of Pomology and Floriculture, College of Horticulture
                                          2. Department of Olericulture, College of Horticulture
                                          3. Department of Plant Breeding/Seed Technology,
                                          College of Horticulture
Course fee: Rs. 3,000/- per student

Syllabus

I Basics of nursery management

1. Introduction to nursery
2. Plant propagation- methods and classification
3. Factors affecting plant growth
4. Plant growth regulators
5. Introduction to landscaping
6. Lawn making

II Seed propagation

1. Seed as propagule
2. Germination of seeds
3. Seed dormancy and viability
4. Seed production- method of collection, processing, etc.
5. Hybrid seed production
6. Seed treatment
7. Classes of seed
8. Seed testing
9. Commercial vegetable seedling production
10. Artificial seeds

III. Vegetative propagation-I

1. Asexual reproduction-importance, advantages
2. Propagation through stolons, runners, offsets, bulbs, corms, rooted crowns, division, cuttings layering

IV Vegetative propagation-II

1. Grafting and budding
2. Root stock-scion relationship
3. Top working
4. Special practices in nursery management
5. Micro-propagation (tissue culture/invitro culture)
6. Apomixis and poly embryony
V. Commercial nursery management

1. Nursery - site selection, lay out, records
2. Nursery structures
3. Potting, repotting
4. Nursery management of major crops
5. Progeny orchard
6. Problems in nursery management and its control
7. Nursery accreditation and certification

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</th>
<th>Field work</th>
<th>Project Work</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PNM-1</td>
<td>Basics of nursery management</td>
<td>1+0</td>
<td>12</td>
<td>12</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2.</td>
<td>PNM-2</td>
<td>Seed propagation</td>
<td>1+1</td>
<td>36</td>
<td>12</td>
<td>06</td>
<td>06</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3.</td>
<td>PNM-3</td>
<td>Vegetative propagation-I</td>
<td>1+1</td>
<td>36</td>
<td>12</td>
<td>06</td>
<td>06</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4.</td>
<td>PNM-4</td>
<td>Vegetative propagation-II</td>
<td>1+1</td>
<td>36</td>
<td>10</td>
<td>06</td>
<td>06</td>
<td>---</td>
<td>02</td>
</tr>
<tr>
<td>5.</td>
<td>PNM-5</td>
<td>Commercial nursery management</td>
<td>2+2</td>
<td>72</td>
<td>20</td>
<td>12</td>
<td>12</td>
<td>---</td>
<td>04</td>
</tr>
<tr>
<td>6.</td>
<td>PNM-6</td>
<td>Entrepreneurship Development</td>
<td>1+0</td>
<td>12</td>
<td>12</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7.</td>
<td>PNM-7</td>
<td>Case study &amp; project report</td>
<td>0+2</td>
<td>48</td>
<td>---</td>
<td>---</td>
<td>12</td>
<td>12</td>
<td>---</td>
</tr>
<tr>
<td>8.</td>
<td>PNM-8</td>
<td>Major project work</td>
<td>0+4</td>
<td>96</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>48</td>
<td>---</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>18</td>
<td>348</td>
<td>78</td>
<td>30</td>
<td>42</td>
<td>60</td>
<td>06</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Midterm</th>
<th>Assignments</th>
<th>Final exam</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Marks</td>
<td>20 Marks</td>
<td>60 Marks</td>
<td>100 Marks</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Participation &amp; presentation</th>
<th>Records</th>
<th>Final practical</th>
<th>Viva voce Exam</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Marks</td>
<td>10 Marks</td>
<td>60 Marks</td>
<td>20 Marks</td>
<td>100 Marks</td>
</tr>
</tbody>
</table>

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 platform 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. Progeny orchard
2. Tissue culture Lab
3. Seed production unit
4. Seed Extraction Unit
5. Seed testing lab
6. Nursery structures under Collaborating Departments
7. Propagation unit, Central Nursery
8. ATIC, Mannuthy