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**Open course 2**                      **Code: BO5OPT02**  
**HORTICULTURE AND NURSERY MANAGEMENT**  
**(Theory 72 hrs; Credits 3)**

**Objectives:**

- Understand the importance of horticulture in human welfare.
- Understand the propagation and cultural practices of useful vegetable, fruit and garden plants.
- Understand the impact of modern technologies in biology on horticultural plants.
- Understand the basic concepts of landscaping and garden designing.
- Inculcate interest in landscaping, gardening and flower and fruit culture.

**HORTICULTURE (48 hrs)**

**Module 1: Introduction (10 hrs)**

Introduction to horticulture: definition, history; classification of horticultural plants, disciplines of horticulture. Soil: formation, composition, types, texture, pH and conductivity. Garden tools and implements.

Preparation of nursery bed; manures and fertilizers - farm yard manure, compost, vermicompost, biofertilizers; chemical fertilizers - NPK; time and application of manures and fertilizers, foliar spray. Irrigation methods - surface, sub, drip and spray irrigations - advantages and disadvantages - periodicity of irrigation.

**Module 2: Propagation of plants (10 hrs)**

Propagation of horticultural plants - by seeds; seed development and viability, seed dormancy, seed health, seed testing and certification. Growing seedlings in indoor containers and field nurseries, seed bed preparation, seedling transplanting; advantages and disadvantages of seed propagation.

Vegetative propagation - organs used in propagation - natural and artificial vegetative propagation; methods - cutting, layering, grafting and budding; advantages and disadvantages of vegetative propagation; micropropagation.

**Module 3: Gardening (10 hrs)**

Gardening - ornamental gardens, indoor gardens, kitchen gardens- terrestrial and aquatic gardens - garden adornments; garden designing; garden components - lawns, shrubs and trees, borders, hedges, edges, drives, walks, topiary, trophy, rockery; famous gardens of India. Landscape architecture - home landscape design, urban planning, parks, landscaping and public buildings, industrial and

highway landscaping. Physical control of plant growth - training and pruning - selection of plant, bonsai containers and method of bonsai formation.

**Module 4: Floriculture (6 hrs)**

Introduction, commercial floriculture - jasmine, orchid, anthurium, rose, gladiolus; production of cut flowers, quality maintenance, packing, marketing. Flower arrangements - basic styles - upright and slanting - japanese Ikebana, dry flower arrangement.

**Module 5: Olericulture (4 hrs)**

Olericulture - types of vegetable growing - home gardens and market gardens; cultivation practices of leafy vegetable (Amaranthus), tuber (Potato), fruit (Tomato), flower (Cauliflower).

**Module 6: Pomology (4 hrs)**

Pomology - cultivation of fruit crops - mango, banana and pine apple - preparation of land, spacing, planting, irrigation, hormones, harvest and storage. Factors affecting duration of storage. Principles of preservation - temporary and permanent - agents for fruit preservation. Preparation of pickles, jams, jellies and squashes using locally available fruits.

**Module 7: Gardening – additional features (4 hrs)**

Garden friends - honey bees, ladybirds, frogs, spiders, earthworms, centipedes and millipedes. Garden foes - pests, pathogenic fungi, bacteria, virus. Control measures - pesticides and fungicides; neem tobacco decoction. Hazards of chemical pesticides; equipments used in controlling horticultural pests - sprayers, dusting equipments - sterilization, fumigation.

Weeds - annual, perennial; weed control - prevention, eradication - hand weeding, tillage, burning, mowing, biological control, use of herbicides - selective and non selective - mechanisms involved in herbicidal actions.

**NURSERY MANAGEMENT (6 hrs)****Module 1: Nurseries (6 hrs)**

Nursery: definition, types; management strategies - planning, layout, budgeting - production unit, sales unit. Plant growing structures - green houses, fernery, orchidarium, arboretum.

**ON HAND TRAINING (18 hrs)**

1. Preparation of potting mixture of known combination and potting in earthen pots/poly bags.
2. Preparation of nursery beds.
3. Preparation of compost/vermicompost using different substrates.
4. Working knowledge and identification of garden tools and implements.
5. Practical knowledge in different plant propagation techniques listed in syllabus.
6. Cultivation of a vegetable/ornamental plant/fruit crop listed in the syllabus.
7. Practice of different pruning operations (top dressing, shaping and topiary) in the following plants: (1) Bougainvillea (2) Phyllanthus.
8. Visit a well established nursery and submit report.

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**Open course 3**                      **Code: BO5OPT03**  
**ECOTOURISM**  
**(Theory 72 hrs; Credits 3)**

**Objectives:**

- Make the students to opt various ecotourism programs in the self employment stream
- Make the students aware of the usefulness of ecotourism in the conservation of natural resources.
- Help the students to assess various ecotourism programs

**Module 1: Introduction (4 hrs)**

Definition, concept, introduction, history, relevance and scope.

**Module 2: Key principles and characteristics of ecotourism (4 hrs)**

Nature area focus, interpretation, environmental sustainability practice, contribution to conservation, benefiting local communities, cultural respect, customer satisfaction, responsible marketing.

**Module 3: Components of Ecotourism (12 hrs)**

Travel, tourism industry, biodiversity, local people, cultural diversity, resources, environmental awareness, interpretation, stake holders, capacity building in ecotourism.

**Module 4: Ecotourism terms (10 hrs)**

Adventure tourism, certification, commercialization chain, cultural tourism, canopy walkway, conservation enterprises, ecosystem, ecotourism activities, ecotourism product, ecotourism resources, ecotourism services, endemism, ecolabelling, ecotourism “lite”, geotourism, greenwashing, stakeholders, sustainable development, sustainable tourism, leakages

**Module 5: Ecotourism resources in India and Kerala (14 hrs)**

Major ecosystems vegetation types and tourism areas in Kerala. Festivals and events, entertainment, overview, culture, famous destinations, sightseeing, historical monuments, museums, temples, national parks & wildlife sanctuaries, hill stations, waterfalls, rivers, reaches, wildlife watching and bird watching sites, agricultural sites, tribal areas, tribal museums, tribal arts, rural handicrafts, tribal medicines, archeological sites, adventure sports, sacred groves, mountains, etc.

**Module 6: Forms of Ecotourism in India and Kerala (8 hrs)**

Eco regions, eco places, waterfalls in Kerala and India, eco travel, dos and don't on eco travel, eco trips. Potential of ecotourism in Kerala. Community based ecotourism, ecotourism and NGOs.

**Module 7: Ecotourism Planning (16 hrs)**

Background, objectives, strategy, design of activities, target groups, opportunities, capacity building, threats, expectations positive and negative impacts, strength and weakness, benefits and beneficiaries,