



**JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J.T.LALVANI COLLEGE OF COMMERCE
(AUTONOMOUS)**

"A" Road, Churchgate, Mumbai - 400 020, India.

**Affiliated to
University of Mumbai**

Program: B.Sc.

Proposed Course: HORTICULTURE (Applied Component)

**Credit Based Semester and Grading System
(CBCS) with effect from the academic year 2019-**

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SEMESTER V

T.Y.B.Sc. (A.C.) Horticulture and Gardening Syllabus

Academic year 2019-2020

Semester V			
Course Code	Course Title	Credits	Lectures /Week
SBOT5AC	Horticulture and Gardening I	2	4
SBOT5ACPR	Practicals	2	4



Semester V - Theory

Course code: SBOT5AC	<u>HORTICULTURE AND GARDENING –I</u> (Credits : 2 Lectures/Week: 4)	
	<p>Learning Objectives:</p> <ul style="list-style-type: none"> • Study the various branches of horticulture as well as regional centres and research institutes promoting horticulture • Students will learn basic gardening skills and operations including propagation of plants by artificial and natural methods • Learn use of various gardening implements • Study common pests and diseases of plants and their control measures including preparation and use of ecofriendly insecticides • Study commonly used manures and fertilizers and importance of biofertilizers • Study the ways to test soil samples <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Students will be able to manage and operate nurseries as well as fruit and vegetable gardens in a profitable way. They will be able to solve the common problems encountered with soil pollution and erosion. They will be able to guide farmers to control pests and diseases in an eco-friendly way. They will be able to skillfully perform indoor gardening techniques and use them as a tool to generate income source. 	
Unit I	<p>Unit 1 INTRODUCTION TO HORTICULTURE</p> <ul style="list-style-type: none"> • Definition, importance and objectives of Horticulture, branches of Horticulture, Pomology, Olericulture, Landscape Gardening, Nurseries and development • Definition, importance and objectives of Horticulture, branches of Horticulture, Pomology, Olericulture, Landscape Gardening, Nurseries and development • Allied branches – Apiculture – Bee box, honey bee life cycle and role of apiculture in pollination, Sericulture – Silkworm life cycle, different types with host plant, Social Forestry, Exhibition: aims and objectives. • Important Horticulture Research Institutes and Government Schemes for strategy plantations <ul style="list-style-type: none"> ✓ Konkan Krishi Vidyapeeth – Dapoli ✓ National Research Centre for grapes. ✓ Regional Fruit Research centre Pune ✓ Horticulture Training Centre (H.T.C.) – Talegaon. ✓ Central Potato Tuber Research Institute (CPTRI) – Shimla • Horticulture Consultancy • Strategy plantation – Lakhibaug Yojana 	15 L
Unit II	<p>Unit 2 PROPAGATION PRACTICES</p> <ul style="list-style-type: none"> • By Seeds Advantages and disadvantages, method of seed Propagation Production of seeds, Handling, Collection and Storage Sowing, Transplanting of seedlings and Hardening. 	15 L

	<ul style="list-style-type: none"> • By specialized Vegetative structures: Bulbs, Tubers, Corms, Rhizomes, Root stock, runners, Offsets and suckers. • Artificial methods of plant propagation ✓ Cutting– Root cutting, Stem cuttings, and leaf cuttings. Use of PGR's for rooting. ✓ Layering – Definition, Types: Simple, compound, (Serpentine) Tip, Trench, Mound, Air Layering. ✓ Grafting-Definition, advantages and disadvantages. Types: Splice, Whip/ Tongue, side, veneer, cleft, bark, epicotyls, approach, repair grafting – enarching, bridge and bracing ✓ Budding – Definition advantages and disadvantages. Types: T-budding, shield patch, ring budding ✓ Developing new varieties- technique of Emasculation and bagging, role of polyploidy in production of seedless varieties in plants. ✓ Application of plant tissue culture in relation to horticulture. 	
Unit III	<p>UNIT 3 MAURES, FERTILIZERS AND DISEASES</p> <ul style="list-style-type: none"> • Manures: Definition, importance, important manures FYM(compost), oilcakes, green manure, organic manures and Vermicompost. • Fertilizers: Definition, Types – Straight, Compound and mixed. Nitrogenous ($(NH_4)_2SO_4$, Urea, $Ca(NO_3)_2$, NH_4Cl, Phosphatic (Superphosphate, Bone meal), Potassic (Muriate of potash, K_2SO_4) • Biofertilizers: Bacteria, Cyanobacteria, Mycorrhiza, Sea weeds • Diseases: Horticultural plant diseases and their control. Fungal diseases-Rust, Smut, Powdery mildew. Bacterial – Citrus canker, Bacterial wilt. Viral – TMV, Leaf curl. • Pests – common pests on horticultural crops – Aphids, beetle, stem borer, caterpillars and rats. • Friends of farmers: Earth worm, snakes and predaceous fungi. 	15 L
Unit IV	<p>UNIT 4 GARDEN OPERATIONS FOR HORTICULTURE</p> <ul style="list-style-type: none"> • Selection of site, Preparation of soils for garden • Mulching, top-dressing, blanching • Sowing, transplanting, tree transplanting • Irrigation, -Overhead, Surface, Underground • Weeding and pruning, - Principles, Objectives and general technique. • Water management and conservation through horticulture, Dry land Horticulture. • Organic Farming :Definition, Scope, Indian scenario, Future scope 	15 L
<p>References:</p> <ul style="list-style-type: none"> • Randhawa G.S & Mukhopadhyay A., Floriculture in India, Allied Publishers, 1986 • Das P.C., Manures and Fertilisers, Kalyani Publication, 2003 • Verma, L.R., Joshi V. K. Post-Harvest Technology of fruits and Vegetables, Vol I, General concepts and Principles, Indus Publishing company, 2000 • Verma, L.R., Joshi V. K. Post-Harvest Technology of fruits and Vegetables, Handling, 		

Learning Objectives:

- Students will perform basic gardening operations including propagation of plants by artificial and natural methods
- Students will experience use of various gardening implements
- Students will observe common pests as well as samples of diseased specimens of plants and they will learn to prepare eco-friendly insecticides.
- Perform test to identify different types of chemical fertilizers and also observe different types of bio-fertilizers and green manure plants
- Study the ways to test soil samples for its pH, organic content, etc
- Project work will ensure that every student will work on selected horticulture related topic in depth.

Learning Outcomes:

- Students will be able to manage and operate nurseries as well as fruit and vegetable gardens in a profitable way.
- They will be able to skillfully perform indoor gardening techniques and use them as a tool to generate income source.
- They will be able to guide farmers to control pests and diseases in an eco-friendly way .
- They will be able to guide farmers on the use of biofertilizers in the best possible way. They will be able to understand and differentiate between various types of fertilizers available in the market and select the best one as per need of the crop.
- They will be able to solve the common problems encountered with soil pollution and erosion.

Horticulture project will help students gain detailed knowledge of their specific selected topic. Students will be able to carry further entrepreneurial work on the same and venture business opportunities.

1	Garden implements and their uses.
2	Different types of pots & Potting medium , Potting and repotting.
3	Propagation practices by seed, Vegetative propagation, cutting, layering, budding, grafting.
4	Identification of : Fertilizers – Identification by physical and chemical methods –Urea Ammonium sulphate, Potassium sulphate, super phosphate. Manures – Identification of plants as green manure – <i>Glyricidia</i> , <i>Crotolaria</i> , <i>Leucaena</i> . Biofertilizers – Identification (material as slides) –VAM, <i>Nostoc</i> , <i>Rhizobium</i> .
5	Soil pH, Use of soil testing Kit, electrical conductivity, pH of water, liquid fertilizers.
6	Method of preparing bonsai, Bottle Garden / Terrarium, Hanging baskets, Dish garden.
7	Diseases and pests Fungal – Powdery mildew ,Rust ,Wilt, Blight, Smut, Bacterial – Canker ,Wilt Viral – Leaf curl ,yellow vein Mosaic Insects – Sucking, Biting, Chewing, Borers & Ants Non Insects pests- Nematodes, Rodents.
8	Preparation of natural insecticides – Neemarka, Dashparniarka, Seetaphal powder, Tobacco extracts.

9	Project – Each student should individually present a project related to any topic related to Horticulture. It should be duly certified presented at practical examination. Project presentation college at level compulsory.
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