

SRI VENKATESWARA UNIVERSITY : TIRUPATI
B.VOC , in HORTICULTURE
Under CBCS W.E.F.2021-2022
COURSE STRUCTURE
SEMESTER-IV

S. N O	Skill / general educati on	Courses	Title of the paper/course and code	Cred its per cour se	Hou rs/w eek	Total hours/ course	Marks		
							Internal	Externa l	Tota l
1	Domain Skill Compo nent	CORE-I	Organic Forming	04	04	60	25	75	100
2		PRACTICAL-1	Organic Forming	02	03	30	---	50	50
3		CORE-II	Production Technology of flowers, medicinal and Aromatic plants	04	04	60	25	75	100
4		PRACTICAL-II	Production Technology of flowers, medicinal and Aromatic plants	02	03	30	--	50	50
5		CORE-III	Pests of Horticulture crops and their management	04	04	60	25	75	100
6		PRACTICAL-III	Pests of Horticulture crops and their management	02	03	30	---	50	50
7		CORE-IV	Production Technology of spices and plantation crops	04	04	60	25	75	100
8		PRACTICAL-IV	Production Technology of spices and plantation crops	02	03	30	-----	50	50
9		CORE-V	Manures, Fertilizers and soil fertility management	04	04	60	25	75	100
10		PRACTICAL-V	Manures, Fertilizers and soil fertility management	02	03	30	-----	50	50
11		CORE-VI	Mushroom Culture and Technology	04	04	60	25	75	100
12		PRACTICAL-VI	Mushroom Culture and Technology	02	03	30	-----	50	50
TOTAL				36			900		

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B.VOC. DEGREE COURSE IN HORTICULTURE
IV SEMESTER
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SKILL COMPONENT
Core Paper-I: ORGANIC FARMING

(Credits:4+2=6)

UNIT-I

Organic Farming - Detrimental effects of currently chemical dependent farming.- Reduction of crop production due to depletion of soil Health - Pesticide contamination and human health hazard - Contamination of food products by pesticides & chemicals - Environmental (soil, water, air) pollution - Reduction of natural enemies of crop pests - Threat to Bio diversity - Historical development of Organic Agriculture in India - Present status of Organic farming in Andhra Pradesh.

UNIT-II

Types of Farming (Advantage & disadvantage of each system) - Pure Organic Farming - Definition, Concept & Benefits - Integrated Farming system (Combination of Organic and Inorganic) - Mixed Farming - Inter cropping - Organic Farming (Process): - Concept of farming system - Developing organic farms - Important steps & methods

UNIT-III

Sources of nutrients for Organic farming - Organic Manure - FYM/Rural compost, City compost, Oil cakes, - Animal wastes, Vermi composts, etc - Characterization and Nutrients content of the above sources - Green Manure - Liquid Manure - Bio fertilizers

UNIT-IV

Plant Protection Measures: - Integrated pest & disease managements - Organic pesticides, bio-pesticides - Inorganic pesticides, disadvantages of their use - Seed, seedling and soil Treatment measures - Feasibility of complete dependence on organic sources

UNIT-V

Organic Agri-Horticulture in Urban & Semi urban areas - Quality Control and certification procedures of Organic products - Marketing and export potential of Organic products – National Economy

PRACTRICAL SYLLABUS:

- 1. Selection of soil and soil conditioners**
- 2. Preparation of FYM / Rural compost / Vermi compost**
- 3. Preparation of seed bed & raising of seedlings**
- 4. Land preparation**
- 5. Raising of seedlings in pots or seed pans**
- 6. Undertaking pot / container culture of flowers, vegetables, fruit plants**
- 7. Practice training on inter culture operations**
- 8. Visit to near Organic Farming at farmer fields**

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B.VOC. DEGREE COURSE IN HORTICULTURE
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SKILL COMPONENT

Core Paper-II: PRODUCTION TECHNOLOGY OF FLOWERS MEDICINAL AND AROMATIC PLANTS

(Credits:4+2=6)

UNIT I:

Scope and importance of commercial floriculture in India – present status, future prospects and - strategies needed for improvement - Features, types and styles of ornamental gardens.

UNIT II:

Floriculture: Climate, Soil, varieties, propagation, training & pruning, irrigation, harvest and yields production - techniques of flowering plants such as Rose, Marigold, Chrysanthemum, Carnation, Gladiolus, Jasmine, Tuberose, Crossandra, Antherium, Gerbera, Orchids.

UNIT III:

Medicinal plants – importance of medicinal plants –production technology of - Dioscorea, phyllanthus, prewinkle, Solanum, Aloe, Coleus, Asparagus, Belladonna, Costus , Aswagandha.

UNIT IV:

Aromatic plants –Importance – essential oil industry in india – properties of essential oils – production technology of – Mint, Palmarosa, Ocimum, Geranium, Lemongrass, Vettivar, Citronella, Patchoul.

UNIT V:

Post harvest techniques of cut flowers - dehydration techniques for drying of flowers.

PRACTICAL SYLLABUS:

- 1. Planning and layout of ornamental gardens training and pruning in flower crops lily, rose, chrysanthemum.**
- 2. Harvest, packaging and storage methods of flowers.**
- 3. Vase life determination in cut flowers**
- 4. Nursery bed preparation and sowing of flower crops**
- 5. Visit to ornamental gardens/ parks and flower gardens**
- 6. Propagation methods in aromatic & medicinal plants**
- 7. Harvesting and processing methods of aromatic and medicinal plants**
- 8. Visit to herbal gardens**

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SECOND YEAR – FOURTH SEMESTER
Under CBCS W.E.F. 2021-22
SKILL COMPONENT

**Core Paper-III: PESTS OF HORTICULTURAL CROPS AND THEIR
MANAGEMENT**

(Credits:4+2=6)

UNIT I - INTRODUCTION, ECONOMIC CLASSIFICATION OF INSECTS

Study of insect pests(Distribution, host range, biology, Nature of damage and management) in horticultural crops - Tropical fruits - Mango: Hoppers, red banded caterpillar, nut weevil, stem borer, leaf webber, mealy bug - oriental fruit fly, leaf gall midges, thrips - Guava: Tea mosquito bug, fruit fly, fruit borer, mealy bug, bark eating cater piller - Banana: Rhizome weevil, pseudostem borer, aphid. Papaya: mealy bug, spiraling white fly - Pomegranate : Pomegranate butterfly, fruit borer, fruit sucking moths

UNIT -II PESTS OF SUB-TROPICAL FRUITS

Grapevine: Flea beetle, thrips, stem girdler, mealy bug, stem borer, spotted spidermite - Citrus: Citrus butterfly, fruit sucking moths, citrus leaf miner, psylla, white fly, blk fly, mangu mite - Temperate fruits - Apple: Sanjose scale, woolly aphid, cottony cushion scale, codling moth , tent caterpillar, gypsy moth, European red mite.

UNIT III- PESTS OF PLANTATION CROPS

Cashew: Cashew shoot and root borer, shoot and blossom webber, tea mosquito bug, thrips, leaf miner, fruit borer - Coconut & Oil Palm: Black header caterpillar, rhinoceros beetle, red palm weevil,Eriophid mite, coconut scale - Tea: Tea mosquito bug, thrips, mite complex(red spider mite, yellow mite, pink mite,purple mite, scarlet mite) - Coffee: Green scales, white borer, red borer, shot borer, berry borer.

UNIT-IV- PESTS OF MEDICINAL & AROMATIC PLANTS

Neem : Root grub, slug caterpillar, mired bug, mealy bug, tea mosquito bug - Cinnamon: leaf eating caterpillar, jumping bug - Mint: leaf roller, hairy caterpillars, termites - Datura: spotted borer, thrips - Bellodona: Cut worm, potato beetle, flea beetle - Dioscorea: aphids, red spider mites.

UNIT-V- PESTS OF STORED PRODUCTS

Tamarind beetle, cigarette beetle, Lesser grain borer, Kapra beetle - Drug store beetle, Dried fruit moth, sweet potato tuber moth, red flour beetle, rice moth, Indian meal moth - Dried current moth, Tobacco moth, dried fruit beetle, saw toothed beetle - Insecticide residues problem in fruit, plantation, medicinal and aromatic plants and their tolerance limits.

PRACTICAL SYLLABUS:

- 1. Sampling techniques for estimation of insect damage**
- 2. Identification of insects and damage symptoms of pests of mango**
- 3. Identification of insects and damage symptoms of pests of guava**
- 4. Identification of insects and damage symptoms of pests of banana, papaya**
- 5. Identification of insects and damage symptoms of pests of pomegranate**
- 6. Identification of insects and damage symptoms of pests of grapevine and citrus**
- 7. Identification of insects and damage symptoms of pests of cashew**
- 8. Identification of insects and damage symptoms of pests of coconut, oil palm**
- 9. Identification of insects and damage symptoms of pests of tea, coffee and rubber**
- 10. Identification of insects and damage symptoms of pests of medicinal and aromatic plants**
- 11. Identification of insects and damage symptoms of pests of stored products**

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B.VOC. DEGREE COURSE IN HORTICULTURE
SECOND YEAR – FOURTH SEMESTER
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SKILL COMPONENT

Core Paper-IV: PRODUCTION TECHNOLOGY OF SPICES AND PLANTATION CROPS

(Credits:4+2=6)

UNIT-I

History, scope and importance, present status, area and production, uses, export potential and role in Indian economy, Classification of spices.

UNIT-II

History and development, Scope and importance, area and production, export and import potential of plantation crops, role in national and state economy.

UNIT-III

Spices- Production Technology of

- 1. Cardamom**
- 2. Black pepper**
- 3. Betel vine**
- 4. Ginger**
- 5. Turmeric**
- 6. Clove**
- 7. Nutmeg**

UNIT-IV

Spices- Production Technology of

- 1. Cinnamon**
- 2. Curry leaf**
- 3. Coriander**
- 4. Fenugreek**
- 5. Fennel**
- 6. Cumin**
- 7. Saffron**

UNIT-V

Plantation- Production technology of

- 1. Coconut**
- 2. Arecanut**
- 3. Oil palm**
- 4. Cocoa**
- 5. Cashew nut**
- 6. Coffee**
- 7. Tea**

PRACTICAL SYLLABUS:

- 1. Identification of spices seeds**
- 2. Preparation and submission of specimens of spices and condiments**
- 3. Seed treatment, Sowing layout and planting methods of Spices and condiments**
- 4. Intercultural operations, Harvesting and processing, grading of Spices and condiments.**
- 5. Different methods of tapping of rubber**
- 6. Raising of nursery and nursery management in cocoa**
- 7. Layout and planting of coconut, Areca nut and oil palm, cashew nut, cocoa.**

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IV-SEMESTER
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SKILL COMPONENT

**Core Paper-V: MANURES, FERTILIZERS AND SOIL FERTILITY
MANAGEMENT**

(Credits:4+2=6)

UNIT-I

Essential nutrients – functions, deficiency and toxicities. Concepts and methods of soil fertility evaluation -Nutrient Dynamics - Nutrients – sources, forms, mobility, transformations, fixation, losses and availability of nitrogen - phosphorus, potassium, calcium, magnesium, sulphur, iron, manganese, zinc, copper, boron - molybdenum, nickel, chloride in soils – Beneficial elements – Nutrient interactions.

UNIT-II :

Classification of Fertilizers - Fertilizers – Definition and classification, sources, properties and reactions of primary, secondary and micro nutrient fertilizers in soil – Manufacture of urea, ammonium sulphate, SSP, DAP, MOP and SOP. Complex, mixed fertilizers, customized/Speciality fertilizers – Water soluble fertilizers, liquid fertilizers. Micro nutrient mixtures and chelated micronutrients – Preparation – Fertilizer Control Order (FCO). Manures – classification, nutrient contents. Composting techniques.

UNIT-III

**Application Methods - Methods of fertilizer application – Seed coating, pelletization, seedling dipping – Soil Application – Foliar spray – Fertigation – water soluble fertilizers, fertigation scheduling
(Fertilizer – water interaction, fertilizer solubility, comparison of fertilizer application methods).**

UNIT-IV

Nutrient Management - Nutrient management concepts – INM, STCR, IPNS, SSNM and RTNM. Nutrient use efficiencies of major and micronutrients and enhancement techniques (Soil, Cultural and Fertilizer strategies). Soil health – Quality indices and their management – Long term effect of fertilization on soil.

UNIT-V

Compost and composting- Green manures- Definitions of penning -Introduction and importance of organic manures- Bulky organic manures- Different methods of composting including the starters and raw materials

PRACTICAL SYLLABUS:

1. Introduction to analytical instruments and principles-spectrometry and flame photometry
2. Estimation of available N in soils
3. Estimation of available P in soils
4. Estimation of available K in soils
5. Estimation of available S in soils
6. Estimation of available Ca and Mg in soils
7. Estimation of available Zn in soils
8. Identification acid radicals in fertilizers / salts
9. Identification of basic radicals in fertilizers / salts

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Core Paper-VI: MUSHROOM CULTURE AND TECHNOLOGY
(Credits:4+2=6)

UNIT I: INTRODUCTION, HISTORY: (12HRS)
Introduction - history - scope of edible mushroom cultivation, Types of edible mushrooms available in India-*Volvariella volvacea*, *Pleurotus citrinopileatus*, *Agaricus bisporus*. Nutritional and medicinal value of edible - mushrooms; Poisonous mushrooms.

UNIT II: PURE CULTURE-SPAWN PREPARATION: (12HRS)
Pure culture - preparation of medium (PDA and Oatmeal agar medium)sterilization - preparation of test tube - slants to store mother culture - culturing of *Pleurotus* mycelium on Petriplates, preparation of mother spawn - in saline bottle and polypropylene bag and their multiplication.

UNIT III: CULTIVATION TECHNOLOGY: (12HRS)
Infrastructure: Substrates (locally available) Polythene bags, vessels, Inoculation hook, inoculation loop, low-cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves. Factors affecting the mushroom bed preparation - Low cost technology, composting technology in mushroom production.

UNIT IV: STORAGE AND NUTRITION : (12HRS)
Short-term storage (Refrigeration - up to 24 hours) Long term Storage (canning, pickles, papads), drying, storage in salt solutions. Nutrition - Proteins - amino acids, mineral elements nutrition - Carbohydrates, Crude fibre content - Vitamins.

UNIT V: FOODPREPARATION:

(12HRS)

Types of foods prepared from mushrooms; soup, cutlet, omlette, samosa, pickles and curr. Research Centres - National level and Regional level. Cost benefit ratio - Marketing in India and abroad, Export Value.

PRACTRICAL SYLLABUS:

- 1. Identification of different edible and poisonous mushrooms.**
- 2. Microscopic and anatomical observations of different mushroom species.**
- 3. Types of Compost preparation and sterilization.**
- 4. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves/waste.**
- 5. Inoculation and spawning of compost.**
- 6. Incubation and harvesting of mushrooms (collection, drying and preservation).**
- 7. Diseases of mushrooms (photographs).**
- 8. Post-harvest technology steps (photographs).**
- 9. Study tour to mushroom cultivation farms**
- 10. Project work – cultivation of paddy straw/ oyster/white button mushrooms.**