# SRI VENKATESWARA UNIVERSITY : TIRUPATI

## B.VOC. DEGREE COURSE IN HORTICULTURE

### Under CBCS W.E.F. 2020-21

## COURSE STRUCTURE

## SEMESTER – I

| Sl. No | Skill/ Gen. Edu | Courses | Title of the Paper/Course and code | Credits per course | Hours/ week | Total Hours/ Course | Marks | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| 1 | General Education component Gen.Edu | Language | General English | 3 | 4 | 60 | 25 | 75 | 100 |
| 2 | | Life skills | Human Values and Professional Ethics | 2 | 2 | 30 | - | 50 | 50 |
| 3 | | Skill Dev. Course | Fundamentals of Microbes and Non Vascular Plants (1-3 Units) | 2 | 2 | 30 | - | 50 | 50 |
| 4 | | | Plant Nursery | 2 | 2 | 30 | | 50 | 50 |
| 5 | Domain Skill component | Core-I | Principles of Horticulture Crops | 4 | 4 | 60 | 25 | 75 | 100 |
| 6 | | Practical-I | Principles of Horticulture Crops | 2 | 2 | 30 | - | 50 | 50 |
| 7 | | Core-II | Fundamentals of Plant Physiology | 4 | 4 | 60 | 25 | 75 | 100 |
| 8 | | Practical-II | Fundamentals of Plant Physiology | 2 | 2 | 30 | - | 50 | 50 |
| 9 | | Core-III | Floriculture Management and Plant Pathology | 4 | 4 | 60 | 25 | 75 | 100 |
| | | Practical III | Floriculture Management and Plant Pathology | 2 | 2 | 30 | - | 50 | 50 |
| 10 | | Industrial Internship | Industrial Training for 30 days | 3 | 36 | 144 | - | 50 | 50 |
| **Total Credits** | | | | **30** | **Total Marks** | | | | **750** |

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**FIRST YEAR – FIRST SEMESTER**
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**SKILL COMPONENT**
**Core Paper-I: PRINCIPLES OF HORTICULTURE CROPS**

## Learning outcome:

After complete of these courses, students should be able to be

- Understand the significance of horticulture, and know about botanical Names.
- Production in national and international level.
- Know about Definitions and science terminology of plants
- advantages and disadvantages of propagation
- Understand about Purpose of nurseries
- Know and understand about types of gardens
- Understand about significance and maintenance of lawn, plants
- Know about orchard cultivation
- Learn about types of culture ,irrigation process etc.,

## SYLLABUS

**Unit –I ( 12 h)**

Definition, Scope, Importance and production of horticulture crops in national level, Branches of Horticulture and Classification of Horticultural Crops with botanical names and zones/areas of A.P & India, Research institutes of Horticulture in India and Andhra Pradesh, and nutritive values.

**Unit-II (12 h)**

Definition, scope, objectives, Classification of nursery, examples of nursery plants, components, establishment (location, climate and transport, site, soil, water, manure, labour etc.) and maintenance of a nursery, Definition, Types (asexual and sexual), Advantages and disadvantages of Propagation methods in horticulture., Definition and objectives of Soilless (Hydroponics /water)culture with examples.,

**Unit-III (12 h)**

Definition, scope, principle, importance of gardening, Formal and Informal Lawn and its Maintenance, Types of garden namely Hindu type gardens (vanams), natural garden, wild garden, Mughal garden, Persian garden, Italian garden, French garden, English garden, Japanese garden and popular gardens in India and special types of gardening( namely roof garden, sunken garden, vertical garden, terrace garden, water garden, bog garden, shade garden, rock garden, terrarium, bottle garden, window garden). Characteristics and importance of Lawn and types of lawn grass, Establishment and maintenance of lawn, Significance and utility of various plants (annuals, biennials and herbaceous perennials. Shrubs, trees, climbers and creepers, cacti and succulents, indoor plants, ornamental palms and bulbous plants etc.,) in landscaping.

**Unit-IV (12 h)**

Definition, Scope and significance and classification of orchards/fruits, Objectives of Orchard floor/Soil management, establishment (location, site, laying out, planning, Types and planting season, planting distance, High density of planting system, planting season, planting method and transplanting)and cultivation of Orchards (Soil management, saving moisture ,organic farming) and production., Factors Influencing on Crop Production and rejuvenation of old orchards.

**Unit –V (12 h)**

Advantages of Clean cultivation, sod culture and mulch, uses of herbicides, Inter cropping, cover crops, Nutrition management, Pruning and training (plant management), Plant protection against pests and diseases, Types of mulching, Weed management, Definition and types of irrigation management, Bearing habits/fruiting, fruitfulness and causes of unfruitfulness, Maturity and harvest. Post harvest handling, utilization and marketing.

**Books:**

1.Chadha, K.L. 2001. Handbook of Horticulture, ICAR, New Delhi.

2. Jitendra Singh, 2012. Basic Horticulture. Kalyani Publishers, New Delhi.

3. Randhawa, G.S. and Mukhopadhyaya, A.1994. Floriculture in India. Allied Publishers Pvt. Ltd., New Delhi.

4 .Kumar, N. 1997. Introduction to Horticulture. Rajyalakshmi Publications, Nagorcoil, Tamilnadu.

5. Chattopadhya, P.K.2001. A Text Book on Pomology (Fundamental of fruit growing).

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**SKILL COMPONENT**
**Practical Paper-I: PRINCIPLES OF HORTICULTURE CROPS**

**Hours:-30** **Marks: 50** **Credit: 02**

1. Practicing of grafting method.
2. Practicing of budding method.
3. Types and methods of irrigation.
4. Collect and prepare Herbarium of various lawn grasses (from internet/ natural/model)
5. Prepare the landscaping of Herbarium plants l (from internet/ natural/model)
6. Practicing model kitchen garden
7. Identification of various seeds.
8. Various types of nursery plants for growing of flowering, fruits, Vegetables etc.,
9. Visit to local Nurseries/ horticulture department/institutes/ any university

* Field note book must be submitted at the time of Practical Examination

## Scheme of valuation

**Practical paper- I PRINCIPLES OF HORTICULTURE**

**Time: 3 h**

**Marks: 50**

| | |
|---|---|
| 1. Explain the budding method | 7 marks |
| 2. Prepare the 10 herbarium plants and grass | 10 marks |
| 3. Preparation of garden | 7 Marks |
| 4. Establish and maintenance of Nursery for growing of flower/fruits/ vegetables | 10 Marks |
| 5. Field note book | 6 Marks |
| 6. Certified record | 10 Marks |

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**SKILL COMPONENT**
**Core Paper-II: FUNDAMENTALS OF PLANT PHYSIOLOGY**

**Learning outcome:**

After complete of these courses, students should be able to be

- Understand about objectives of plant physiology
- Understand about relation water and plants
- Role of plants hormones
- Understand about differences between C3, C4, and CAM with examples.
- Learn about definitions, science terminology
- Understand about Seed dormancy
- Provide hands- on- experience

**Unit-I (12 h)**

Morphology of plant, Classification of plants and significance of plants ,Differences between monocot and dicot plants ., Definition, scope, objectives, importance of physiology.

**Unit-II (12 h)**

water relation in plants: Role of water in metabolism, Role of phloem and xylem water potential, osmosis, inhibition, diffusion and its components, Measurements of water potential in plants and absorption of water and Mechanism of absorption and ascent of sap., Structure, classification, mechanism of stomata, Osmotic pressure, guttation, stem bleeding , Definition and types, mechanism of transpiration and differences between translocation and transpiration, Factors affecting on transpiration.

**Unit- III (12 h)**

Definition, objectives, Classification of nutrition, Plant nutrition essential and mechanism of absorption , Role of Nutrients in plant metabolism and Hidden hunger (lack of vitamins and minerals), Sand/Soil culture and soilless culture( Hydroponics and aeroponics).

**Unit-IV (14 h)**

Structure and function of chloroplast and mitochondria, and Peroxisome, Dark and light reactions, cyclic and non-cyclic electron transfer, C3, C4and CAM metabolism and advantages. Differences between the C3 and C4 and CAM with examples and difference between Photosynthesis and Photorespiration.

**Unit- V (10 h)**

Photoperiodsm – short, long and day neutral plants, Definition and classification of stress in plants (abiotic physical namely floods, drought, temperature, light and radiation and chemical I e pesticides, insecticides, heavy metals, pollution etc.), biotic (pest, diseases, weed, human activity etc.,), Plant growth hormones namely Auxins, Gibberellins Cytokinins, Ethylene and Abscisic Acid., Definition, types of Seed dormancy and methods to overcome dormancy, and role of sprouts to human health., commercial applications of plant growth regulators.

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### SKILL COMPONENT
### Practical Paper-II: FUNDAMENTALS OF PLANT PHYSIOLOGY

**Time: 3 h** **Marks: 50** **Credit: 02**

1. Measurement of leaf area by different methods
2. Experiment to demonstration of transpiration
3. Estimation of photosynthetic pigments, i.e., paper chromatography
4. Identification of disorders nutrients of plants
5. Factors effecting on the seed germination (i.e., temperature, light and water, etc.,)
6. Role of plant growth hormones (structure and significance)
7. Identification and Collection the nutrient deficiencies plant leaves for preparation of herbarium.
8. Role of sea weed extract (foliar).
9. Study of morphology of any three plants namely related fruits, vegetables, flowers.

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**SKILL COMPONENT**
**Core Paper-III: FLORICULTURE MANAGEMENT AND PLANT PATHOLOGY**
**Hours: 60** **Marks: 75** **Credits: 04**

## Learning outcome:

After complete of these courses, students should be able to be

- Understand the floriculture management
- Know and Learn about plant pathology
- Understand about causes of diseases in various crops.

**Unit –I (12 h)**

Definition, Scope and Objectives of floriculture, Production of floriculture scenario in India and Andhra Pradesh, Export and import of flowers in India, Areas and verities of flowers with botanical names. Classification of flowers (Based on flower color, season of growing, purpose, mode of propagation etc.). Differences between cut and loose flowers with examples.

**Unit –II (12 h)**

Taxonomy and identification of flowers varieties namely Rose, Chrysanthemums, Marigold, Jasmine, Carnation , Gladiolus, Orchids, Aster, Daisy, Anthurium, Tuberose, Crossandra, Lilium etc., Preparation of garlands, bouquets and Common leaves used in flower arrangements namely Cypress, Podocarpus, Asparagus, Palms, Cycads, Ferns, and Eucalyptus.

**Unit-III (12 h)**

Floriculture: climate , Soil, varieties, Propagation methods, training and Pruning, Irrigation, harvest yields, production techniques of flower plants, Post harvest techniques of flowers and dehydration techniques for drying of flowers. Propagation techniques of flowers plants

**Unit –IV (10 h)**

History, Definition, scope and objectives of Plant Pathology, classification of plant pathology (Infection/biotic and non-infection/abiotic and mesobiotic) with examples.

**Unit-V (14 h)**

Diseases management in vegetable crops (Tomato, Capsicum, Chili, Crucifers, Potato, Leafy vegetables, etc.), Diseases management in fruit crops (Mango, Citrus, Banana, Guava, Sapota, Papaya, Pomegranate, Apple etc.,), Diseases management in floriculture (cut and loose). Biological control of horticultural crop diseases.

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**SKILL COMPONENT**
**Practical Paper-III: FLORICULTURE MANAGEMENT AND PLANT PATHOLOGY**
**Hours: 30** **Marks: 50** **Credits: 02**

1. Different types of diseases in fruits crops (Collect the photos from natural/ download the figures)
2. Identification of diseases in Vegetables namely Tomato, Ladies finger, potato, Brinjal, Cauliflower, etc.,)
3. Taxonomy, identification and Description of commercial flowers (minimum 8)
4. Preparation of Bouquet and garlands
5. Visit to vegetable farm, Orchard farm and floriculture

*Field note book should be submitted at the time of University practical examination.

**References:**


1. Bhattacharjee.S.K and Lakshman Shardra De.2003. Advanced commercial floriculture. Aavishar Publisher and Distributors, Jaipur
2. Bose,T.K., YadavL.P., Pal. P, Parthasarathy, V.A and P. Das. 2003. Commercial flowers– Vol.I and II Second Revised Edition. Naya Udyog, Kolkata
3. Prasad, S. and U.Kumar, 2003. Commercial floriculture. Agrobios, Jodhpur
4. Roy,A. Larson 1992. Introduciton of Floriculture International Book DistributingCompany, Lucknow.
5. Singh, R.S plant diseases
6. Rangaswami G and Mahadevan A, Diseases of crop plant in india
7. Chandha, K.L. (ICAR) 2002, 2001. Hand book of Horticulture. ICAR, New Delhi


**Web Resources**

1) www.floriculture today.com
2) www.Hitech horticulture.com
3) www.icar.org.in
4) www.wikihow.com
5) www.theflowerexpert.com