SRI VENKATESWARÅ UNIVERSITY: 'I'IRUPATI

B.VOC. HONOURS PROGRAMME IN HORTICLUTURE

Under CBCS W.E.F. 2023-2024

COURSE STRUCTURE

SEMESTER – III

	Skills Gen. Edu	Courses	Title of Paper/Course and code	Credits per course	Hours/ week	Total "ours/ Course	Marks		
							Internal	External	Total
1									
2									
3									
4									
5	Domain Skill component	Major-I	Basics of Vegetable Science	3	3	45	25	75	100
6		Practical	Basics of Vegetable Science	1	2	30		50	50
7		Major -II	Introduction to Soil Science	3	3	45	25	75	100
8		Practical	Introduction to Soil Science	1	2	30		50	50
9		Major-III	Plant tissue culture	3	3	45	25	75	100
10		Practical	Plant tissue culture	1	2	30		50	50
11		Major-IV	Pest management of horticultural crops	3	3	45	25	75	100
12		Practical	Pest management of horticultural crops	1	2	30		50	50

13		Minor-I	Milk and milk products technology	3	3	45	25	75	100
14		Practical	Milk and milk products technology	1	2	30		50	50
15		TOTAL							

SRI VENKATESWARA UNIVERSITY TIRUPATI

B.VOC. HONOURS PROGRAMME IN HORTICLUTURE

MAJOR: HORTICLUTURE

SECOND YEAR – THIRD SEMESTER

Under CBCS W.E.F. 2023-24 AY Onwards

MAJOR PAPER-I: BASICS OF VEGETABLE SCIENCE

Credits -3 **Hours: 45**

I. Learning Objectives: By the end of this course the learner has:

1. To recognize the morphology of the various vegetable crops.
2. To acquire knowledge in cultivation of vegetable crops.
3. To acquire knowledge in identification of various pests and diseases of vegetable crops.

II. Learning Outcomes: On completion of this course students will be able to:

1. Distinguish the growing of vegetables according to season and climate
2. Get detailed knowledge on cultivation aspects of different vegetables
3. Understand and explain the special intercultural operations done in vegetable crops
4. Study of morphology and taxonomy of different vegetable crops
5. Study of different varieties of vegetable crops
6. Identify the diseases and pests of vegetable crops and their management

III. Syllabus of Theory:

Unit-1: Introduction to Vegetable crops **9 Hrs.**

1. Importance of vegetable cultivation in India and Andhra Pradesh.
2. Classification of vegetables.

3. Constraints in vegetable production and remedies to overcome them.

4. Vegetable Gardens

Unit-2: Sub-tropical vegetables **9Hrs.**

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

Cultivation of (a) Brinjal (b) Tomato (c) Chilli (d) Okra (e) Cucurbits

Unit-3: Temperate Vegetables **9 Hrs.**

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

Cultivation of (a) Cauliflower (b) Cabbage (c) Onion

Unit-4: Tuber and Root crops **9 Hrs.**

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

Cultivation of (a) Potato (b) Carrot (c) Beetroot (d) Tapioca

Unit-5: Beans and leafy vegetables **9Hrs.**

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

Cultivation of (a)Cluster bean (b) Cow pea and (d) Dolichos bean (e) Coriander

IV. Text Books:

1. Thompson, H. C and Kelly, W. C. 1959. Vegetable Crops. Tata Mc Graw Hill Publishing Co. Ltd., Bombay.

2. Premnath Velyudhan, S and Singh, D. P. 1987. Vegetables for the Tropical Region ICAR, New Delhi. 3. Shanmugavelu, K. G. 1989. Production Technology of Vegetable Crops. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi

4. Chaudhary, B. 1992. Vegetables. National Book Trust, New Delhi.

5. Bose, T. K and Mitra, S. K. Tropical Horticulture. Naya Prakash, Calcutta.

6. Bose, T. K et al. 2003. Vegetables Crops. Naya Udyog Publishers, Kolkata

7. Choudhury, B. (ICAR). 1990. Vegetables. 8th Edition, National Book Trust, New Delhi.

SEMESTER-III

MAJOR PEPAR-I: BASICS OF VEGETABLE SCIENCE

PRACTICAL SYLLABUS

Credits -1

I. Laboratory/field exercises:

1. Demonstration of seed germination test for a vegetable seed.
2. Demonstration of seed viability test.
3. Identification of vegetable seeds and vegetable crops at different growth stages.
4. Different Seed Sowing methods.
5. Canning and Dehydration of vegetables.
6. Cost of cultivation studies of locally grown vegetables

V. Suggested activities:

A. Measurable:

a. Student seminars:

1. Production Technology of Solanaceous crops
2. Production Technology of Cucurbit Vegetables
3. Production Technology of Root and Tuber crops
4. Production Technology of Temperate crops
5. Production Technology of Leguminous crops
6. Special intercultural operations in vegetable crops
7. Major Pests and Diseases of vegetable crops and their management
8. Morphological characters of vegetable crops
9. Maturity and Harvesting indices of vegetable crops
10. Nutritional aspects of vegetable crops

b. Student Study Projects:

1. Identification and Herbarium preparation of different vegetable seeds
2. Identification and Herbarium preparation of disease symptoms of vegetable crops
3. Identification and Herbarium preparation of pest symptoms of vegetable crops
4. Raising of vegetables in Nursery and portrays

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General:

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus of the course.

2. Visit to Horticulture University/ Research Station.

3. Visit to a vegetable nursery and vegetable crop field.

MAJOR PAPER-I: BASICS OF VEGETABLE SCIENCE

MODEL QUESTION PAPER

Time: 3 Hours Max. Marks: 75

PART -A

Answer any FIVE questions, each question carries 5 marks. (5x5=25)

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PART – B

Answer **ALL** of the following Question. (5x10=50)

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12. a)

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MAJOR PAPER-II: INTRODUCTION TO SOIL SCIENCE

Credits: 3 **Hours: 45**

Theory: Learning Outcome:

On successful completion of this course, the student will be able to:

1. Understand basic principles of Soil science
2. Understand the soil formation, soil profile, and soil physical properties
3. Understand the elementary knowledge of soil taxonomy
4. Understands the problematic soils and their management
5. Understand soil organic matter composition and its influence on soil microorganisms

Syllabus of Theory

UNIT -I: INTRODUCTION **9 Hrs**

1. Definition of Soil, Soil profile
2. Different types of soils
3. Soil as Natural Body, Soil Components; Soil Air, Soil water, Organic and Inorganic Solids, soil components.

UNIT -II: PHYSICAL PROPERTIES **9 Hrs**

1. Soil separates, texture, and structural characters, Temperature", Colour, Soil quality.
2. Properties of Soil -Soil mixture, pore Space, bulk density, particle density, water holding capacity.
3. soil erosion and conservation, soli water relations.

UNIT -III: MORPHOLOGY OF COLLOIDS & BIOLOGICAL PROPERTIES OF SOIL 9 Hrs

1. Chemistry of clays, ionic exchange, acidity, alkalinity, ph., and salinity relations.

2. soil organic matter, C: N relations, N transformations, soil organisms.
3. Soil sulphur, transformation.
4. soil health.

UNIT- IV: GENESIS AND CLASSIFICATION 9 Hrs

1. Soil survey methods, soil survey reports, soil distribution, soil classification of systems.
2. Soil drainage, erosion and mechanisms, - control, irrigation.
3. environmental quality, plant and animal waste, municipal, and industrial by products,

UNIT: V SOIL FERTILITY AND FERTILIZERS 9 Hrs

1. Soil Essential elements, soil fertility evaluation techniques.
2. Factors affecting soil fertility. Importance of soil fertility.
3. Soil testing methods and soil fertilizers.
4. Soil Micro nutrient fertilizers and their quality.

Reference books:

a. The Soil: A Natural Resource: TAPAS BHATTACHARYYA AND D.K. PAL
b. Soil Physical Properties. V.K. PHOGAT, V.S. TOMAR AND RITA DAHIYA
c. Soil Water and its Management. ANIL KUMAR SINGH AND S.K. CHAUDHARI
d. Soil Erosion and Conservation. S.S. KUKAL AND M.J. SINGH
e. Soil, Water and Air Pollution. H. PATHAK, K.M. MANJAIAH AND PREM DUREJA

SEMESTER -III

MAJOR PEPAR – II: INTRODUCTION TO SOIL SCIENCE

PRACTICALS SYLLABUS

Credits: 1

Learning outcomes after completion of this course, the students should have learned the skills:

1. Conducting chemical analysis, Principles, techniques and calculations.

2. About soil physical characteristics, nutrient analysis, and soil Structure.

3. Determination of infiltration rate of the soil, determination of Cat ion Exchange capacity.

PRACTICAL SYLLABUS

1. Soil sampling procedures for field and horticultural crops.

2. Determination of EC.

3. Determination of PH of soil.

4. Land use, texture bulk density, Definition of Soil Physical properties.

5. Determination of N, P and K of the soil.

6. Determination of Sulphur.

7. Fertilizer recommendations.

8. Soil health card, parameters, EC, PH and their Importance.

MAJOR PAPER-II: INTRODUCTION TO SOIL SCIENCE

MODEL QUESTION PAPER

Time: 3 Hours Max. Marks: 75

PART -A

Answer any FIVE questions, each question carries 5 marks.

(5x5=25)

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PART – B

Answer **ALL** of the following Question. (5x10=50)

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b)

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MAJOR PAPER-III: PLANT TISSUE CULTURE

Credits: 3 **Hours: 45**

Unit-I: Introduction: **9 Hrs**

1. History, Scope and Concepts of basic techniques in plant tissue culture.
2. Plant tissue culture. Laboratory requirements-the basic facilities of laboratories Layout Of Plant Tissue Culture, Washing Room, Sterilization Room, Media Preparation Room, Inoculation Room, Incubation Room.

Unit-II: Tissue culture media **9 Hrs**

1. Media composition -Macro inorganic nutrients, Micro inorganic nutrients, Iron (as chelating agent), Vitamins, Carbon sources, Organic nitrogen, Plant growth regulators
   Agar (as gelling substance)
2. Media preparation

Unit-III: Micro propagation **9 Hrs**

1. Selection of suitable material
2. Stock plant selection
3. Parts of plant
4. Size of explants
5. Avoid diseased tissue

Unit-IV: Types of plant tissue culture **9 Hrs**

1. Meristem culture
2. Callus culture
3. Anther culture
4. Embryo culture

5. Ovary culture
6. Ovule culture
7. Pollen culture

Unit-V: Benefits of plant tissue culture **9 Hrs**

1. Rapid multiplication of clones
2. Genetic uniformity
3. Aseptic condition Controlled environment

References:

1. R Keshavachandran and K V Peter. Plant Biotechnology: Methods in Tissue Culture and Gene Transfer. Orient Blackswan.
2. Haberlandt, G. (1902) KulturversuchemitisoliertenPflanzenzellen. Sitzungsber. Akad. Wiss. Wien. Math.-Naturwiss. Kl., Abt. J. 111, 69–92.
3. ^ Noé, A. C. (1934). "Gottlieb Haberlandt". Plant Physiol. 9 (4): 850– 855. doi:10.1104/pp.9.4.850. PMC 439112. PMID 16652925.
4. ^ Plant Tissue Culture. 100 years since Gottlieb Haberlandt. Laimer, Margit; Rücker, Waltraud (Eds.) 2003. Springer ISBN 978-3-211-83839-6
5. ^ Martin, Bernice M. (2013-12-01). Tissue Culture Techniques: An Introduction. Springer Science & Business Media. pp. 29–30. ISBN 978-1-4612-0247-9.
6. ^ Simon, Eric M. (1988). "NIH PHASE I FINAL REPORT: FIBROUS SUBSTRATES FOR CELL CULTURE (R3RR03544A) (PDF Download Available)". ResearchGate. Retrieved 2017-05-22.

SEMESTER-III

MAJOR PAPER-III: PLANT TISSUE CULTURE

PRACTICAL SYLLABUS

1. Sterilization Techniques – Autoclave and Hot Air Oven,

2. Preparation of nutrient media.

3. Establishment of callus culture.

4. Organogenesis in callus cultures.

5. Test tube plants.

6. Micro propagation.

7. Isolation of plant secondary metabolites.

8. Importance of macro and micro nutrients, phytohormones, growth factors in Nursery.

MAJOR PAPER-III: PLANT TISSUE CULTURE
MODEL QUESTION PAPER

Time: 3 Hours Max. Marks: 75

PART -A

Answer any FIVE questions, each question carries 5 marks.

(5x5=25)

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PART – B

Answer **ALL** of the following Question. (5x10=50)

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OR

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MAJOR PAPER-IV: PEST MANAGEMENT OF HORTICULTURAL CROPS

Credits: 3 **Hours: 45**

UNIT I - INTRODUCTION, ECONOMIC CLASSIFICATION OF INSECTS 9 Hrs

Study of insect pests (Distribution, host range, biology, Nature of damage and management) in horticultural crops - Tropical fruits –
1. Mango: Hopers, stem borer, leaf gall midges.
2. Guava: Tea mosquito bug, fruit borer.
3. Banana: Rhizome weevil, pseudo stem borer.
4. Papaya: fruit fly, white fly.

UNIT -II PESTS OF SUB-TROPICAL AND TEMPERAATE FRUITS 9 Hrs

1. Grape: Thrips, stem girdler, mealy bug.
2. Citrus: Citrus butterfly, fruit sucking moths, citrus leaf miner.
3. Apple: Sanjose scale, woolly aphid, cottony cushion scale.

UNIT III- PESTS OF PLANTATION CROPS 9 Hrs

1. Cashew: Cashew shoot and root borer, tea mosquito bug.
2. Coconut & Oil Palm: Black header caterpillar, red palm weevil.
3. Tea: Tea mosquito bug, red spider mite.
4. Coffee: white stem borer, berry borer.

UNIT-IV- PESTS OF MEDICINAL & AROMATIC PLANTS 9 Hrs

1. Neem: Root grub, tea mosquito bug.
2. Cinnamon: cinnamon butterfly, leaf miner.
3. Belladonna: Cut worm, leaf feeder.
4. Dioscorea: aphids, red spider mites.

UNIT-V- PESTS OF STORED PRODUCTS 9 Hrs

1. Tamarind beetle, cigarette beetle.
2. Capra beetle - Drug store beetle.
3. Red flour beetle, rice moth.
4. Tobacco moth, Indian meal moth

References:

1. Insect Pests of Horticultural Crops and Its Management Dr. K. Senguttuvan, Ph.D.,
2. Pest Management in Horticultural Crops Under Protected Cultivation / m mani pages 387–417

SEMESTER-III

MAJOR PAPER-IV: PEST MANAGEMENT OF HORTICULTURAL CROPS

PRACTICAL SYLLABUS

Credits: 1

1. Identification of insects and damage symptoms of pests of mango
2. Identification of insects and damage symptoms of pests of guava
3. Identification of insects and damage symptoms of pests of papaya
4. Identification of insects and damage symptoms of pests of grapes
5. Identification of insects and damage symptoms of pests of apple
6. Identification of insects and damage symptoms of pests of cashew
7. Identification of insects and damage symptoms of pests of coconut
8. Identification of insects and damage symptoms of pests of tea, coffee
9. Identification of insects and damage symptoms of pests of neem, cinnamon
10. Identification of insects and damage symptoms of pests of stored products

MAJOR PAPER-IV: PEST MANAGEMENT OF HORTICULTURAL CROPS
MODEL QUESTION PAPER

Time: 3 Hours Max. Marks: 75

PART -A

Answer any FIVE questions, each question carries 5 marks. (5x5=25)

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PART – B

Answer **ALL** of the following Question. (5x10=50)

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SRI VENKATESWARA UNIVERSITY TIRUPATI

B.VOC. HONOURS PROGRAMME IN HORTICLUTURE

MINOR: DAIRY AND ANIMAL HUSBENDARY

SECOND YEAR – THIRD SEMESTER

Under CBCS W.E.F. 2023-24 AY Onwards

MINOR PAPER-I: MILK AND MILK PRODUCTS TECHNOLOGY

Credits: 3 **Hours: 45**

UNIT – I **9 Hrs**

Milk industry in India, milk processing unit and its management Composition & Nutritive value of milk Factors effecting composition of milk Physic-chemical properties of milk

UNIT – II **9 Hrs**

Collection, chilling of milk Standardization of milk- pasteurization, homogenization, bacon fixation, dehydration of milk.

UNIT – III **9 Hrs**

Introduction to functional milk products. Preparation of cream, butter, paneer or China, ghee, whoa, lassie, dacha, ice-cream, mozzarella cheese and dairy byproducts. Common defects of milk products and their remedial measures.

UNIT – IV **9 Hrs**

Packaging, transportation, storage and distribution of milk and milk products. Good manufacturing practices and implementation of HACCP in milk plant. Organic milk products.

UNIT – V **9 Hrs**

Food safety standards for milk and milk products.

SEMESTER-III

MINOR PAPER-I: MILK AND MILK PRODUCTS TECHNOLOGY

PRACTICALS -SYLLABUS **Credits: 1**

1. Visit to modern milk processing and milk products manufacturing plants.

2. Sampling of milk.

3. estimation of fat, solid not fat (SNF) and total solids.

4. Platform tests.

5. Cream separation.

6. Detection of adulteration of milk.

7. Determination of efficiency of pasteurization.

8. Preparation of milk products like ghee, pander or china, whoa, ice-cream or sulfa, milk beverages.

Reference books:

1. Text Book on Milk & Milk Products Ran veer R C, Kamble, D K, Pa'anga

2. Milk and milk processing Herrington B.L.

3. Milk and Milk Products H. Varna Alan

4. Principle of Dairy Processing. Warner James N

MINOR PAPER-I: MILK AND MILK PRODUCTS TECHNOLOGY

MODEL QUESTION PAPER

Time: 3 Hours Max. Marks: 75

PART -A

Answer any FIVE questions, each question carries 5 marks. (5x5=25)

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PART – B

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