SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN HORTICULTURE
IV SEMESTER
(Syllabus under CBCS w.e.f. 2021-22)
Core Course – 4 Basics of Fruit Science (Pomology)
(Total hours of teaching – 60 @ 04 Hrs./Week)

Theory :

Learning Outcomes: On successful completion of this course, the students will be able to:

- Realize the value of fruits in terms of human nutrition and economy of nation.
- Explain the potential fruit zones in various states of our country.
- Classify the fruiting plants based on temperature requirements.
- Acquire knowledge related to various cultivation practices for different fruit crops
- Demonstrate the special intercultural operations done in fruit crops
- Comprehend the knowledge on varieties of different fruit crops.
- Examine the pests and diseases of fruit crops and develop skills to manage the same,
- Explain about Integrated Orchard Management
- Develop knowledge on various entrepreneurial skills related to fruit science.

Unit – 1 : Introduction to Fruit crops **12 Hrs.**

1. Importance of fruit growing in India and Andhra Pradesh.
2. Nutritive value of fruits.
3. Area and production of India and Andhra Pradesh.
4. Export and import potential of fruits in India. Constraints in fruit production and remedies to overcome them.

Unit – 2 : Tropical Fruit Crops **12 Hrs.**

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following tropical fruit crops:

(a) Mango (b) Guava and (c) Papaya

Unit – 3 : Sub-tropical and temperate fruit crops **12 Hrs.**

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following sub-tropical and temperate fruit crops:

(a) Grapes (b) Pomegranate (c) Citrus and (d) Apple

Unit – 4 : Arid and minor fruit crops **12 Hrs.**

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, inter cropping, harvesting and yield, diseases and pests of the following arid fruit crops:

(a) Amla (b) Dates and (c) Wood apple

Unit – 5 : Management practices for fruit crops **12 Hrs.**

1. Sustainable Production Practices for Local Fruit Production.
2. Integrated Orchard Management/Principles of IPM.
3. Harvesting and Labor Concerns
4. Grading, packing, storage and marketing of fruits.

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Practical syllabus of Horticulture Core Course – 4
Basics of Fruit Science (Pomology)
(Total hours of teaching – 30 @ 02 Hrs./Week)

1. Study of varieties of Mango, Papaya and Guava.
2. Study of varieties of Grape, Pomegranate, Citrus and Apple.
3. Study of varieties of Amla, Dates and Wood apple.
4. Manure and fertilizer application including biofertilizers in different fruit crops.
5. Methods of application, calculation of the required quantity of manure and fertilizers based on the nutrient content.
6. Use of growth regulators in fruit crops.
7. Identification and collection of important pests in fruit crops.
8. Identification and collection of important diseases in fruit crops and herbarium preparation.
9. Visit to a local fruit market/commercial orchard.

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Model Question Paper for Practical Examination

Horticulture Core Course - 4

Basics of Fruit Science (Pomology)

Max. Time: 3 Hrs. Max. Marks: 50

1. Describing cultivation practice for a fruit crop. **10 M**
2. Identification with remarks on Mango/ Guava/Papaya variety. **5 M**
3. Identification with remarks Grape/Pomegranate/Citrus/Apple variety. **5 M**
4. Identification with remarks Amla, Dates and Wood apple. **5 M**
5. Identify the disease and pest symptoms and write its causal organism.

   2 x 5 = **10 M**
6. Record + Viva Voice 10 + 5 = **15 M**

Text books :

- **Chattopadhyay, T.K. 1997.** Text book on Pomology (Fundamentals of fruit growing), Kalyani Publishers, Hyderabad.
- **Chundawat, B.S. 1990.** Arid Fruit Culture, Oxford and IBH, New Delhi.
- **Gourley J H 2009.** Text book of Pomology, Read Books Publ., Canada

Suggested co-curricular activities for Horticulture Core Course - 4 in Semester- IV :

A. Measurable :

a. Student seminars:

1. Nutritional value of fruits growing in India and Andhra Pradesh
2. Production technology of major tropical fruit crops
3. Production technology of major tubtropical and temperate fruit crops
4. Production technology of major arid and minor fruit crops
5. Special intercultural operations in fruit crops
6. Intercropping in fruit crops.
7. Methods of irrigation of fruit crops.
8. Methods of fertilizer application of fruit crops.
9. Major pests and diseases of fruit crops and their management.
10. Maturity and harvesting indices of fruit crops.
11. Principles of Integrated Orchard Management (IOM).

b. Student Study Projects:

1. A report on vegetable crops in a locality.
2. Collection and preparation of herbarium of fruit crops in their area.
3. A report on various inter-culture practices for a fruit crop.
4. Study report on nutritional disorders of fruit crops in a locality.
5. Study report on diseases of fruit crops in a locality.
6. A report on use of fertilizers, pesticides, herbicides and PGRs for local fruit crops.
7. A report on harvest to marketing for a fruit crop.
8. Report on economics of a fruit crop in their locality.
9. A study report on different methods of irrigation of fruit crops in a locality.

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/ Commercial Orchard.

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Horticulture Core Course - 5
Pests and Diseases of Horticulture Plants and their Management
(Total hours of teaching – 60 @ 04 Hrs./Week)

Theory :

Learning Outcomes: On successful completion of this course, the students will be ableto:

- Develop a critical understanding of insect pests and plant disease symptoms.
- Examine and identify the pests and diseases of vegetable crops and their management
- Examine and identify the pests and diseases of ornamental crops and their management
- Examine and identify the pests and diseases of fruit crops and their management
- Identify and classify various insect pests on horticulture plants.
- Justify the significance of Integrated Plant Disease Management for horticultural crops.
- Classify the pesticides based on use, chemical nature, formulation, toxicity and action.

Unit – 1 :Basics of Entomology and Plant Pathology 12 Hrs.

1. Classification of Insects up to orders and families of economic importance; Study of insect pests (Distribution, host range, biology, nature of damage and management) in horticultural crops.
2. Disease triangle and disease pyramid; Plant Pathology : Definition
3. A general account on symptoms of plant diseases caused by Viruses and Bacteria.
4. A general account on symptoms of plant diseases caused by Fungi.

Unit – 2 :Pests and diseases of Vegetables crops 12 Hrs.

1. Bhendi : Spotted boll worms, Red cotton bug, Yellow vein mosaic.
2. Cucurbits : Fruit flies, Pumpkin beetles; Downy and powdery mildews.
3. Potato : Potato tuber moth, Golden cyst nematode; Late blight.
4. Sweet Potato : Sweet potato weevil, Vine borer; Mottled necrosis.

Unit – 3 :Pests and diseases of Fruit crops 12 Hrs.

1. Coconut :.Rhinoceros beetle, Burrowing nematode; Ganoderma root rot, Grey blight
2. Banana : Banana weevil, banana aphids; Panama wilt. Bunchy top
3. Cashew : Tea mosquito bug. Cashew stem borer; Anthracnose, 2.Pink disease
4. Custard apple : Mealy bug, Fruit boring caterpillar; Anthracnose, Glomerella fruit rots.

Unit – 3 :Pests and diseases of Commercial Flower crops **12 Hrs.**

1. Rose : Rose aphid,Dieback, and black spot
2. Marigold : Aphids, leaf spot, and bud rot
3. Gerbera : Thrips, white flies and Blossom blight
4. Gladiolus :Cut worms, leaf eating caterpillar and corm rot.

Unit – 4 :Management of Pests and Diseases **12 Hrs.**

1. Principles and methods of plant disease management.
2. Integrated Plant disease management.
3. Fungicides classification based on chemical nature; commonly used insecticides, fungicides, bactericides and nematicides.
4. Preparation of fungicidal solutions, slurries, pastes and their application.

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Practical syllabus of Horticulture Core Course – 5
Pests and Diseases of Horticulture Plants and their Management
(Total hours of teaching – 30 @ 02Hrs./Week)

1. Study of characteristics of insect pests, microbial pathogens, nematodes causing diseases on different plants given in the theory syllabus.
2. Identification of disease symptoms on different plants given in the theory syllabus.
3. Observing and acquiring knowledge on pesticides, fungicides etc.,
4. Acquaintance with methods of application of common fungicides.
5. Field visit and acquaintance with disease of crops

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Model Question Paper for Practical Examination
Horticulture Core Course - 5
Pests and Diseases of Horticulture Plants and their Management

Max. Time: 3 Hrs. Max. Marks: 50

1. Identify and comment on insect diseases A & B 2 x 5 = **10 M**
2. Identify and comment on microbial diseases C & D 2 x 5 = **10 M**
3. Identify and comment on nematodal diseases E & F 2 x 5 = **10 M**
4. Identify and comment on Pesticide/ Fungicides G & H2 × 4 = **6 M**
5. Record + Herbarium + Viva Voice 10 + 4= **14 M**

Text books :

- **Verma L R and R C Sharma 1999.** Diseases of Horticultural Crops – Fruits, Indus Publishing, New Delhi.
- Diseses of Horticulture Crops and their management, TNAU Publ. Agrimoon.Com
- **Jagatap G P, D N Dhutraj and Utpal Dey. 2001.** Diseases of Horticultural crops and their management, Agrobios Publications

Suggested co-curricular activities for Semester- V :

A. Measurable :

a. Student seminars :

1. Disease symptoms and their management of vegetable crops
2. Disease symptoms and their management of ornamental crops
3. Disease symptoms and their management of fruit crops
4. Disease symptoms of nematode and their management in horticultural crops
5. Role of Integrated Pest Management (IPM) in horticultural crops
6. Role of Integrated Disease Management (IDM) in horticultural crops
7. Classification of insecticides
8. Classification of fungicides

b. Student Study Projects:

1. Identification and herbarium preparation of disease symptoms of vegetable crops
2. Identification and herbarium preparation of disease symptoms of ornamental crops.
3. Identification and herbarium preparation of disease symptoms of fruit crops

4. Preparation of laminated photos of major diseases of horticultural crops
5. Preparation of laminated photos of major fungicides used in horticultural crops
6. Preparation of laminated photos of major insecticides used in horticultural crops

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/Horticultural fields.
3. Visit to Pesticide industries/shops.

RECOMMENDED ASSESSMENT OF STUDENTS:

Recommended continuous assessment methods for all courses:

Some of the following suggested assessment methodologies could be adopted. Formal assessment for awarding marks for Internal Assessment in theory.

(a) Formal:

1. The oral and written examinations (Scheduled and surprise tests),
2. Simple, medium and Critical Assignments and Problem-solving exercises,
3. Practical assignments and laboratory reports,
4. Assessment of practical skills,
5. Individual and group project reports,
6. Seminar presentations,
7. Viva voce interviews.

(b) Informal:

1. Computerized adaptive testing, literature surveys and evaluations,
2. Peers and self-assessment, outputs form individual and collaborative work
3. Closed-book and open-book tests,

Common pattern for Question Paper for Theory Examination(s) at Semester end

Max. Time : 3 Hrs. Max. Marks : 75 M

Section – A

Answer all the following questions. 5 x 2 = 10 M

- ✓ One question should be given from each Unit in the syllabus.

Section – B

Answer any <u>three</u> of the following questions. Draw a labeled diagram wherever necessary

3 x 5 = 15 M

- ✓ One question should be given from each Unit in the syllabus.

Section – C

Answer any <u>five</u> of the following questions. Draw a labeled diagram wherever necessary

5 x 10 = 50 M

- ✓ Two questions (a & b) are to be given from each Unit in the syllabus (internal choice in each unit). Student has to answer 5 questions by choosing one from a set of questions given from a Unit.

Note : Questions should be framed in such a way to test the understanding, analytical and creative skills of the students. All the questions should be given within the frame work of the syllabus prescribed.

Annexure

<u>Objectives and General Outcomes of Programme and Domain Subject</u>

Programme (B.Sc.) Objectives: The objectives of bachelor's degree programme with Horticulture are:

1. To provide a through insight on various aspects related to Horticulture.
2. To inculcate a sound knowledge on latest developments in the field of Horticulture with a practical approach.
3. To produce a student who thinks independently, critically and discuss various aspects of Horticulture.
4. To enable the graduate to prepare and pass through various examinations related to the domain subject.
5. To empower the student to become an employee or an entrepreneur in the field of Horticulture and to serve the nation.

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Programme Outcomes :

1. Understand the basic concepts of Horticulture in relation to its allied core courses.
2. Distinguish the importance of various horticultural plants for the welfare of humans.
3. Demonstrate simple experiments related to plant sciences, analyze data, and interpret them with the theoretical knowledge.
4. Work in teams with enhanced inter-personal skills and hence develop the critical thinking with scientific temper.
5. Effectively communicate scientific ideas both orally and in writing.
6. Realize the potential of the horticulture to become an entrepreneur – self employment.

Domain Subject (Horticulture) Objectives :

1. To create awareness on various branches of Horticulture and basic aspects of soil science.
2. To teach various methods of plant propagation and imparting skills for establishment of a nursery.
3. To provide in depth knowledge on cultivation of different vegetable plants by inculcating both theoretical and practical aspects.
4. To provide a practical experience on cultivation of different fruit plants with sound theoretical background.
5. To give sufficient knowledge on pests and diseases of horticulture plants and measures to control the same.

Domain Subject (Horticulture) Outcomes:

1. Students will be able to design, execute the establishment and manage orchards and horticulture gardens.
2. Students will be able to propagate plants through sexual/vegetative methods and may establish a nursery of their own.
3. Students will be able test the suitability of various soils for cultivation of horticulture plants.
4. Students will be able to discuss various aspects related to cultivation of vegetable plants.
5. Students will be able discuss various aspects related to cultivation of fruit plants.
6. Students will be able to examine, identify and control different pests and diseases of horticulture plants.
7. Students will think independently and may become an employ in the said sector or may become an entrepreneur by taking up cultivation of horticulture crops.