B.Sc., SEMESTER – II

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language English	100	25	75	4	3
2	Second Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
3	*Foundation course - 3* Environmental Sci	50	0	50	2	2
4	*Foundation course – 4A* ICT – 1 (Information & Communication Technol)	50	0	50	2	2
5	DSC* 1 B (Group Sub- 1)	100	25	75	4	3
6	DSC 1 B Lab Practical	50	0	50	2	2
7	DSC 2 B (Group Sub- 2)	100	25	75	4	3
8	DSC 2 B Lab Practical	50	0	50	2	2
9	DSC 3 B (Group Sub- 3)	100	25	75	4	3
10	DSC 3 B Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

B.Sc (Horticulture) Semester II
Paper II: Postharvest Technology Of Horticultural Crops
Theory

Unit I

Importance of Postharvest handling.
Maturity and maturity indices of Horticultural crops.
Harvesting methods of Horticultural crops.
Factors responsible for maturity, ripening and deterioration of Horticultural crops.
Preharvest factors: Selection of varieties, Cultural operations, Preharvest treatment Maturity and Harvesting.

Unit II

Postharvest factors: Curing, degreening, precooling, washing and drying, storing and grading, disinfestations, Postharvest treatments and Waxing.
Physiological and Biochemical changes during ripening.
Harvesting of horticultural crops: Manual and Mechanical methods of harvesting.
Methods used for hastening and delaying ripening: Chemicals that hasten ripening and chemicals that delay ripening.
Ethylene in Postharvest technology.

Unit III

Respiration and transpiration in relation to harvesting, packing, transportation and storage.
Nature and causes of deterioration: a) Primary causes of losses– i) Mechanical losses, ii)Physio-biochemical losses, iii)Microbial losses, iv)Physical losses.
Secondary causes of losses.
Impact of postharvest losses.
Technologies for minimizing losses .
Methods of precooling, grading, packaging, storage and transport of horticultural crops.

Unit IV

Principles and method of preservation: Preservation by asepsis, high temperature, low temperature, chemicals, drying, filtration, carbonation, sugar, salt, fermentation, acids, oil and spices, antibiotics, irradiation.
Canning and bottling of fruits and vegetables.
Causes for spoilage of canned foods.
Unfermented fruit beverages: Preparation and preservation of unfermented fruit beverages–Juices, RTS, Nectar, Cordial, Squash, Syrup, Fruit juice concentrate, Crush.

Unit V

Fermented fruit beverage: Different types of wine preparation.
Jams, jellies and Marmalades – Procedure for preparation.
Preservation by sugar: Candies, Crystallized fruits, Preservation, procedure for preparation.

Preservation by salt: Pickles.
Food laws.

Practicals

1 Visit to a commercial nurseries in the locality and adjoining areas.
2 Microscopic studies on foliar diseases of horticultural crops.
3 Practice in judging the maturity indices of fruits and vegetables.
4 Preparation of juices and squashes.
5 Preparation of jam and jelly.
6 Preparation of ketchup and sauce.
7 Preparation of pickles.

Reference Books:

1 Postharvest Technology of Fruits and Vegetables, Thompson, A.K1996. Blackwell science, London.
2 Principles and Practice of Postharvest Technology, Pandey, P.H. 1998. Kalyani Publisher, Ludhiana.
3 Postharvest Technology of Horticultural Crops, Sudheer, K.P. 2007. New India Publishing Agency, New Delhi.
4 Fruit and Vegetable Preservation Principles Practice, Srivastava, R.P. and Sanjeev Kumar 1998. International Book Distribution Co., Lucknow .
5 Preservation of Fruits and Vegetables. Girdharilal, G. S., Siddappa and Tandon, G.L. 1998. ICAR, New Delhi.
6 A Handbook on Postharvest Management of Fruits & Vegetables, P.Jacob John 2008. Baya publishing House, Delhi.
7 Postharvest–An Introduction to the Physiology & Handling of Fruits & Vegetables, R.B.H. Wills, W.B.Mc Glassan, D. Graham, T.H. Lee & E.G. Hall. CBS Publishers & Distributors, New Delhi .
8 Small–scale Postharvest Technology, Kitinoja, L& Kader, A.A. 2002. Research and Information Center, University of California , Davis.

B.Sc., SEMESTER – III

SEMESTER – III

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language English	100	25	75	4	3
2	Second Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
3	*Foundation Course - 5* Entrepreneurship	50	0	50	2	2
4	*Foundation course -2B* Communication & Soft Skills -2	50	0	50	2	2
5	DSC 1 C (Group Sub- 1)	100	25	75	4	3
6	DSC 1 C Practical	50	0	50	2	2
7	DSC 2 C (Group Sub- 2)	100	25	75	4	3
8	DSC 2 C Practical	50	0	50	2	2
9	DSC 3 C (Group Sub- 3)	100	25	75	4	3
10	DSC 3 C Practical	50	0	50	2	2
	Total	750	-	-	30	25

B.Sc (HORTICULTURE) SEMESTER – III
Paper III – PRODUCTION TECHNOLOGY OF FRUIT CROPS
Theory syllabus

Unit I: Introduction to Fruit Crops

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

Unit II: Cultivation practices of tropical fruit crops

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:
Mango
Banana
Citrus
Guava
Papaya

Unit III: Cultivation practices of sub-tropical and temperate fruit crops

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:
Grapes
Pomegranate
Apple
Pear

Cultivation practices of arid and minor fruit crops:
Unit IV

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:
Amla
Ber
Tamarind

Unit V

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 minor fruit crops:

Jamun

Bael

Wood apple

Practicals

1. Study of varieties of Mango and Banana.
2. Study of varieties of Grape and Citrus.
3. Study of varieties of Papaya, Sopata and Guava.
4. Manure and fertilizer application including biofertilizers in different fruit crops (Methods of application, calculation of the required quantity of manure and fertilizers based on the nutrient content).
5. Study of varieties of Pomegranate, Custard apple and Ber
6. Study of varieties of Apple.
7. Study of varieties of minor fruit crops
8. Use of growth regulators in fruit crops.
9. Identification and collection of important pests in fruit crops.
10. Identification and collection of important diseases in fruit crops and Herbarium preparation.
11. Visit to a fruit market/commercial orchids

Reference Books:

1. Text book on Pomology (Fundamentals of fruit growing), Chattopadhyay, T.K.1997. Kalyani Publishers, Hyderabad.
2. Citriculture, Rajput, C.B.S. and Srihari Babu, R. 1958. Kalyani Publishers, New Delhi.
3. Banana, Simmonds, 1966 II Edition. Longman, London.
4. Arid Fruit Culture, Chundawat, B.S. 1990. Oxford and IBH, New Delhi.

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B.Sc., SEMESTER – IV

SEMESTER – IV

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours**	Credits
1	*Foundation Course – 2C** Communication & Soft Skills -3	50	0	50	2	2
2	*Foundation Course – 6** Analytical Skills	50	0	50	2	2
3	*Foundation Course - 7* ** CE (Citizenship Education)	50	0	50	2	2
4	*Foundation course – 4B* ICT – 2 (Information & Communication Technol)	50	0	50	2	2
5	DSC 1 D (Group Sub- 1)	100	25	75	4	3
6	DSC 1 D Lab Practical	50	0	50	2	2
7	DSC 2 D (Group Sub- 2)	100	25	75	4	3
8	DSC 2 D Lab Practical	50	0	50	2	2
9	DSC 3 D (Group Sub- 3)	100	25	75	4	3
10	DSC 3 D Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

*To be taught by English Teachers (and partly by Maths/Stat Teachers)
** To be taught by Telugu Teachers

B.Sc (HORTICULTURE) SEMESTER – IV
Paper IV– PRODUCTION TECHNOLOGY OF VEGETABLE CROPS
Theory syllabus

Unit I
Olericulture definition.
Importance of vegetables in human nutrition and national economy.
Types of vegetable gardens.
Classification of vegetables based on botany, plant part used as vegetables, seasons of growing and methods of culture.

Unit II
Origin, Taxonomy, importance, growth habits (wherever applicable), varieties, climate and soil, nursery raising, transplanting, spacing, manuring, irrigation, inter cultivation, harvesting, different stages of maturity, physiological disorders, causes and control and yield of the following tropical vegetables:
Tomato, Brinjal.
Chilli, Okra.
Gourds: Bottle gourd, Snake gourd, Bitter gourd and Ash gourd.

Unit III:
Importance, botany, climate and soil, varieties, cultivation, pruning and training, manuring and fertilization, intercultural operations, irrigation, harvesting and postharvest management :
Water melon and Musk melon.
Onion.
Beans & Pea: French bean, Cluster bean, Cow pea, Dolichos bean and Pea.

Unit IV
Importance, Botany, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, harvesting and yield of following crops:
Tuber crops: Colocasia, Elephant foot yam and Dioscorea.
Root tubers: Sweet Potato, Tapioca .
Root crops : Carrot, Radish, Turnip and Beet root.

Unit V
Importance, botany, climate and soil, sowing, manuring, irrigation, intercultural operations, harvesting and postharvest management :
Cole Crops: Cabbage, Cauliflower, Knoll-knol.
Leafy vegetables: Amaranthus, Palak, Gogu.
Perennial vegetables: Coccinia, Curry leaf and Drumstick.

Practicals

1. Nursery bed preparation and management/ Preparation of field for sowing/transplanting.
2. Pre sowing seed treatments in vegetable crops (Cold water/ Hot water/ Acid/ Chilling)
3. Identification and description of tomato, brinjal and chilli varieties.
4. Identification and description of okra, gourds and melon varieties.
5. Visit to farmer's field.
6. Visit to a Vegetable Research Station.
7. Identification and description of bulb crops – Onion.
8. Identification and Description of beans and peas varieties.
9. Identification and description of tuber crops/ root tuber and root crop varieties.
10. Identification and description of leafy vegetable and perennial vegetable varieties.
11. Preparation of vegetables for marketing (cleaning, trimming, washing, sorting, grading, stocking and bundling)
12. Calculation of cost of cultivation for important vegetable crops and project preparation of commercial cultivation.
13. Study of irrigation (furrow/ sprinkler/ drip) methods in vegetable crops.
14. Identification of physiological, nutritional disorders and their corrections in vegetable crops.
15. Preparation of seed herbaria and herbaria of vegetable crops.

Reference Books:

1. Vegetables Crops, Bose, T.K *et al,* 2003. Naya Udyog Publishers, Kolkata.
2. Production Technology of Vegetable Crops. Shanmugavelu, K.G.1989. Oxford & IBH Publishing Co. PVt.Ltd,. New Delhi.
3. Vegetables. Choudhury, B. (ICAR), 1990 8th edition. National Book Trust, New Delhi
4. Modern Vegetable Varieties and Production, Singh, D.K.2007. IBN Publishers Technology International Book Distributing Co., Lucknow.
5. Vegetables for the Tropical Region, Premnath, Sundari Velayudhan and Sing, D.P. 1987. ICAR, New Delhi.