SEMESTER 1st

Course No. H/HORT- 111

Title: Fundamentals of Horticulture **Credits: 3 (2+1)**

Lesson No.	Topics	Marks
1 & 2	Economics, importance, area and production of Horticultural crops	10
3	Export-import scenario of Horticultural crops	5
4	Classification of Horticultural crops	10
5	Agroclimatic zones of India for fruits and vegetables cultivation	5
6 & 7	Soil and climatic requirements of Horticultural crops	10
8	Vegetable gardens-Nutrition, garden, kitchen garden and types	10
9	Ornamental gardens	5
10	Selection of site for establishing orchard.	10
11 & 12	Layout and planting of an orchard	10
13 & 14	Planting systems and planting densities	10
15 & 16	Management of orchards	10
17 & 18	Special horticultural practices	10
19 & 20	Principles and methods of training and pruning of fruit crops	10
21 & 22	Classification of bio-regulators and their uses in Horticulture	10
23 & 24	Water management, weed management, mulching and nutritional management of Horticultural crops	5
25 & 26	Cropping systems-inter cropping, mixed cropping, mixed farming and multistoried cropping	10
27	Bearing habits in fruit crops	5
28 & 29	Fruitfulness, unfruitfulness; factors affecting unfruitfulness and remedies	10
30	Rejuvenation methods- top working, crown working, bridge grafting, etc	10
31	Canopy management of fruit crops	5
32	Organic farming — Definition and principles	5

SEMESTER - II

Course No. H/HORT -122

Title: Plant Propagation and Nursery Management **Credits: 3 (2+1)**

Lesson No.	Topics	Marks
1	Propagation: Definition and potentialities for plant multiplication	10
2 & 3	Sexual and asexual methods of propagation their advantages and disadvantages, different methods for breaking dormancy	10
4 & 5	Seed dormancy internal and external factors affecting seed dormancy different seed treatments	10
6, 7 & 8	Apomixis, monoembrony, polyembrony, chimera etc.	10
9, 10 & 11	Propagation Structures:- Mist chamber, humidifiers, greenhouses, glasshouses, cold frames, hot beds, poly houses, etc	10
12 & 13	Use of growth regulators in (seed, vegetables, tissue culture) propagation	10
14 to 20	Methods and techniques of vegetative propagation - cuttings, layering, grafting and budding, Physiological and bio chemical basis of rooting, factors influencing rooting of cuttings and layering, factors affecting grafting, graft incompatibility. Anatomical studies of bud union	10
21 to 23	Selection and maintaince of mother trees. Collection, storage and transport of scion sticks, scion and root stock relationship	10
24	Bud wood certification	10
25	Techniques of propagation through specialized organs, such as bulbs, tubers, rhizomes, corms, runners. Suckers, etc.	10
26 & 27	Micro propagation, hardening of plants in nursery	10
28 to 30	Selection of site for nursery. Features of nursery. Nursery registration act.	10
31 & 32	Plant protection in nursery management.	5

SEMESTER- III

Course No. : H/VS-231

Course title : Tropical and Sub-Tropical Vegetable **Credits : 3(2+1)**

Lesson plan -Theory

Lecture No.	Topic
1	Introduction, scope and importance of vegetable and tuber crops
2	Area, production, economic importance and export potential of tropical and subtropical vegetables and tuber crops
3	Types of vegetable farming
4-9	Production technology of vegetable crops Viz. Fruit vegetables: Tomato, Brinjal, Chilli, Okra, Capsicum
10-16	Cucurbits: Pumpkin, Cucumber, Bottle gourd, bitter gourd, ridge gourd, sponge gourd, water melon, and musk melon
17-20	Beans: French bean, Cluster bean, Cow pea, Dolichus bean
21	Leafy vegetables: Amaranthus
22-27	Tuber crops- sweet potato, colocasia, dioscoria, Amarpophyllus, xanthosoma, tapioca
28-29	Perennial vegetables: Moringa, Curry leaf, Agathi
30-31	Physiological disorders in vegetable crops
32	Physiological disorders in vegetable crops

Semester - IV

Course No. : H/FS — 243 Course title : Arid Fruit Crops Lesson Dian - Theory:

Sr. No .	Course No	Course Title	Credits 2+1=3.
1	H/FS — 242	Breeding of fruit and plantation crops	2+1=3
2	H/FS — 243	Arid fruit crops	1+1=2
3	H/VS — 242	Temperate Vegetables	1+1=2
4	H/FL — 243	Commercial Floriculture	2+1=3
5	H/AGRO — 243	Organic Farming	1+1=2
6	H/PATH — 243	Diseases of fruit, Plantation, Medicinal and Aromatic Crops	2+1=3
7	H/AROMED — 241	Aromatic and Medicinal plants	1+1=2
8	H/SSAC — 244	Soil Irrigation water and plant analysis	0+1=1
9	H/ECON — 242	Horti - Business Management	2+0=2

Semester- v

Course title : Temperate Fruits and plantation crops

Course No- HFS-354

Sr.no.	Topics	Marks
1.	Propagation of temperate fruits. Apple, Pear, Plum and Peach	
2.	Propagation of Nuts, Almond, Walnut, Pecan nut	
3.	Planting of important temperate fruits planting systems and season of planting	
4.	Planting of important.nut crops, planting systems and season of planting	
5.	Description of varieties of Apple, Pear, Plum and Peach	
6.	Description of varieties of Apricot, Almond, Walnut and cherry	
7.	Training, pruning in temperate fruit crops	
8.	Manuring and fertilizer application to temperate fruit crops	
9.	Preparationsand use of growth regulators in temperate fruit crops and working economics of important temperate fruit crops viz. Apple, Pear, Plum and Peach	
10.	Propagation of Coconut and Areca nut. Selection of mother palms and seednut. and layout of nurse of Coconut and Areca nut.	
11.	Description of varieties of Coconut and Areca nut.	
12.	Layout and planting of Coconut and Areca nut, Oil palm and Cashew nut,Cocoa gardens.	
13.	Description of varieties and species of Coffee and sowing of Coffee.	
14.	Harvesting and processing of Coffee.	
15.	Propagation in Cashew nut, rejuvenation of Cashew nut and tea	
16.	Working out the Economics and project preparation for CoconutlArecanutlOil palm/Cashew nut/Cocoa	

Course No. : H/ BIOT-361 1+1=2			
Sr. No.	**Topic**	**Sub topics**	**Marks**
1	History, scope and importance of biotechnology Biotechnology	definition, Scientists contribution and applications of biotechnology	6
2	Organogenesis and effect of plant growth regulators	Totipotency, dedifferentiation and re-differentiation, direct and indirect Organogenesis, caulogenesis, rhizogenesis, primordia,	6
3	Effect of plant growth regulators	Effect of plant growth regulators on shooting and rooting, Skoog and Miller hypothesis, auxin to cytokinin ratio	6
4	Callus culture	Callus culture, types of callus and applications of callus culture	7
5	Somatic embryogenesis and artificial seeds	Zygotic and non zygotic embryogenesis, artificial seeds; hydrogels, alginate method, applications and limitation.	7
6	Suspension culture and secondary metabolites	Suspension culture, growth curve, open and closed culture, chemostat, turbidostat, callus culture Vs Suspension culture, secondary metabolites, importance and examples	6
7	Micropropagation,	Micropropagation, stages; shooting, rooting; acclimatization and hardening, applications, advantages and disadvantages	6
8	Meristem culture and production of disease free plants	Meristem culture, methods for producing virus free plants, thermotherapy, chemotherapy, micro grafting, virus indexing	6
9	Anther and pollen culture	Anther and pollen culture, production of haploids, technique, advantages and limitations, applications	6
10	Embryo culture and embryo rescue technique	Embryo culture, mature and mil-nature, embryo rescue technique and its applications	6
11	Somaclonal variation	Schemes for obtaining somaclonal variation, factors affecting somaclonal variation, Applications, somaclonal Vs gametoclonal Variation	6
12	Protoplast isolation methods and protoplast culture	protoplast isolation methods and protoplast culture mechanical and enzymatic, viability of protoplast, regeneration of protoplast and culture of protoplasts-liquid culture, liquid droplet, hanging drop, feeder layer, co culturing	6
13	Protoplast fusion,, somatic hybridization and cybridization	Somatic hybridization and Methods of protoplast fusion-Spontaneous, induced, fusogen, sodium nitrate, calcium with high pH, PEG, Electrofusion method, mechanism of fusion, cybridization approaches to achieve cybridization iodoacetate,, gamma or X-rays, enucleation, applications of cybridization, selection, verification and	6