SARDAR PATEL UNIVERSITY
Programme: MSC (Botany)
Semester: IV
Syllabus with effect from: June 2011

Paper Code: PS04EBOT02	**Total Credits: 4**
Title Of Paper: Horticulture	

Unit	Description in detail	Weightage (%)
1	Fundamentals of horticulture (History, nature and scope of horticulture) Origin of Horticulture – Domestication of plants, definitions –scope and impact of horticulture (importance of horticulture in terms of economy, production and employment generation classification of horticultural crops) – pomology, olericulture, spices and planting, ornamental horticulture – climatic zones of India and Gujarat in relation to horticulture – development of horticulture in India - Divisions of horticulture and their importance (Horticultural zones of India and Gujarat) – nutritive value and nutra-ceutical properties of horticultural crops	
2	Factors influencing horticultural crop production Growth and development – respiration – photosynthesis – seed physiology – dormancy and germination – physiology of flowering, pollination, fruitset, fruit ripening and senescence – factors influencing growth and development – soil, light, temperature, rainfall, humidity, wind. Role of plant growth regulators in seed and bud dormancy, juvenility, maturity and senescence, flowering, pollination, fruitset including parthenocarpy, fruit growth, fruit drop and fruit ripening (climacteric and non-climacteric) and fruit colour development, tuber and bulb formation and sex expression and extension of shelf life in fruits, vegetables and flowers. Role of growth regulators in plant propagation. Nutrition of horticultural crops – assessment of nutritional requirements based on soil, tissue analysis, and field experiments. Id entification of deficiency symptoms of various nutrients and methods of nutrient application. Assessment of irrigation requirements for different horticultural crops and different methods of irrigation. Pruning and training, their objectives and methods. Pollination and fruit set, problems and requirements, flower and fruit drop, stages, causes and remedial measures. Fruit thinning, objectives, advantages and disadvantages. Unfruitfulness, reasons and remedial measures.	
3	Methods of propagation of horticultural crops - Introduction, principles and classification of plant propagation methods: Propagation – definitions – seed propagation – merits and demerits – crops propagated through seeds – Factors affecting seed germination and pre-germination treatments and viability tests–vegetative propagation – merits and demerits – cutting, layering, grafting and budding rootstock influence – stock / scion relationship – specialized structures for propagation – micro - propagation, Importance of micro propagation of plants. Role of	

	growth regulators in propagation.	
4	Method of production and cultivation Definition and nature of growth of fruits, vegetables, spices, plantation and flower crops – system of cultivation and planting systems including HDP for fruits, vegetables, spices and plantation and flower crops – intercultural operations – weed, water and fertilizer management – bearing habits – crop regulatory practices for fruit crops and vegetables – training, pruning, canopy management – off season production in fruits, vegetables and flower crops – protected cultivation - Principles of protected cultivation, Structure and types of green houses, Regulation of controlled environment (RH, temperature and ventilation) and nutrient management. High-tech nursery raising technology, Production technology of high value vegetables like Tomato, Capsicum, Cucumber and flowers viz. Rose, Carnation, Gerbera, Lilium, Chrysanthemum. Soil and media, Plant protection, harvesting, grading and packaging. Importance, scope and practicing of organic farming in horticultural crop production.	
5	Pre and Post – harvest operations and Technologies of horticultural crops Crop loading – pre-harvest operations – maturity indices – harvesting methods for climacteric and non-climacteric fruits – grading – sorting – standards for domestic and export consumption (HACCP) – packing – pre-cooling – storage –transport – quarantine and regulatory measures.	

Basic Text & Reference Books:

- Adams, C.R. and M. P. Early. 2004. Principles of horticulture. Butterworth Heinemam, Oxford University Press.
- Chadha, K.L. 2001, Handbook of Horticulture, ICAR, New Delhi.
- Chandra, R. and M. Mishra. 2003. Micropropagation of horticultural crops. International Book Distributing Co., Lucknow.
- Chattopadhyaya, P.K.2001. A text book on Pomology (Fundamentals of fruit growing) Kalyani Publication, New Delhi
- Christopher, E.P. 2001. Introductory Horticulture, Biotech Books, New Delhi
- Edmond, J.B. T.L.Senn, F.S. Andrews and P.G.Halfacre, 1975. Fundamentals of Horticulture, Tata MC. Graw Hill Publishing Co. New Delhi
- George Acquaah, 2002, Horticulture-principles and practices. Prentice-Half of India pvt. Ltd., New Delhi.
- Hartman, H.T. and Kester, D.E. 1986. Plant propagation –Principles and Practices – Prentice Hall of India Ltd., New Delhi.
- Jitendra Singh. 2006. Basic Horticulture. Kalyani Publishers, New Delhi.
- Kumar, N.1997. Introduction to Horticulture, Rajalakshmi Publication, Nagercoil.
- Rajan, S. and B.L. Markose. 2007. Propagation of horticultural crops. New India Publishing, New Delhi.
- Shanmugavelu, K.G., N. Kumar and K.V. Peter. 2005. Production technology of spices and plantation crops. Agrobios, Jodhpur.
- Singh, N.P. 2005. Basic concepts of fruit science. International Book Distributing Co., Lucknow.
- Surendra Prasad and U. Kumar. 1999. Principles of horticulture, Agro-botanica, Bikaner, India.