M.Sc. COURSES

Curriculum for the Degree of Master of Science in *Horticultural Science*

COURSE CODE	COURSE TITLE	CREDITS
Semester I (Fall)		
36-14-524	Plant Growth Regulators	3
36-14-546	Plant Nutrition in Horticulture	3
36-14-541	Advanced Postharvest Physiology	3
90-10502-36	Seminar I	1
Semester II (Spring)		
36-14-540	Micropropagation of Horticultural Crops	3
36-14-525	Physiology of Plants under Stress	3
36-14-542	Physiology of Fruit Trees	3
Semester III (Fall)		
36-14-544	Special Topics in Vegetable Crops Production	3
36-14-543	Greenhouse and Nursery Management	2
--	M.Sc. Thesis	6

GRADUATE COURSE DESCRIPTION

36-14-524 Plant Growth Regulators 3 Cr.

Introduction, historical aspects and fundamental terms, recognition, extraction, purification, quantification, chemistry, biological effects, mechanism of action and application of Auxins, Gibberellins, Cytokinins, Ethylene, Abscisic acid, Brassionostroids, Salysilates, Jasmonates and Polyamines.

36-14-525 Physiology of Plants under Stress 3 Cr.

Introduction, plant and water, plant processes under stress, growth and development, water stress, temperature stress, salt stress.

36-14-540 Micropropagation of Horticultural Crops 3 Cr.

Introduction: Definitions, history, applications of micropropagation in Horticulture. Principles and Methodology: The concept of totipotency of cells, general principles of plant tissue culture as applied to micropropagation, organization of laboratory design and construction, laboratory equipment and supplies, media components, media preparation. Micropropagation: Relative merits and drawbacks, developmental stages of micropropagation, methods of micropropagation and their, acclimatzation of micropropagated plants, Micrografting. Microcutting. Organogenesis and morpho- genesis: Organogenesis process, callus tissue and organo genesis, growth induction and morphogenesis, Somatic embryogenesis: Zygotic embryogenesis, synthetic seed technology. Protoplast technology, Somaclonal variation: Epigenetic variation, applications of somaclonal variation. Production of pathogen-free plants. Bioreactor technology for plant micropropagation.

36-14-541 Advanced Postharvest Physiology 3 Cr.

Introduction, respiratory of horticultural products, biochemistry of fruit ripening, ethylene biosynthesis in fruit, controlling of ripening, controlling respiration in horticultural crops, hypobaric storage of fresh products, artificial ripening of fruits and vegetables, ethylene control in storage and package, postharvest treatments, physiological disorders, oxidative stress physiology modified atmosphere packing.

36-14-542 Physiology of Fruit Trees 3 Cr.

Introduction, influence of physiological science on orchard management, physiology and function of roots, seasonal cycle of deciduous fruit trees, photoassimilation production and distribution, source-sink relations, physiology of grafting and budding, rootstock-scion interaction, flowering and fruit set, fruit growth and development, flower and fruit thinning, alternate bearing, rest and dormancy, winter hardiness, aging and rejuvenation, apical dominance.

36-14-543 Greenhouse and Nursery Management 2 Cr.

Introduction, types of greenhouse, greenhouse site selection. designing and structure of greenhouse, environmental control, types of nurseries, production systems in nurseries, plant production systems, certified plants, transition, packing and marketing of nursery products, time management in greenhouse and nursery.

36-14-544 Special Topics in Vegetable Crops Production 3 Cr.

Introduction, New methods in vegetable production, hydroponics, greenhouse production of important vegetables, impact of environmental factors on vegetables, different growing media (eg. Soil, peats, straw, perlit, etc).

36-14-546 Plant Nutrition in Horticulture 3 Cr.

Introduction, history, definition and clarification of mineral nutrients, ion uptake mechanisms of roots, short- and long-distance transport in the xylem and phloem, functions of mineral nutrients on the quantity and quality of horticultural plants, determination of the fertilizer requirements, diagnosis of mineral deficiencies in plants, method and time of fertilizer application.

90-10502-36 Seminar 1 Cr.

Students undertake a research project under the supervision of their supervisor and the results preferably should be published in domestic or international journals and its report is presented to the department.