

College of Horticulture

Details of UG Courses and degree Programme of PG and Ph.D. outcome

Course offered

- B.Sc. (Hons.) Horticulture
- M.Sc. (Hort.) Vegetable Science
- M.Sc. (Hort.) Fruit Science
- M.Sc. (Hort.) Floriculture and Land Scape Architecture
- Ph.D. (Hort.) Vegetable Science
- Ph.D. (Hort.) Fruit Science
- Ph.D. (Hort.) Floriculture and Land Scape Architecture



1. B.Sc. (Hons.) Horticulture

Sl No.	Course Code	Name of Course	Credit Hrs	Outcome
1	HFS-111	Fundamentals of Horticulture	3 (2+1)	<ul style="list-style-type: none"> • To enable the students to apply various horticultural skills and knowledge in their career. • To identify and prescribe sustainable options in horticulture which benefit the environment while maintain productivity and economic viability
2	HFL-111	Principles of Landscape Architecture	2 (1+1)	<ul style="list-style-type: none"> • It helps in gaining knowledge of landscape architecture design practices and processes, design terms and techniques through discussion and studio work. • It develops understanding of form and its varieties by creating models, doing sketches and drawings and completing design projects.

3	HBS-111	Introductory Crop Physiology	2 (1+1)	<ul style="list-style-type: none"> • It explains the plant hormones and their roles in plant development. They also explain the structure and properties of each plant hormones. • It explains the different mechanism in plant growth and development. • Its explains how plants achieve water balance.
	HNM-111	Fundamental of Soil Science	2 (1+1)	<ul style="list-style-type: none"> • Comprehensive knowledge on rocks and minerals, their composition and the types of soils formed from different parent materials. • Understand the role of soil forming factors and processes in soil formation • Understand various soil physical, chemical and biological properties and their impact on plant growth. • The knowledge gained in this course will be useful in understanding the behavior of soils in crop production and management
	HBS-115	Elementary Plant Biochemistry	2 (1+1)	<ul style="list-style-type: none"> • Understand the significance of biochemistry. • Describe the chemistry of carbohydrates, lipids, proteins and amino acids. • Describe the mechanism of enzyme action and identify the classes of enzymes and factors affecting action.
	HBS-114	Principles of Plant Breeding	3 (2+1)	<ul style="list-style-type: none"> • Describe sources and types of genetic variation and explain their importance for plant improvement. • Describe the progression of stages within a modern breeding programme from the setting of breeding objectives, through the development and • implementation of breeding strategies to the commercialisation of plant varieties and the protection of intellectual property. • Describe methods that are used in plant breeding. • Locate, analyse, evaluate and synthesise information relevant to plant breeding. • Judge which plant breeding methods are appropriate for specific objectives and situations. • Formulate and justify a plan for the application of plant breeding methods to achieve a specific objective.
	HSS-112	Communication Skills and Personality Development	2 (1+1)	<ul style="list-style-type: none"> • Developing the effective communication skills among students. • Inculcating the soft skills in theoretical and practical ways and also to develop the effective communication skills among students.

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				<ul style="list-style-type: none"> • Learning about the essential factors for personality development and bringing them into practice. • Create understanding of the non-verbal forms of communication.
	HBS-112	Introductory Microbiology	2 (1+1)	<ul style="list-style-type: none"> • Describe historical aspects of microorganisms' impacts on human societies. • Describe the characteristics of bacteria, virus, fungi, protozoa, parasites and prions as they relate to medical microbiology. • Compare the differences between prokaryotic and eukaryotic cells. • Describe the fundamentals of microbial reproduction, growth and control. • Explain pathogenic features of disease-causing microbes. • Describe the basic immune response to infection by microbial agents.
	HBS-113	Elementary Statistics and Computer Application	3 (2+1)	<ul style="list-style-type: none"> • Explain the use of data collection and statistics as tools to reach reasonable conclusions. • Recognize, examine, and interpret the basic principles of describing and presenting data. • Compute and interpret empirical and theoretical probabilities.
	HSS-111	Economics and Marketing	3 (2+1)	<ul style="list-style-type: none"> • Identify and describe key theories and practices in the areas of accounting, finance, marketing, management, economics, and business law. • Apply knowledge and principles to business scenarios in the areas of accounting, finance, marketing, management, and economics. • Use critical thinking to identify issues, collect and examine information, evaluate evidence, and draw conclusions.
	NSO-114 / NSO-115	National Service Scheme/National Cadet Corp	1 (0+1) (NC)*	<ul style="list-style-type: none"> • Awakening of rural and local people regarding environmental issues • Conducting surveys in various important social and burning issues • To develop qualities of character courage, comradeship, discipline, leadership, secular outlook, spirit of adventure and sportsmanship and ideas of self less service among the youth to make them useful citizen. • To create human resource of organized trained and motivated youth to provide leadership in all walks of life including the Armed Forces and be always available for the service of Nation.
	HFS-121	Tropical and Subtropical Fruits	3 (2+1)	<ul style="list-style-type: none"> • It presents an extensive overview of crop production techniques, processing, marketing, breeding efforts, harvesting, and postharvest handling, as well as

				pest and disease management of banana, citrus, durian, grapes, guava, jackfruit, litchi, mango, and papaya
HVS-121	Tropical and Subtropical Vegetables	3 (2+1)	<ul style="list-style-type: none"> • It presents an extensive overview of crop production techniques, processing, marketing, breeding efforts, harvesting, and postharvest handling, as well as pest and disease management of tomato, brinjal, chili, cucurbits, okra, beans etc. 	
HBS-121	Principles of Genetics and Cytogenetics	3 (2+1)	<ul style="list-style-type: none"> • Display a broad understanding of core molecular genetics concepts including molecular biology, genetics, cell biology, physiology, and evolution. (GENERAL BIOLOGY CONCEPTS or breadth of knowledge) • Demonstrate working knowledge in a defined skill set of molecular biology and biotechnology protocols, including PCR, genetic mapping, gene isolation and cloning, DNA sequencing, and sequence analysis (basic bioinformatics). Students in the biotechnology business track will have additional skills acquired from case studies-oriented management courses. • Explain key concepts of genome organization and manipulation in depth, such as assembly of physical maps of genomes, sequencing methods and strategies, genome annotation and bioinformatics, comparative genomics, global gene expression profiling, and transgenic plant and animal technologies. (MAJOR-SPECIFIC CONCEPTS or knowledge depth) 	
HNM-121	Environmental Studies and Disaster Management	3 (2+1)	<ul style="list-style-type: none"> • Summarize about environment and its importance and Discuss environment and importance of ecosystems. • Provides the information regarding ecosystem and applicability. Acquire knowledge of how all the animals are competing with their food requirements and also understand the various trophic levels in the food chain. • Describe the flow of energy through the various components of ecosystem. Examine the importance a of nutrients and flow of nutrients in ecosystem • 4. Summarize about the toxicity of heavy metals on the biotic and a biotic component. 	
HFS-124	Growth and Development of Horticultural Crops	2 (1+1)	<ul style="list-style-type: none"> • To learn the physiology of growth and development of horticultural crops. • Cellular structures and their function; definition of growth and development, growth analysis and its importance in Horticultural crops. 	

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				<ul style="list-style-type: none"> • Physiology of dormancy and germination of seeds, tubers and bulbs; Role of auxins, gibberellins, cytokinin and abscisic acid; Application of synthetic hormones, plant growth retardants and inhibitors and modern PBRs for various purposes in horticultural crops.
	HSS-121	Information and communication technology	2 (1+1)	<ul style="list-style-type: none"> • Students will perform basic ICT operations, access digital resources and develop 21st Century Competencies (CC), design thinking skills and computational thinking skills. • Communicate ideas confidently and present information accurately with the use of technology
	HNM-122	Water Management in Horticultural Crops	2 (1+1)	<ul style="list-style-type: none"> • To learn the Water Management in horticultural crops. • One drop more crop
	HNM-123	Soil Fertility and Nutrient Management	2 (1+1)	<ul style="list-style-type: none"> • This subject will discuss the role of synthetic and organic fertilizers in maintaining soil fertility for sustainable horticultural production systems. • The subject will explore the concepts of soil fertility and nutrient management from the standpoint of chemical, physical and biological processes in soil. Key nutrient cycles in soil will be discussed with a view to understanding plant requirements across a range of horticultural crops
	HFS-123	Plant Propagation and Nursery Management	2 (1+1)	<ul style="list-style-type: none"> • Familiarization with principles and practices of propagation and nursery management for Horticultural Crops. • Study of introduction to propagation, cellular basis for propagation, sexual propagation, apomixis, polyembryony, chimeras. Principle factors influencing seed germination of horticultural crops, dormancy, hormonal regulation of germination and seedling growth. • Knowledge of nursery management, nursery establishment and nursery rules and regulation.
	NSO-121	Physical and Health Education	1 (0+1) (NC)*	<ul style="list-style-type: none"> • Demonstrate knowledge and competency of movement patterns and strategies needed to perform a variety of physical activities. • Achieve a level of physical fitness for health and performance while demonstrating knowledge of fitness concepts, principles, and strategies.
	HPP-211	Fundamentals of Entomology	3 (2+1)	<ul style="list-style-type: none"> • Attain a solid foundation in insect biology, including general entomology, basic systematics, morphology, physiology, and biodiversity.

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				<ul style="list-style-type: none"> • Understand evolution and biodiversity generation through macro- and micro-evolutionary processes, including how these processes have formed and diversified insects. • Develop the ability to read and interpret scientific papers in entomology, and critically assess content.
	HVS-211	Temperate Vegetable Crops	2 (1+1)	<ul style="list-style-type: none"> • Educate production technology of cool season vegetables. • Imparting knowledge about botany and taxonomy, climatic and soil requirements, commercial varieties/hybrids, sowing/planting times and methods, seed rate and seed treatment, nutritional and irrigation requirements, intercultural operations, weed control, mulching, physiological disorders, harvesting, postharvest management, plant protection measures and seed production of vegetables grown in winter.
	HPT-211	Fundamentals of Food Technology	2 (1+1)	<ul style="list-style-type: none"> • Develop knowledge and understanding on food and its related functions. • Develop knowledge about the nutritional deficiency disease, sources and requirements. • To educate about the Nutritional Status of all age groups and their Recommended Dietary Allowances (RDA)
	HFS-211	Temperate Fruit Crops	2 (1+1)	<ul style="list-style-type: none"> • Impart basic knowledge about the importance and management of temperate fruits grown in India. • Study of commercial varieties of regional, national and international importance, Eco physiological requirements, recent trends in propagation, rootstock influence, planting system, cropping systems, root zone and canopy management, nutrient management, water management, fruit set and development, abiotic factors limiting fruit production, physiological of flowering, and remedies, quality improvement by management practices; maturity indices, harvesting, grading, packing, precooling, storage, transportation and ripening techniques. • Knowledge of industrial and export potential, Agri Export Zones (AEZ) and industrial support of fruit business.

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HFL-211	Commercial Floriculture	(2+1)	<ul style="list-style-type: none"> To study about introduction Importance of floriculture in India, Scope to enter floriculture industry in India, Problems/constraints for Floriculture industry in India Area and production of flowers in the state and the country. Hi-Tech Floriculture Export Market World Floriculture Trade Cut Flowers Export Potential Top Ten Major Exporter, Importers and Producers Major import markets for Floriculture products Top Ten Cut flowers and Pot Plants in the World Trade Major Import Markets for Floriculture Product Per Capita Consumption of Flowers and Plants Global Trade in Floricultural Products Role of Indian Government and other Agencies for Export
HBS-211	Elementary Plant Biotechnology	2 (1+1)	<ul style="list-style-type: none"> Scope and Importance of Biotechnology. Familiarization of the terms associated with plant tissue culture. Felt applications in the different domains of biotechnology. Briefing the methods and tools associated with recombinant DNA technology.
HPP-212	Diseases of fruit, Plantation, Medicinal and Aromatic Crops	3 (2+1)	<ul style="list-style-type: none"> To study the etiology, symptoms, mode of spread, epidemiology and integrated management of the diseases of fruits, plantation, medicinal and aromatic crops viz mango, banana, grape, citrus, guava, sapota, papaya, jack fruit, pineapple, pomegranate, ber, apple, pear, peach, plum, almond, walnut, strawberry, areca nut, coconut, oil palm, coffee, tea, cocoa, cashew, rubber, betel vine senna, neem, hemp, belladonna, pyrethrum, camphor, costus, crotalaria, datura, dioscorea, mint, opium, Solanum khasianum and Tephrosia. Important post-harvest diseases of fruit, plantation and medicinal and aromatic crops and their management.
HFS-212	Weed Management in Horticultural Crops	2 (1+1)	<ul style="list-style-type: none"> To understand effective cultural, mechanical, biological, and chemical methods for managing weeds

				<ul style="list-style-type: none"> • To critically evaluate weed management options within ecological, economic, and social constraints • To design integrated weed management systems for field and horticultural crops • To enable students to develop a solid, long-term weed-management plan
HPP-213	Fundamentals of Plant Pathology	3 (2+1)	<ul style="list-style-type: none"> • The student knows about the early development & role of different micro-organism in development of plant disease. • The students gain knowledge on general concepts and classification of plant diseases The students have knowledge with general characteristics of fungi, bacteria, virus and mycoplasma like organisms causing plant diseases. • To acquaint the students with reproduction in fungi and fungal like organisms causing plant diseases. 	
HPP-214	Nematode pests of horticultural crops and their Management	2 (1+1)	<ul style="list-style-type: none"> • To understand the History and development of Nematology, Definition, Economic Importance, General Characters of plant parasitic nematodes, their morphology and biology, Symptomatology and management of important plant parasitic nematodes of fruits (tropical, subtropical and temperate), vegetables, tubers, ornamentals, spice and plantation crops. Role of nematodes in plant disease complex. 	
NSO-114/ NSO-115	NSS/NCC(NC)	1 (0+1)	<ul style="list-style-type: none"> • NSS/NCC helps the student to grow individually and also as a group. Volunteering for various tasks under NSS/NCC activities allows students to become confident, develop leadership skills, and learn about different people from different walks of life 	
HFL-221	Ornamental Horticulture	2 (1+1)	<ul style="list-style-type: none"> • Familiarization with principles and practices of landscaping and ornamental gardening. • Landscape designs, its principles and practices of landscaping and ornamental Gardening structure, features. • Styles of garden, types of gardens: English, Mughal, Japanese, Persian, Spanish, Italian, Vanams, Buddha garden, Popular gardens of India. 	
HVS-221	Spices and Condiments	3 (2+1)	<ul style="list-style-type: none"> • To study about Spices and condiments- Definition, History, scope and importance, present status in India and Karnataka, area and production, uses, export potential and role in national economy. Highlights of research 	

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				<p>achievements, thrust area, role of research stations and organization in promotion of spices and condiments.</p> <ul style="list-style-type: none"> • Classification of Spices and condiments-based on parts used, aromatic origin, family and mixed: major and minor spices
	HFS-221	Plantation Crops	3 (2+1)	<ul style="list-style-type: none"> • Students will know more about origin, area, climate, soil, improved varieties and cultivation practices such as time and methods of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield of different plantation crops.
	HNM-221	Farm Power and Machinery	2 (1+1)	<ul style="list-style-type: none"> • To enable the students to understand the basic principles and parts internal combustion engine and different tillage, sowing, intercultural, plant protection equipment, working principles of threshers, harvesting of field and horticultural crops. • To train the students with skills required for the operation, maintenance and evaluation of harvesting, threshing machinery needed for agricultural farms.
	HNM-222	Soil, Water and Plant Analysis	2 (1+1)	<ul style="list-style-type: none"> • After successful completion of the course, students will be able to understand the basic principles and practices of laboratory techniques and methods of analysis of soil, water and tissue materials.
	HFS-222	Breeding of Fruit and Plantation Crops	3 (2+1)	<ul style="list-style-type: none"> • Update knowledge on the recent research trends in the field of breeding of fruit crops with special emphasis on tropical, subtropical and temperate crops grown in India. • Evolutionary mechanisms adaptation and domestication, Genetic resource, cytogenetics, cytomorphology, chemotaxonomy, genetics of important traits and their inheritance pattern, variation and natural selection, spontaneous mutations, incompatibility systems in fruits, recent advances in crop improvement efforts- introduction and selection chimeras, apomixes, clonal selection, intergeneric, interspecific and inter-varietal hybridization, mutation and polyploidy breeding, resistance breeding to biotic and abiotic stresses, breeding for improving quality, molecular and transgenic approaches in improvement of selected fruit crops.
	HPP-221	Insect Pests of Fruit, Plantation, Medicinal & Aromatic Crops	3 (2+1)	<ul style="list-style-type: none"> • To understand the serious insects constraints in the cultivation of vegetables, spices and ornamental crops. For example, in some of vegetables, the

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				<p>accumulative losses have been worked out to be as high as 50 per cent and in certain diseases even complete crop failure can not be ruled out. The diseases not only reduce the quantity but also the quality of the produce.</p> <ul style="list-style-type: none"> • Diseases caused by various organisms like fungi, bacteria, virus, phytoplasma and others. The present course aims to give an overview of disease symptomatology, etiology, epidemiology, and management including host resistance, cultural biological and chemical methods.
	HVS-222	Precision Farming and Protected Cultivation	3 (2+1)	<ul style="list-style-type: none"> • Understanding the principle, theoretical aspects and developing skills in protected cultivation of horticultural crops. 2. Prospects of protected horticulture in India; Types of protected structures- Greenhouse, poly house, shade houses, rain shelters etc. Low cost/Medium, cost/High cost structures, Location specific designs; Structural components; Suitable horticultural crops for protected cultivation.
	HFS-223	Dry land Horticulture	2 (1+1)	<ul style="list-style-type: none"> • This course helps to design production technology of various horticultural crops which may be able to produce in water scarcity conditions.
	HNM-311	Organic Farming	3 (2+1)	<ul style="list-style-type: none"> • Ability to explain definition, concept, importance and scope of organic farming in India. • Propagation of the initiatives taken by govt. (Central/state), NGO and other organization for promotion of organic agriculture. • Discussion on organic agriculture in relation to the choice of crop and their varieties, nutrient management, weed and plant-protection measures under organic mode. • Familiarity with the certification process and standards of organic farming. • Developing understanding of Indigenous Technology knowledge (ITK) for inputs used in organic farming, quality aspects, grading, packaging as well as handling of organic outputs.
	HFL-311	Medicinal and Aromatic crops	3 (2+1)	<ul style="list-style-type: none"> • Impart comprehensive knowledge about the production technology of medicinal and aromatic crops. • Study of Herbal industry, Indian system of medicine, indigenous Traditional Knowledge, IPR issues, Classification of medicinal crops,

				<p>Systems of cultivation, Organic Production, Role of institutions and NGO's in production, GAP in medicinal crops production.</p> <ul style="list-style-type: none"> • Knowledge of production technology for Senna, Periwinkle, Coleus, Aswagandha, Glory lily, Sarpagandha, Dioscorea sp., Aloe vera, Phyllanthus amarus, Andrographis paniculata.
	HFS-311	Introductory Agroforestry	(1+1)	<ul style="list-style-type: none"> • Student learn Agroforestry definitions, objectives, potential and distinction between agroforestry and social forestry. • Agroforestry seeks to optimize positive interactions, such as mutualism and commensalism, and to minimize predation on crops and livestock and competition within and between species. Positive interactions may reduce stress to plants and animals, enhance yields, retain soil, and capture water.
	HVS-311	Breeding of Vegetable, Tuber and Spice Crops	3 (2+1)	<ul style="list-style-type: none"> • This course also helps to design a breeding programme for a given crop species for the conditions of the need according to specific objectives.
	HPP-311	Diseases of Vegetables, Ornamentals and Spice Crops	3 (2+1)	<ul style="list-style-type: none"> • To understand the serious disease constraints in the cultivation of vegetables, spices and ornamental crops. For example, in some of vegetables, the accumulative losses have been worked out to be as high as 50 per cent and in certain diseases even complete crop failure can not be ruled out. The diseases not only reduce the quantity but also the quality of the produce. • Diseases caused by various organisms like fungi, bacteria, virus, phytoplasma and others. The present course aims to give an overview of disease symptomatology, etiology, epidemiology, and management including host resistance, cultural biological and chemical methods.
	HFS-312	Orchard and Estate Management	2 (1+1)	<ul style="list-style-type: none"> • To study about Orchard management, importance, objectives, merits and demerits, clean cultivation, sod culture, Sod mulch, herbicides and inorganic and organic mulches. • Tropical, sub-tropical and temperate horticultural systems, competitive and complimentary effect of root and shoot systems. • Biological efficiency of cropping systems in horticulture, systems of irrigation. Soil management in relation to nutrient and water uptake and their effect on soil environment, moisture, organisms and soil properties.

				<ul style="list-style-type: none"> • Integrated nutrient and pest management. Utilization of resources constraints in existing systems. Crop model and crop regulation in relation to cropping systems.
	HVS-312	Potato and tuber crops	2 (1+1)	<ul style="list-style-type: none"> • Students will be able to learn importance of potato and tuber crops scope and importance of potato and tuber crops and tuber crops
	HNM-312	Introduction to Major Field Crops	2 (1+1)	<ul style="list-style-type: none"> • At the end of this course, the students will be able to • Remember classification and distribution of major field crops • Define and explain the concepts of multiple cropping, mixed cropping, intercropping, relay and alley cropping • Gain knowledge about major field crops and cropping systems
	HNM-313	Agro-meteorology and Climate Change	2 (1+1)	<ul style="list-style-type: none"> • To study about different climatic factors affecting crop growth and development • Study about different weather aberrations • Study about climate change, it's cause and impacts
	HPP-321	Insect Pests of Vegetable, Ornamental and Spice Crops	3 (2+1)	<ul style="list-style-type: none"> • Student will have an understanding of economic importance of insects in vegetable, ornamental and spice crops. Ecology and pest management with reference to these crops. Pest surveillance in important vegetable, ornamental and spice crops. Distribution, host range, bioecology, injury, integrated management of important insect pests affecting vegetable, ornamental and spice crops. Important storage insect pests of vegetable, ornamental and spice crops, their host range, bioecology, injury and integrated management. Insect pests of processed vegetables and ornamental crops, their host range, bioecology, injury and integrated management. • Insecticidal residue problems in vegetables and ornamental crops, tolerance limits etc.
	HPT-321	Postharvest Management of Horticultural Crops	3 (2+1)	<ul style="list-style-type: none"> • Facilitate deeper understanding on principles and methods of postharvest management of horticultural crops. • Maturity indices, harvesting practices for specific market requirements, influence of pre and post-harvest practices, respiration, transpirational loss. • Physiology and biochemical change during ripening, senescence, ethylene evolution and ethylene management, factors leading to post-harvest loss and its control, pre-cooling.

				<ul style="list-style-type: none"> • Study of post harvest loss and their control.
	HVS-321	Seed production of Vegetable, Tuber and Spice Crops	3 (2+1)	<ul style="list-style-type: none"> • To the concept and phenomenon which help increase agricultural production through spread of good quality seed of high yielding varieties, well before the planting season at reasonable cost.
	HFL-321	Breeding and Seed Production of Flower and Ornamental Plants	3 (2+1)	<ul style="list-style-type: none"> • Student will learn about history of improvement of ornamental plants, objectives of plant breeding, selection, mass selection, hybridization and its techniques, mutational breeding etc.
	HPT-322	Processing of Horticultural Crops	3 (2+1)	<ul style="list-style-type: none"> • This course helps in overview of fruit and vegetable production, status of fruit and vegetable processing in the country, objectives and importance of preservation, important constraints in expansion of industry and scope for further growth in this sector.
	HSS-321	Horti-Business Management	2 (1+1)	<ul style="list-style-type: none"> • Understand and gain knowledge on fundamentals of hortibusiness management. • Clear comprehension of tasks performed by various departments of the hortibusiness. • Skills to execute the management functions in farms and hortibusiness. • Analytical skills to prepare farm plans and budgets. • Gaining skills to execute tasks pertaining to different functional areas of management.
	HSS-322	Entrepreneurship Development and Business Management	2 (1+1)	<ul style="list-style-type: none"> • Identify market opportunities. • Develop a business plan. • Identify sources of financing. • Pitch an idea to investors. • Incorporate a small business. • Operate a small business.
	HFS-322	Apiculture, Sericulture and Lac culture	2 (1+1)	<ul style="list-style-type: none"> • The learner will be able to understand the basics about beekeeping tools, equipment, and managing beehives. • Gain skill with hands on training on mulberry cultivation and carry forward to field, • Gain skill with hands on training on silkworm egg production and support drainage activity,

				<ul style="list-style-type: none"> • To Acquire knowledge and develop skill in silkworm rearing and support silkworm farming. • Lac culture is the scientific management of lac insects to obtain a high amount of quality lac. This involves selection and maintenance of host plants, inoculation of host plants with healthy lac insects, collection and processing of lac and protection against enemies
	HSS-323	Fundamentals of Extension Education	2 (1+1)	<ul style="list-style-type: none"> • To orient the students with the concept of extension education and its importance in agricultural development. • To expose the students towards various rural development programmes aimed at poverty alleviation and to increase employment opportunities and their analysis. • To orient the students learning about the extension system worldwide and new dimensions of Agricultural Extension in India.
	RHWE	STUDENT READY - Placement in Industries	0+10	<ul style="list-style-type: none"> • The Rural Horticultural Work Experience (RHWE) provides exposure to agricultural students to the natural setting of the village situations, work with the farm families, identify their problems and make use of various extension tools for transferring the latest agricultural technologies. The students also get opportunity to study the various on-going schemes related to agriculture and rural development and participate in their implementation. The students were given rigorous orientation and familiarization on various issues and problems expected on farmers' field and hence gain competence and confidence for solving problems related to agriculture and allied sciences. It has been implemented in adopted villages under the supervision of scientists. Activities focused on intensive observations/ analysis of socio-economic and technological profile of the farm families in rural areas, participatory extension approach and acquaintance with farming situations, farm practices and interaction with progressive farmers. Soil testing has become the integral part of RHWE. This helps orient our horticultural graduates for participation in various rural developmental programme. The students also gained first-hand information on industries during attachment with identified agro based industries.

		STUDENT READY-Placement in Villages	0+10	<ul style="list-style-type: none"> The Rural Horticultural Work Experience (RHWE) provides exposure to agricultural students to different practical aspects of values addition, post-harvest management and many other exposures related to the horticultural activities to develop their entrepreneurship skills.
	HELP-421/HHC-221	Commercial Horticulture		<ul style="list-style-type: none"> At the end of this course, students will be able to learn the introduction of high yielding, disease free and true to type varieties of fruits, vegetable and spices crops through layout of demonstration and minikilts in the selected areas.
	HELP-422/HHP-421	Protective Cultivation of High Value Horticulture Crops		<ul style="list-style-type: none"> To learn about infrastructure (greenhouses, net houses, shade nets, nurseries, drip fertigation system) for protected cultivation of high value vegetables i.e. tomato, capsicum, cucumber, and flower crops i.e. gerbera and chrysanthemum in different agro-climatic locations with the aim of developing model production systems. To study about standardization of production technologies for tomato, capsicum, cucumber, gerbera and chrysanthemum under protected cultivation including IPM, grafting of vegetable seedlings and the use of drip fertigation and super absorbents for improving water and nutrient use efficiency. Field level evaluation of the value-added products and development of effective linkages of marketing high value horticultural produce including establishment of cool chain management system. To strengthen human resources for development of entrepreneurial skills for commercialization of protected cultivation technologies
	HELP-423/ HHP-421	Processing of Fruits and Vegetables for Value Addition		<ul style="list-style-type: none"> To provide basic understanding/knowledge of postharvest processing methods of fruits and vegetables and processes involved in post-harvest loss reduction. To introduce postharvest management practices which are eco-friendly and sustainable by integrating them with existing modern technologies. To encourage students in product development, conversion of fresh produce to processed form for value addition (nutritive and economic value).
	HELP-423 / HFF-421	Floriculture and Landscape Architecture	New Module	<ul style="list-style-type: none"> It helps in strengthening the research farm and nursery activities for under graduate students for practical teaching works in floriculture & landscaping. It initiates the research in basic and advanced concepts of landscaping and on various flower crops.

HELP-444/AB-421	Bio-inputs: Bio-fertilizers and Bio-pesticides	New Module	<ul style="list-style-type: none"> • To promote organic farming in the region through technical capacity building of all stake holders • To facilitate the students to understand basics of biofertilizers • To impart training to develop skill both handling, cultivation and propagation of quality microbial inoculants • To make students ready for industry as entrepreneurs • To improve the professional competencies and upgrade the knowledge and develop technical skills of biofertilizer production
HELP-426/HM-421	Mass Multiplication of Plant and Molecules through Tissue Culture	New Module	<ul style="list-style-type: none"> • Define the basic concepts of Plant Tissue Culture "PTC" as a Biotechnology tool. • Recognize the importance of Plant Tissue Culture technique. • Practice the different techniques used in Plant Tissue Culture. • Acquire all skills used in Plant Tissue Culture techniques.
HELP427/APH-421	Mushroom Culture	New Module	<ul style="list-style-type: none"> • This course will give the students a concise and practical information about wild and cultivated mushrooms, their nutritional and medicinal values, spawn production and cultivation techniques, post - harvest management, pest and disease problems and the economics and marketing strategies.
HELP-428/AEB-421	Bee Keeping	New Module	<ul style="list-style-type: none"> • This course is designed to apprise the students with a broad field of beekeeping. Students will be briefly introduced to the principles and management practices needed for advanced beekeeping. • All the participants will practically learn and perform the hive management, opening and examining colonies, supplementary feeding of honeybees, management of pests and diseases, and harvesting of beeswax and honey. This study guide will train the students to establish their own beekeeping as a hobby or commercial business.

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2. M.Sc. (Hort.) Vegetable Science

- Students having a combined knowledge of Vegetable Science with entrepreneurial skills enable them to get administrative or marketing positions with organizations involved in the processing and marketing of vegetables.
- Students will understand basic principles, processes and functions of plant growth and reproduction, including photosynthesis, respiration, transpiration, vegetative growth and reproductive growth, fertilization and vegetable formation.
- Students will understand how to propagate, plant, sustainably grow, manage and harvest a variety of vegetables in a diverse set of environmental, marketing, and financial conditions.
- Students will understand how the environment influences vegetable growth and crop yields, and ways to modify the environment to improve vegetable growth and yields.

3. M.Sc. (Hort.) Fruit Science

- Student will understand the basic knowledge about the importance and management of Tropical and dry land fruits grown in India.
- Students will learn the concept of IPM and recognizing the physiological disorders of fruit plants.
- Students will have knowledge about inflorescence, pollination and fruit bearing in orchard.
- Students will learn about the importance and management of tropical and dry land fruits.
- To provide knowledge about IPM, diseases and others physiological disorders effecting fruit production.
- Provide knowledge about flowering, pollination and fruit setting in fruit crops.

4. M.Sc. (Hort.) Floriculture and Landscape Architecture

- After successful completion of this course, the students are expected to be.
- The students will be apprised of different types of gardens and have a thorough understanding of principles of landscape gardening
- Develop skills for landscaping under different situations and layout of garden components.

5. Ph.D. (Hort.) Vegetable Science

- To keep abreast with latest developments and trends in production technology of vegetable crops.
- To update knowledge on the recent research trends in the field of
- Breeding of vegetable crops with special emphasis on tropical, subtropical and temperate crops grown in India.


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- To impart latest knowledge in growing of vegetable crops under protected environmental condition.
- To teach advances in biotechnology for improvement of vegetable crops.

6. Ph.D. (Hort.) Fruit Science

- To update knowledge on the recent research trends in the field of biotic and abiotic stress management in horticultural crops.
- To facilitate deeper understanding on principles and practices of postharvest management of fruit crops.
- Appraisal on the advances in growth regulation of fruit crops.
- To keep abreast with latest developments and trends in production technology of fruit crops.
- To update knowledge on the recent research trends in the field of breeding of fruit crops with special emphasis on tropical, subtropical and temperate crops grown in India.

7. Ph.D. (Hort.) Floriculture and Landscape Architecture

- To strengthen the research farm and nursery activities for research students for practical teaching works in floriculture & landscaping.
- To initiate the teaching-research in basic and advanced concepts of landscaping and on various flower crops.

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DR. VALSHALI