DEPARTMENT OF B.VOC

Programme Specific Outcomes (PSOs) - B.Voc Agriculture Programme

PSO1	To acquire knowledge on the importance of Environmental Science
PSO2	To acquire knowledge on importance of agriculture and various types of farming.
PSO3	To acquaint with importance, division and classification of horticultural crops and to understand the basic principles and types of plant propagation.
PSO4	To familiarize with fundamentals of water management and to acquaint with various soil conservation methods.
PSO5	To understand the fundamentals of Plant breeding, Basics of Seed technology and cultivation aspects of Plantation crops, spices and fruit crops.
PSO6	To build theoretical foundation in plant tissue culture and biotechnology and to develop knowledge on the theoretical basis of integrated pest management and also to familiarize with protected cultivation structures and cultivation practices.
PSO7	To understand the general characters of weeds and their management and to acquaint with cultivation of rice, fibre crops, fodder crops, etc.
PSO8	To acquire the fundamentals of live stock farming and to understand various aspects of environmental microbiology and biotechnology, to describe various aspects of food and dairy microbiology.
PSO9	To understand various principles and practices of commercial vegetable production and also to have a look on various commercial enterprises in agricultural sector through observation, field visits and presentation and also to familiarize with the concept of sustainability and sustainable development along with organic farming.
PSO10	To acquaint with various Government Policies related to Agriculture in Kerala and India and to familiarise with five year plans and Panchayathiraj system in India.
PSO11	To acquaint with the principles and practices of Human Resource Management, to acquire knowledge of Mathematics and Statistics and to understand the general principles and techniques of Information Technology
PSO12	To develop practical skill in propagation and cultivation aspects of horticultural crops, Plantation crops, spices and fruit crops.
PSO13	To develop skill in various aspects of seed production and to do the micro propagation of plants.
PSO14	To practice with protected cultivation practices of important crops and also the familiarization with cultural methods of pest control.
PSO15	To familiarize with the general characters of weeds and their management, cultivation of rice, fibre crops, fodder crops, familiarization with cultural methods of pest control, familiarize with practices in livestock farming, acquaint with the management of important farm animals and birds.
PSO16	To develop awareness on bee keeping, sericulture and lac culture through observation, field visit and reporting and to develop skill in cultivation of edible mushrooms and to develop skill in dry flower production and bouquet making and also with the production and utilization of biofertilizers and biocontrol agents.

COURSE OUTCOMES

Semester	Course Code	Course Name	Course Outcomes
1	GEC1ES03	Fundamentals of Environmental Science	• CO1-Explain the Methodology and perspectives of science
			• CO2-Explain the definition ,scope and importance of Environmental Science
			• CO3-Describe the components of the environment
			• CO4 -Describe the environment al factors, topographic factors, edaphic factors and biotic factors.
			• CO5 – Describe the ecological adaptations of plants and animals.
			• CO6 –Definition and components of ecosystem.
			• CO7- Explain the energy flow in an ecosystem, Ecological Pyramids and Biogeochemical cycles of an ecosystem.
			• CO8- Describe the Population Ecology and Community Ecology.
	SDC1AG01	Fundamentals of Agronomy	• CO1- Describe the importance of agriculture in India and Kerala
			• CO2-Explain the agricultural classification of crops
			• CO3-Explain the Soil productivity and fertility
			• CO4-Describe the crop nutrition and nutrient cycling through manures and fertilizers.
			• CO5-Explain the Integrated Nutrient Management
			CO6- Explain the irrigation and irrigation methods.
			CO7- Describe the water management.
	SDC1AG02	Fundamentals of Horticulture	• CO1- Describe the definition, importance, division and classification of horticultural crops.

			• CO2- Explain the layout, planting systems and management practices in an orchard.
			• CO3- Describe thetraining and pruning in horticultural crops
			• CO4-Describe the fruit drop and seedlessness in horticultural crops.
			• CO5- Describe the different types of plant propagation methods
			• CO6-Describe the components of nursery and its various aspects.
			• CO7- Explain the plant propagating structures.
	SDC1AG03	Fundamentals of Agricultural Engineering	• CO1- Describe the irrigation with definition and objectives
			• CO2-Explain the methods of irrigation and their engineering aspects
			• CO3- Describe the agronomic techniques to improve water use efficiency
			• CO4-Describe the soil erosion and its relative aspects
			• CO5-Describe the water harvesting techniques - in situ and ex situ methods
			• CO6- Explain surveying: survey equipment, chain survey, cross staff survey, plotting procedure, calculations of area of regular and irregular fields.
	SDC1AG04	Fundamentals of Agronomy and Horticulture – Practicals	• CO1- Identification of cereals and millets, pulses, and tuber crops.
			• CO2. Explain the different methods of sowing; direct seeding: broadcasting, dibbling and drilling-transplantation.

			• CO3. Describe the seed treatment - Rhizobium inoculation of leguminous crops.
			• CO4. Identification of manures and fertilizers and their preparation
			• CO5- Explain the fertilizer recommendation and calculation for major cereals and pulses.
			• CO6. Fertilizer recommendation and calculation for major cereals and pulses
			• CO7-Familiarization with green manure crops and cover crops, Different planting systems and layout and the propagation methods
	GEC2HR06	Human Resource Management	• CO1- Explain the scope and objectives of HRM.
			• CO2- Describe the approaches to HRM
			• CO3- Explain the Human resource planning
			• CO4- Describe the process of job analysis
			• CO5- Describe the recruitment and methods.
			• CO6- Explain the areas of training and training environment.
			• CO7- Explain the concept of career planning
			• CO8-Describe the compensation management and grievance redressal
	SDC2AG05	Plantation Crops, Spices and Fruits	• CO1- Explain the importance - area, production ,origin, distribution of plantation crops.
			• CO2- Describe the propagation, planting, irrigation ,and manuring of Coconut and Rubber.
			• CO3- Explain the nursery management -,layout, planting, aftercare ,irrigation, manuring and stage of harvest, harvesting, yield and uses of cashew, tea and coffee.

			• CO4-Describe the distribution, propagation,crop management of pepper, cardamom,ginger and nutmeg
			• CO5- Describe the importance and scope of commercial fruit production
			• CO6- Explain the maturity indices, harvesting, grading, packing, storage and ripening techniques and also the industrial and export potential- of Crops Banana, mango, and pineapple.
			• CO7 – Describe the management practices of crops -
	SDC2AG06	Fundamentals of Seed Technology	• CO1- Describe the morphology and systematics of crop plants
			• CO2-Explain the basics of seed production
			• CO3-Describe the Genetic and agronomic principles of seed production and Seed testing procedures for quality assessment
			• CO4- Describe the role of growth regulators in restoring seed viability
			• CO5- Explain the general principles of seed storage, measures for pest and disease control, temperature control
			• CO6-Legislation of Seed Technology
			• CO7- Explain the government policy in seed production and study of export potential of seeds.
	SDC2AG07	Plantation Crops, Spices and Fruits and Seed Technology-Practicals	• CO1- Describe the Nursery techniques, Seedling selection, Production of quality planting materials and hybrids and mother palm selection of coconut
			• CO2 - Explain the layout and planting, care and management of plantations
			• CO3- Describe the practice in propagation, selection of good planting materials, field preparation and planting, manuring and use of growth regulators
			• CO4 – Describe the general morphology of roots, stem , leaves,

			inflorescence, flowers and family characters and botany and economic parts of the crop plants
			• CO5- Explain the preparation and use of fixatives and stains for light microscopy
			• CO6- Describe the preparation of micro slides
			• CO7 – Explain the Seed sampling principles and procedures
			• CO8- Explain Seed Testing: Germination analysis and viability analysis of seeds and Seed dormancy and breaking methods
Semester 3	GEC3NS08	Basic Numerical Skills	• CO1- Explain the Sets and Set Operation
			• CO2- Explain the matrix multiplication
			• CO3- Describe the theory of equations
			• CO4- Explain the meaning and definition of Statistics along with its scope and limitations
			• CO5- Describe the presentation of data by Diagrammatic and Graphical Method and the formation of Frequency Distribution.
			• CO6- Describe the measures of central tendency
	GEC3TC09	Plant Tissue Culture and Biotechnology	• CO1- Describe the principles and techniques of plant tissue culture
			• CO2- Explain the Tissue culture medium
			• CO3- Describe the preparation of explants and different methods of micropropagation
			• CO4- Explain the different phases of micropropagation
			• CO5- Explain the methods and applications of tissue culture
			• CO6- Describe the recombinant DNA Technology
			• CO7- Explain the cloning vectors and PCR
			• CO8- Describe the different methods of gene transfer
			• CO9- Explain the application of biotechnology

	SDC3AG09	Micropropagation of Plants- Practicals	• CO1-Explain the requirements for Plant Tissue Culture laboratory and media components and preparations.
			• CO2- Describe the preparation and sterilization of media and aseptic manipulation and inoculation of various explants
			• CO3- Explain the micro propagation of important crops
			• CO4- Descibe the preparation of synthetic seeds
			• CO5- Explain the demonstraion of anther culture and embryo culture.
	SDC3AG10	Integrated Pest Management in Crops	• CO1- Describe the concepts, principles and tools of IPM
			• CO2- Explain the different types of IPM Methods
			• CO3- Describe the important groups of micro organisms used in insect pest control.
			• CO4- Explain the mass multiplication techniques of important biocontrol agents
			• CO5- Describe the classification of insecticides based on chemical nature
			• CO6- Describe the formulations of insecticides and calculation of quantity of formulations for field application
			• CO7- Describe the distribution, host-range, symptoms of damage and management practices for major pests of the following crops-Rice, Coconut, Banana, Cashew, Pepper, cardamom, Brinjal, Bittergourd and cowpea.
	SDC3AG11	Protected Cultivation of Horticultural Crops	• CO1- Describe the introduction, scope and important of problems and prospects of protected culture in India
			• CO2- Explain the basic considerations in establishment and operation of greenhouses
			• CO3- Explain the environmental control systems in green house.
			• CO4- Describe the type of containers used in protected culture

			• CO5- Explain the use of substrate and preparation of substrate for protected cultivation
			• CO6- Describe the Crop regulation
			• CO7- Explain the harvesting methods
	SDC3AG12	Protected Cultivation of Horticulture crops and Pest Management - Practicals	• CO1-nExplain the design and orientation of poly/green houses and study of various inputs used for protected culture
			• CO2- Describe the use of substrate and preparation of substrate for protected cultivation
			• CO3-Explain the special horticultural practices in protected cultivation
			• CO4-Explain the protected cultivation aspects of individual crops
			• CO5- Explain the identification of predators and microbial agents.
			• CO6- Identification, symptoms of damage, collection and preservation of pests of: a) Rice, Coconut. b) Banana, Cashew c) Pepper, cardamom d) Brinjal, Bittergourd and cowpea.
Semester 4	GEC4IT11	Information Technology	• CO1-Describe the nature, importance and applications in business and management office automation
			• CO2-Ex plain Microsoft Office
			• CO3- Describe the Database system
			• CO4- Explain the Internet protocol suite
			• CO5-Explain the objectives and advantages of EDI
	SDC3AG13	Weed Management and Crop Production	• CO1-Explain the classification, propagation and dissemination of weeds
			• CO2- Describe the Integrated weed management
			• CO3-Describe the herbicide classification, formulations, methods of application.
			• CO4- Describe the soil and climatic requirement , varieties, cultural practices , harvesting and

			postharvest handling of major Oilseeds
\			• CO5- Explain the Crop Production in rice
			• CO6-Describe the mechanised farming in rice
			• CO7-Describe the cultivation and management of fodder crops
	SDC3AG14	Livestock Farming	• CO1- Describe the role of Livestock in National economy
			• CO2-Describe the general management Practices in Dairy farming
			• CO3-Describe the cattle and buffalo management
			• CO4-Explain the general management practices
			• CO5-Explain the dairy development in India-
			• CO6- Describe the composition of milk, Constituent of Milk, Factors affecting Quality and Quantity of milk, Nutritive value , and Physico-chemical properties of milk
			• CO7-Describe the poultry management
			• CO8-Detailed study of major animal diseases
	SDC3AG15	Weed Management, Crop Production and Livestock Farming - Practicals	• CO1- Describe the practices in livestock farming
			• CO2- Explain the techniques of weed collection, identification and preparation of herbarium of weeds.
			• CO3- Describe the economics of weed control.
			• CO4- Explain the mechanical methods of pest control
			• CO5- Identification of predators and microbial agents
			• CO6- Describe the identification,symptoms of damage, collection and preservation of pests of: a) Rice, Coconut. b) Banana, Cashew. c) Pepper, cardamom. d) Brinjal, Bittergourd and cowpea

			• CO7-Describe the morphology of cattle, buffalo and poultry and classification of Cattle Breeds
			CO8- Study of Cattle, Buffalo, Goat and Sheep Breeds
Semester 5	GEC5EM13	Environmental Microbiology and Biotechnology	• CO1- Describe the structure, biology and classification and identification of microorganisms.
			• CO2- Explain tools in Microbiology
			• CO3-Describe the preparation of samples, types of media-sterilization techniques
			• CO4-Explain the methods of estimation and isolation of microorganism in soil, water and milk
			• CO5-Describe the role of soil microorganisms
			• CO6-Explain the distribution, techniques and role of air microorganisms
			• CO7-Explain the microbial genetics
			• CO8- Describe the microbial growth process and major products of Industrial microbiology
			• CO9- Explain the Environmental Applications
	GEC5FD14	Food and Dairy Microbiology	• CO1-Describe the types of microorganisms in food
			• CO2-Explain the factors influencing microbial growth in foods
			• CO3-Describe the types of microorganisms in Milk- bacteria, fungi and yeast
			• CO4- Explain the microbiological analysis of milk
			• CO5-Describe the food fermentation process
			• CO6- Explain the different kinds of foods, cereals and cereal products
			• CO7-Explain the food borne infections
			• CO8- Describe the principles and methods of food preservation
	SDC3AG17	Commercial Vegetable Production	CO1- Describe the importance and scope of vegetable crops of India with special emphasis to Kerala.
			CO2- Explain the classification of

			vegetables
			• CO3- Explain the factors affecting and basic principles of vegetable production.
			• CO4- Describe the types of vegetable garden for seed production
			• CO5- Explain the production technology of warm season vegetable
			• CO6- Describe the production Technology of cool season vegetables
	SDC3AG18	Agricultural Enterprises	• CO1- Describe the kinds of bees, biology,hiving and domestication along with seasonal management of bees
			• CO2- Describe the types of silkworms in morphology, biology, rearing of silkworms in India
			• CO3- Describe the diseases and enemies of silkworm and their control
			• CO4- Explain the use of biotechnology in sericulture
			• CO5- Describe and detailed study on mushroom cultivation
			• CO6- Describe the commercial floriculture, Status and prospects of commercial cultivation of flowers
	SDC3AG19	Fundamentals of Organic Farming	• CO1- Explain the concept of Sustainable agriculture and study the differences between conventional, sustainable, and alternate agriculture
			• CO2- Explain Indian agriculture in terms of availability of natural resources and their carrying capacity
			• CO3- Describe the crop production practices and animal production practices
			• CO4- Describe Principles of organic farming and food security
			• CO5- Explain the different traps and pheromones for pest control
			• CO6- Describe the National Programme for Organic Production (NPOP)
			• CO7- Explain the organic farming initiatives in India and Kerala

	SDC3AG20	Government Policies and Programmes Related to Agriculture	• CO1-Explain the agricultural policies of Kerala and of India
			• CO2- Describe the agricultural policies regarding land and labour
			• CO3- Explain the agricultural policies regarding seeds and fertilizers
			• CO4- Explain the agricultural policies regarding credit
			• CO5- Describe the Five Year plans and Panchayathiraj
	SDC3AG21	Commercial Vegetable Production, Agricultural Enterprises and Organic Farming -Practicals	• CO1- Explain the different aspects of Commercial vegetable production
			• CO2- Explain the handling of bee colonies and extraction and processing of honey.
			• CO3-Describe and study the aspects of mushroom cultivation
			• CO4-Explain and study the production techniques of dry flowers.
			• CO5- Explain the preparation of Vermicompost
			• CO6- Explain and study the different aspects of organic farming.