

DEPARTMENT OF AGRICULTURE
SRK UNIVERSITY, BHOPAL
Diploma of Agriculture (Third Semester)

Semester- wise distribution of courses

III Semester			
S.N.	SUBJECT TITLE	CODE	CREDIT
1.	Crop Production Technology-I (kharif crop)	DAG-301	2(1+1)
2.	Fundamentals of Plant Breeding	DAG-302	3(2+1)
3.	Farm power and Machinery	DAG-303	2(1+1)
4.	Production Technology of Vegetable and Spices	DAG-304	2(1+1)
5.	Livestock and Poultry Management	DAG-305	4(3+1)
6.	Environmental Studies and Disaster Management	DAG-306	3(2+1)
	Total		16(10+6)

Crop Production Technology-I (Kharif Crops) 2(1+1)

Theory

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of *Kharif* crops. Cereals – rice, maize, sorghum, pearl millet and finger millet, pulses-pigeonpea, mungbean and urdbean; oilseeds- groundnut, and soybean; fibre crops- cotton & jute; forage crops-sorghum, cowpea, cluster bean and napier.

Practical

Rice nursery preparation, transplanting of rice, sowing of soybean, pigeonpea and mungbean. maize, groundnut and cotton, effect of seed size on germination and seedling vigour of *kharif* season crops, effect of sowing depth on germination of *kharif* crops, identification of weeds in *kharif* season crops, top dressing and foliar feeding of nutrients, study of yield contributing characters and yield calculation of *kharif* season crops, study of crop varieties and important.

Fundamentals of Plant Breeding 3(2+1)

Theory

Historical development, concept, nature and role of plant breeding, major achievements and future prospects; Genetics in relation to plant breeding, modes of reproduction and apomixis, self-incompatibility and male sterility - genetic consequences, cultivar options. Domestication, Acclimatization and Introduction; Centres of origin/diversity, components of Genetic variation; Heritability and genetic advance; Genetic basis and breeding methods in self-pollinated crops - mass and pure line selection, hybridization techniques and handling of segregating population; Multiline concept. Concepts of population genetics and Hardy-Weinberg Law, Genetic basis and methods of breeding cross pollinated crops, modes of selection; Population improvement Schemes- Ear to row method, Modified Ear to Row, recurrent selection schemes; Heterosis and inbreeding depression, development of inbred lines and hybrids, composite and synthetic varieties; Breeding methods in asexually propagated crops, clonal selection and hybridization; Maintenance of breeding records and data collection; Wide hybridization and pre-breeding; Polyploidy in relation to plant breeding, mutation breeding - methods and uses; Breeding for important biotic and abiotic stresses; Biotechnological tools - DNA markers and marker assisted selection. Participatory plant breeding; Intellectual Property Rights, Patenting, Plant Breeders and Farmer's Rights.

Practical

Plant Breeder's kit, Study of Germplasm of various crops. Study of floral structure of self-pollinated and cross pollinated crops. Emasculation and hybridization techniques in self & cross pollinated crops. Consequences of inbreeding on genetic structure of resulting populations. Study of male sterility system. Handling of segregation populations. Methods of calculating mean, range, variance, standard deviation, heritability. Designs used in plant breeding experiments, analysis of Randomized Block Design. To work out the mode of pollination in a given crop and extent of natural out-crossing. Prediction of performance of double cross hybrids.

Farm Power and Machinery 2(1+1)

Theory

Status of Farm Power in India, Sources of Farm Power , I.C. engines, working principles of I C engines, comparison of two stroke and four stroke cycle engines , Study of different components of I.C. engine, I.C. engine terminology and solved problems, Familiarization with different systems of I.C. engines: Air cleaning, cooling, lubrication ,fuel supply and hydraulic control system of a tractor, Familiarization with Power transmission system : clutch, gear box, differential and final drive of a tractor , Tractor types, Cost analysis of tractor power and attached implement, Familiarization with Primary and Secondary Tillage implement, Implement for hill agriculture, implement for intercultural operations, Familiarization with sowing and planting equipment, calibration of a seed drill and solved examples, Familiarization with Plant Protection equipment, Familiarization with harvesting and threshing equipment.

Practical

Study of different components of I.C. engine. To study air cleaning and cooling system of engine, Familiarization with clutch, transmission, differential and final drive of a tractor, Familiarization with lubrication and fuel supply system of engine, Familiarization with brake, steering, hydraulic control system of engine, Learning of tractor driving, Familiarization with operation of power tiller, Implements for hill agriculture, Familiarization with different types of primary and secondary tillage implements: mould plough, disc plough and disc harrow . Familiarization with seed- cum-fertilizer drills their seed metering mechanism and calibration, planters and transplanter Familiarization with different types of sprayers and dusters Familiarization with different inter-cultivation equipment, Familiarization with harvesting and threshing machinery

Production Technology for Vegetable and Spices 2 (1+1)

Theory

Importance of vegetables & spices in human nutrition and national economy, kitchen gardening, brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders, of important vegetable and spices (Tomato, Brinjal, Chilli, Capsicum, Cucumber, Melons, Gourds, Pumpkin, French bean, Peas; Cole crops such as Cabbage, Cauliflower, Knol-khol; Bulb crops such as Onion, Garlic; Root crops such as Carrot, Raddish, Beetroot; Tuber crops such as Potato; Leafy vegetables such as Amaranth, Palak. Perennial vegetables).

Practical

Identification of vegetables & spice crops and their seeds. Nursery raising. Direct seed sowing and transplanting. Study of morphological characters of different vegetables & spices. Fertilizers applications. Harvesting & preparation for market. Economics of vegetables and spices cultivation.

Environmental Studies and Disaster Management 3 (2+1)

Theory

Multidisciplinary nature of environmental studies Definition, scope and importance.

Natural Resources: Renewable and non-renewable resources, Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.

Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem. Ecological succession, Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hotspots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.

Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Environmental Pollution: definition, cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.

Social Issues and the Environment: From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.

Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

Disaster Management

Natural Disasters- Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level rise, ozone depletion.

Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents.

Disaster Management- Effect to mitigate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community –based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

Practical

Pollution case studies. Case Studies- Fieldwork: Visit to a local area to document environmental assets river/ forest/ grassland/ hill/ mountain, visit to a local polluted site-Urban/Rural/Industrial/ Agricultural, study of common plants, insects, birds and study of simple ecosystems-pond, river, hill slopes, etc.

**DEPARTMENT OF A GRICULTURE
SRK UNIVERSITY, BHOPAL (M.P.)**

**PROGRAMME STRUCTURE
ACADMIC SESSION: 2019-20**

Diploma Agriculture Third Semester

Subject Wise Distribution of marks and corresponding Credit
Semester –III

S.N.	Course code	Credit of the course	Name of the course	Internal Assessment		Assignment		End Semester exams		Practical exams		Total marks
				Max. Marks	Min. Marks	Max. Marks	Mini. Mark	Marks	Min. Marks	Max. Marks	Min. Marks	
1	DAG-301	2(1+1)	Crop Production Technology-I (kharif crop)	30	15	-	-	50	25	20	10	100
2	DAG-302	3(2+1)	Fundamentals of Plant Breeding	30	15	-	-	50	25	20	10	100
3	DAG -303	2(1+1)	Farm power and Machinery	30	15	-	-	50	25	20	10	100
4	DAG-304	2(1+1)	Production Technology of Vegetable and Spices	30	15	-	-	50	25	20	10	100
5	DAG-305	4(3+1)	Livestock and Poultry Management	30	15	-	-	50	25	20	10	100
6	DAG-306	3(2+1)	Environmental Studies and Disaster Management	30	15	-	-	50	25	20	10	100
			Minimum Marks	-	90	-	-	-	150	-	60	300
Total		15(9+6)	Maximum Marks	180	-	-	-	300	-	120	-	600
