

16.	Establishing housing system, planning and arranging for forages/ concentrates/nutrition requirement.
17.	Attending after care - first aid, vaccination, AI, milking and marketing, animal culling and record maintenance.
18.	Planning and Establishing poultry unit, housing, rearing of layers/broilers
19.	Attending after care, feeding/ nutrition, vaccination, egg collection, grading, marketing and maintaining records
20.	Establishing goat/ sheep unit, feeding, vaccination, record keeping, and marketing
21.	Establishing fishery/ mushroom production/ sericulture / bee keeping unit; planning, execution- pond/ housing unit/ silk worm rearing unit, feeding, mulberry production
22.	Attending after care, processing and marketing of produce and record maintenance.
23.	Working out recycling of byproducts and working out input-output relationships.
24.	Planning for strengthening of natural resource base and on-farm enterprises.
25.	Analysing economics of agri- business enterprises.
26.	Visit to different Integrated farming system and farmers fields.
27.	Report writing.
	Examination

II Farm Mechanization (Agricultural Engineering) (EXL.412)

0+7

Sl. No	Contents
1.	Farm mechanization and it's importance
2.	Hand tools used in the farm shop: hammer, punch, screw driver, hexa, chisel. Different types of measuring instruments: divider, inside calipers, outside calipers, vernier calipers, micro meter screw gauge, arc welding and gas welding practices.
3	Care, adjustments and maintenance of Tractor and Farm machineries for operation period of 10, 50, 250, 500 and .1000 hours.
4.	Tractor driving practices and hitching and un-hitching of different implements to the tractor
5.	Tractor driving practices using tractor trailer
6.	Power tiller and its operation.
7.	Chisel plough and MB plough: parts, functions, field adjustment (cross shaft setting, leveling, coulter and jointer setting) and their field operation.
8.	Disc plough: parts, functions, field adjustment (cross shaft adjustment, furrow wheel adjustment, furrow wheel spring adjustment) and their field operation.
9.	Tiller parts, functions and their field operation.
10.	Harrowing equipments - Different types of disc harrow, spike tooth harrow, spring tine harrow, blade harrow and their field operation
11.	Seed drill – different parts and functions of seed drill. Different metering mechanism used in seed drills.
12.	Calibration of seed drill with different seeds
13.	Operation of inter-cultural equipments and weeders - cono weeder, hand hoe, weeding hooks, three tine grubbers, rotary paddy weeder. wheel hoe

14.	Harvesting equipments – mower and reaper and their field operation
15.	Rotavator and it's field operation
16.	Operation of bund former, levelers , ridgers and trenchers
17.	Puddlers and paddy transplanters and their field operation
18.	Combine harvester - parts , functions and operation
19.	Harvesting equipments for groundnut –groundnut digger, groundnut decorticator (manual and power operated).
20.	Maize Sheller (hand operated and power operated)
21.	Threshers - different types, parts , functions and their operations
22.	Performance evaluation of different threshers
23.	Calculation of draft and power requirements of different implements. Calculation of field capacity (theoretical and actual) and field efficiency of different implements (Numerical problems)
24.	Economic analysis of different farm equipments and farm operations
25.	Report writing and presentation by the students
	Examination

III Soil Health Clinic (EXL.413)

0+7

Sl. No	Contents
1.	Orientation
2.	Visit to soil testing laboratory to study layout, laboratory requirements, working pattern and budget requirement
3.	Visit to farmers fields (field crops/orchards) to identify nutrient deficiency symptoms in various crops and collection of soil and plant samples
4.	Preparation of chromic acid solution for washing laboratory glass wares and acquainting with water distillation unit.
5.	Preparation and standardization of commonly used acids
6.	Preparation and standardization of commonly used bases
7.	Processing of soil and plant samples for analysis
8.	Analysis of soil samples for pH and interpretation
9.	Analysis of soil samples for soluble salts (Electrical conductivity) and interpretation
10.	Analysis of soil samples for organic carbon and interpretation
11.	Analysis of soil samples for available nitrogen and interpretation
12.	Analysis of soil samples for available phosphorus in acid soils and interpretation
13.	Analysis of soil samples for available Phosphorus in neutral and alkaline soils and interpretation
14.	Analysis of soil samples for available potassium and interpretation
15.	Analysis of soil samples for available sulphur and interpretation
16.	Analysis of soil samples for exchangeable Ca and Mg and interpretation
17.	Analysis of soil samples for micronutrients (Fe, Zn, Cu, Mn) and interpretation
18.	Analysis of soil samples for Boron and interpretation
19.	Analysis of soil samples for Molybdenum and interpretation
20.	Analysis of plant samples for N content
21.	Analysis of plant samples for P, K, S and micronutrients (Fe, Mn, Cu and Zn)

2.	Collection and classification of different diseases caused by Fungal, Bacterial, Nematode and Phytoplasma pathogens
3.	Collection, visual diagnosis and isolation of Anthracnose, Blights and Blasts disease
4.	Collection and visual diagnosis of pre-emergent and post-emergent Damping off
5.	Collection, visual diagnosis and isolation of wilts and Root rots
6.	Collection and visual diagnosis of Rusts
7.	Collection and visual diagnosis of Powdery mildews
8.	Collection and visual diagnosis of Downy mildews
9.	Collection and visual diagnosis of Smuts
10.	Collection and visual diagnosis of Ergots
11.	Collection and visual diagnosis of Grain molds
12.	Collection and visual diagnosis of Sooty molds
13.	Collection and visual diagnosis of Bacterial cankers and Fungal scabs
14.	Collection visual diagnosis and extraction of nematodes ex: Cysts, knots and galls
15.	Collection and visual diagnosis of viral diseases : Mosaic, leaf curls/rolls, yellows, dwarfs, rings spots and necrosis
16.	Collection and visual diagnosis of phyllody and little leaf
17.	Collection and visual diagnosis of disorders by micro and macro nutrients
18.	Collection and identification of Phenorogamic parasites : Root and stem
19.	Field trips for collection of samples
20.	Symptoms, microscopic observations and management of cereal diseases caused by fungi, bacteria, virus and nematode. Ex: Paddy/Wheat/Maize/ Sorghum/Bajra and other millets.
21.	Field trips for collection of samples
22.	Symptoms, microscopic observations and management of pulse crops diseases caused by fungi, bacteria, virus and nematode. Ex: Red gram / Bengalgram / Greengram / Blackgram.
23.	Symptoms, microscopic observations and management of oil seeds crops diseases caused by fungi, bacteria, virus and nematode. Ex: Groundnut/Sunflower/Safflower/Sesame/Castor/Niger/Linseed
24.	Symptoms, microscopic observations and management of commercial crops diseases caused by fungi, bacteria, virus and nematode. Ex.: Cotton /Sugarcane
25.	Symptoms, microscopic observations and management of vegetables diseases caused by fungi, bacteria, virus and nematode. Ex.: Potato/ Tomato/ Onion/Chilli/Cucurbits/Beans/Peas
26.	Symptoms, microscopic observations and management of spices diseases caused by fungi, bacteria, virus and nematode. Ex.: Ginger/ Turmeric/ Pepper
27.	Symptoms, microscopic observations and management of plantation crops diseases caused by fungi, bacteria, virus and nematode. Ex.: Coconut /Areca nut
28.	Symptoms, microscopic observations and management of ornamental crops diseases caused by fungi, bacteria, virus and nematode. Ex.: Rose/ Jasmine/ Tuberosa etc.
29.	Symptoms, microscopic observations and management of medicinal and aromatic plant diseases caused by fungi, bacteria, virus and nematode. Ex.: Aloe vera/ Ashwagandha/Coleus etc
30.	Methods of preparation and application of seed treatment chemicals , seedling treatment and soil drenching with chemicals

31.	Preparation and application of foliar spray with different chemicals like fungicides/bactericides/nematicides and botanicals.
32.	Method of preparation and application of bordeaux mixture and bordeaux paste.
33.	Report writing and Examination

* Each student has to submit 30 fungal, 5 bacterial, 13 viral and 2 phytoplasma diseased specimens

II Diagnosis and Management of Pests (EXL.422)

0+7

Sl. No	Contents
1.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of major cereal crops of the region (Paddy/ Sorghum). Preparation and use of poison bait for the management of Jowar armyworm.
2.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of major cereal crops of the region (maize, bajra and wheat).
3.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of major pulses crops of the region (redgram and bengal gram). Demonstration of IPM practices for pests of Redgram and Bengalgram.
4.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of major crops of the region (soybean / greengram / blackgram / cowpea)
5.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of major crops of the region (sunflower/sesame/safflower)
6.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of major Oil seed crops of the region (groundnut/mustard/castor). Monitoring of <i>Spodoptera litura</i> using sex pheromone and poison bait.
7.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of Bt-cotton. Demonstration of IPM against cotton pests.
8.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of sugarcane/tobacco.
9.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of mango and guava.
10.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of citrus/pomegranate.
11.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of sapota / banana /ber /fig.
12.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of

	grapes
13.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of tomato, potato
	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of brinjal/onion/curry leaf
14.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of chilli/okra /beans
15.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of Curuciferous vegetables
	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of Cucurbitaceous vegetables
16.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of Leafy vegetables
17.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of coconut.
18.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of medicinal plants
19.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of aromatic plants
20.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of store grain pests.
21.	Diagnosis of damage symptoms, identification of pests, extent of damage, population estimation, their natural enemies and management practices for pests of polyhouse
22	Submission of project report and examination

III Weeds and their Management (EXL.423)

0+7

Agronomy (0+3)

Sl. No	Contents
1.	Identification of weed flora associated with cereals, pulses, oilseed crops and commercial crops.
2.	Identification of weed flora associated with non cropped and aquatic areas.
3.	Identification of weeds in different ecosystems
4.	Working with weed control implements/ tools (cultural methods).
5.	Control of weeds through mulches, polyethylene sheet /soil solarisation.

6.	Biological control of weeds through insects*and mycoherbicides*.
7.	Herbicide formulations and herbicide dose calculations.
8.	Techniques of herbicide application – working with sprayers, calibration of water/ diluents and nozzles.
9.	Techniques of herbicide application –different methods of application of herbicides.
10.	Working with herbicides – pre emergence, post emergence and pre plant incorporation herbicides for cereals.
11.	Working with herbicides – pre emergence, post emergence and pre plant incorporation herbicides for pulses and oilseeds crops.
12.	Working with herbicides – pre emergence, post emergence and pre plant incorporation herbicides for commercial crops.
13.	Observations and recording of weed control rating, crop toxicity rating and weed control efficiency.
14.	Control of <i>Cynodon</i> and <i>Cyperus</i> and other perennial weeds by different methods.
15.	Control of weeds in non cropped areas.
16.	Control of weeds in aquatic areas.
17.	Control of parasitic weeds and visit to farmers fields infested with such weeds.
18.	Visit to weed control experiments.
19.	Visit to weed infested areas in farmers fields, water bodies and paddy fields etc.
20.	Working out economics of different weed management practices.
21.	Report writing
22.	Examination

Note: * For these practical's expertise from Entomology and Plant Pathology is required.

Crop Physiology (0+1)

Sl. No	Contents
1.	Estimation of RWC, chlorophyll Oxidative enzymes, and EC in herbicide applied weeds and crops
2.	Different herbicide residue bioassay by selected indicator plants: For atrazine, Dalapon; Fluchloralin;2,4-D.
3.	Impact of herbicides on soil microbiological activity (soil enzyme assay)
4.	Identification of phytotoxic effects of herbicides and their correction.
5.	Herbicide application with and without adjuvants –:differentiating the effects
6.	Finding out allelopathetic effect of weeds on crop plants.
7.	Antidote application for different herbicides
8.	Report writing and examination

Agricultural Engineering (0+ 2)

Sl. No	Contents
1.	Different tools used in farm shop and their uses.
2.	Operators safety measures and equipment handling measures
3.	Principles of operation, construction techniques of spraying and dusting equipment
4.	Sprayers and dusters – classification, specifications and uses of different types of sprayers and dusters for field operation.

5.	Operation, testing, care and maintenance of hand operated knapsack sprayer. Determination of field capacity (theoretical and actual), field efficiency and cost of operation.
6.	Operation, testing, care and maintenance of foot pump sprayer. Determination of field capacity, field efficiency and cost of operation. Determination of field capacity (theoretical and actual), field efficiency and cost of operation.
7.	Operation, testing, care and maintenance of rocker sprayer and hand pre-compression sprayer. Determination of field capacity (theoretical and actual), field efficiency and cost of operation.
8.	Operation, testing, care and maintenance of hand operated ULV sprayer and power operated knapsack sprayer. Determination of field capacity (theoretical and actual), field efficiency and cost of operation.
9.	Operation, testing, care and maintenance of tractor power take-off (PTO) operated boom sprayer and high pressure orchard sprayer. Determination of field capacity (theoretical and actual) and field efficiency and cost of operation.
10.	Operation, testing, care and maintenance of hand operated duster. Determination of field capacity (theoretical and actual) and field efficiency and cost of operation.
11.	Operation, testing, care and maintenance of power operated duster. Determination of field capacity (theoretical and actual) and field efficiency and cost of operation.
12.	Principle of fumigation, fumigators and their uses.
13.	Ergonomical evaluation of sprayers and dusters.
14.	Repairing, dismantling and assembling of different types of spraying and dusting equipment.
15.	Economic analysis of different plant protection equipments
16.	Report writing, presentation by the students and examination

3. Horticulture

I	Plant Propagation and Nursery Management of Horticultural Crops (EXL.431)	0+7
II	Commercial Cultivation of Horticulture Crops (HRT.432)	0+7
III	Hi-Tech Horticulture (HRT.433)	0+6

I Plant Propagation and Nursery Management of Horticultural Crops 0+7
(EXL.431)

Sl. No.	Contents
1.	Orientation and preparation of inventory.
2.	Establishing mother plant block of fruit and ornamental plants.
3.	Preparation of growth regulators for propagation and treatment - - hormonal powders, solutions and paste preparation.
4.	Seed propagation and raising of root stocks through seeds
	Collection of seeds and their processing,
	Treatment of seeds: scarification and stratification and

	Testing of seed viability.
5.	Seed propagation - Preparation of raised beds and sowing, Preparation of flat beds and sowing, Seed sowing in portrays and Preparation of media and potting mixtures
6.	Visit to specialized structures used in commercial propagation viz., poly house, mist house, shade house, poly tunnel etc.,
7.	Preparation of different types of cuttings - Hardwood cuttings, Semi hardwood and soft wood cuttings and Leaf cuttings- leaf bud, leaf blade, leaf margin and leaf vein Cutting.
8.	Propagation of plants using specialized structures - Tubers - tuberous roots - bulb, sucker, rhizomes and Dormancy breaking techniques in bulbs, tubers and corms.
9.	Methods of layering in ornamental and fruit crops - Girdling, GR application and tying etc.,
10.	Selection of scion for grafting and pre-curing and Preparation of root stocks for grafting.
11.	Practicing grafting methods - - approach, veneer, wedge, saddle, side, whip, whip and tongue
12.	Practicing methods of budding - - 'T', inverted 'T', patch and slit
13.	Preparation of grafts / budded plants / layers of horticultural crops and maintenance. Preparation of media for micro propagation, preparation of explants and inoculation, preparation of aseptic cultures for propagation of fruit, rooting of plantlets and hardening
14.	Visit to commercial nurseries and tissue culture labs
15.	Preparation of project proposal for establishing a commercial nursery
16.	Report writing
	Examination

II Commercial Production of Horticultural Crops (EXL.432)

0+7

Sl. No.	Contents	
	Vegetables / Flowers	Fruits / Plantation Crops
1.	Orientation (book keeping and records) and preparation of inventories.	Orientation (book keeping and records) and preparation of inventories.
2.	Nursery bed preparation and sowing.	Visit to orchards.
3.	Preparation of main field, incorporation of manures, fertilizers, opening of ridges and furrows. Maintenance of nursery	Basin preparation and irrigation.

4.	Transplanting of seedlings and weedicide application.	Basin preparation and irrigation.
5.	Transplanting of seedlings and weedicide application.	Application of manures, fertilizers and irrigation.
6.	After care - irrigation, gap and filling.	Training / pruning and application of GRs.
7.	Weeding, earthing up and staking.	Control of pest and diseases, deficiencies and disorders.
8.	Top dressing and earthing up.	Control of pest, diseases, deficiencies and disorders (contd.)
9.	Plant protection measures, control of deficiencies and disorders.	Inter cultivation, weed management and use of herbicides.
10.	Pinching / nipping / training operations and application of GRS.	Inter-cultivation, weed management and use of herbicides (contd)
11.	Harvesting, grading, packing and marketing.	Maturity indices, harvesting, grading and marketing
12.	Estimation of costs and returns, operation costs, investment capital requirement and investment feasibility analysis.	
13.	Market survey for estimate of demand and source supply identification of market channels and estimation of marketing costs and margins.	
14.	Preparation of project proposal for establishment of commercial orchards/ units.	
15.	Report writing	
	Examination	

III	Hi-Tech Horticulture (EXL.433)	0+6
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Sl. No.	Contents
1.	Orientation- book keeping, records etc., Acquaintance with various types of greenhouses / poly house and their suitability for different crops. Acquaintance with various frame work materials, cladding materials, misting and fogging equipments used in the greenhouse construction.
2.	Designing and erection of a model protected structure. Various growing media used in raising of greenhouse crops, their preparation, testing of EC & pH of soil and water and Seedling production.
3.	Soil sterilization.
4.	Bed preparation, pot filling and mulching.
5.	Planting in beds and pots - training, netting, pruning and bending
6.	Pinching operations and plant protection measures.
7.	Micro irrigation and fertigation - greenhouse roof water harvesting and utilization for greenhouse crops. Application of growth regulators. Identification of pests/ diseases /disorders and their management. Identification of stage of harvest and harvesting.

	Post-harvest operation of flowers / vegetables- grading and packing pre-cooling, use of chemicals (vase solutions) and cold storage.
8.	Visit to commercial hi-tech horticulture units.
9.	Estimation of costs and returns, operational costs, investment capital requirement and investment feasibility analysis.
10.	Market survey for estimate of demand, source of supply, identification of market channels and estimation of marketing costs and margins.
11.	Preparation of project proposal for establishment of protected cultivation unit.
12.	Report writing
	Examination

* Note : Attended on weekly basis till the completion of course

4. Integrated Livestock Farming

I	Dairy Production & Management (EXL.451)	0 + 7
II	Poultry Production & Management (EXL.452)	0 + 7
III	Sheep and Goat Production & Management (EXL.453)	0 + 6

I Dairy Production & Management (EXL.451) 0+7

Sl. No.	Contents
1.	Orientation to dairy farming
2.	Writing technical & account records
3.	Identification of body parts of cow & buffalo
4.	Identification of different breeds of cows & buffaloes
5.	Planning for housing of cows & buffaloes
6.	Handling & control of cows & buffaloes
7.	Identification of age in cows & buffaloes
8.	Judging, selection & culling of cows, buffaloes, breeding bulls & bullocks
9.	Identification of heat & doing artificial insemination in cows & buffaloes
10.	Feeding & management of breeding bulls, collection of semen & preservation
11.	Work evaluation
12.	Feeding & management of bullocks, castration & training young bullocks for draft
13.	Feeding & management of calves – cleaning body, sealing of naval cord, feeding colostrum, milk, concentrate & fodder, deworming, numbering, dehorning & recording of body weight
14.	Feeding & Management of cow & buffalo heifers
15.	Feeding & management of pregnant cows & buffaloes, attending calvings
16.	Feeding & management of milking cows & buffaloes, clean milking & recording of milk yield

17.	Sampling, physical examination & platform test of milk, Estimation of specific gravity, fat, protein, lactose, total ash, total solids, solid not fat & adulterants in milk
18.	Grading, standardization, pasteurization, packing & marketing of milk
19.	Preparation of curd, buttermilk, butter, butterfat, khoa, cheese, paneer, icecream, flavoured milk, lassi, their packing, marketing & sanitary measures in dairy plant
20.	Cultivation of grasses, cereal – legume fodders, fodder trees, preparation of silage & hay, storage & enrichment of dry fodder, chaffing of fodder & transport
21.	Work evaluation
22.	Formulation of concentrate feed for cows & buffaloes, grinding & mixing of concentrate feed ingredients, quality assessment, storing & supply of concentrate feed
23.	Exposure to first aid kit & post mortem examination
24.	Identification of wounds, abscess, cyst, their causes & treatment
25.	Identification of endo & ecto parasites, their effects & control measures
26.	Identification & handling of diarrhea, acidosis, bloat, milk fever, ketosis & downer cow syndrome
27.	Identification & handling of yoke gall, nasal granuloma, horn, hoof, eye, ear, nose & skin disorders
28.	Identification of bacterial, viral & fungal diseases in cattle, buffalo & their preventive measures
29.	Identification of fractures, their immobilization, physiotherapy in sprain & strain cases
30.	Handling of reproductive disorders like dystokia, retention of placenta, prolapse, repeat breeder & metritis
31.	Work evaluation
32.	Cleaning & washing of animal sheds, surroundings & sanitary measures, washing & grooming of animals, cleaning of milk packing machine & containers
33.	Preparing cow & buffalo for exhibition & their marketing
34.	Production, purification & utilization of biogas & slurry
35.	Preparation of farm yard manure & vermicompost, value addition, packing & marketing
36.	Collection, value addition & marketing of urine from dairy animals
37.	Economics of cow & buffalo dairy & project preparation
38.	Visit to cow & buffalo dairies, milk & feed plants, animal market
39.	Report submission & presentation
40.	Group discussion & viva voce
41.	Examination

II Poultry Production & Management (EXL.452)

0+7

Sl. No.	Contents
1.	Orientation to poultry farming
2.	Writing technical & account records
3.	Identification of body parts of layer & broiler

4.	Identification of different breeds of fowl & other poultry birds
5.	Planning for housing of layer, broiler & backyard poultry
6.	Handling of layer, broiler & backyard poultry
7.	Judging, selection & culling of poultry birds
8.	Management of litter & cages in poultry house
9.	Management of light in brooder, grower, layer and broiler house
10.	Work evaluation
11.	Feeding & management of layer chicks, pullets & layers
12.	Feeding & management of broilers & exposure to contract farming
13.	Feeding & management of backyard poultry
14.	Recording of body weight of broilers, layers & backyard poultry
15.	Collection of clean eggs, handling, preservation, chemical composition, grading & marketing
16.	Preparation of boiled eggs, omlet, egg scramble, buls eye, egg pudding, packing & marketing
17.	Dressing of chicken, clean chicken production, chemical composition, grading, packing, marketing & sanitary measures
18.	Preparation of chicken tanduri, grill chicken, packing & marketing
19.	Work evaluation
20.	Preparing fowl for exhibition & their marketing
21.	Maintenance of incubator, selection of fertile eggs & incubation, maintenance of hatcher, hatching of chicks, sanitary measures in incubator & hatcher
22.	Cultivation of lucerne & azolla for feeding to poultry birds
23.	Formulation of feed for commercial chicks, pullets, layers, broiler starter & finisher, breeder chicks, pullets & layers
24.	Grinding & mixing of poultry feed ingredients, quality assessment, storing & supply of poultry feeds
25.	Identification of signs of health & diseases in poultry birds
26.	Medication to poultry birds through feed & water
27.	Identification of endoparasites, their effects & control measures
28.	Work evaluation
29.	Identification of ectoparasites, their effects & control measures
30.	Identification of bacterial, viral, fungal & nutritional diseases in poultry birds & their preventive measures
31.	Exposure to post mortem examination, identification of specific diseases, collection, preservation & sending samples to disease diagnostic laboratory
32.	Cleaning of poultry house, surroundings, & biosecurity measures
33.	Preparation of farm yard manure & vermicompost, value addition, packing & marketing
34.	Economics of layer & broiler farm & project preparation
35.	Visit to layer, broiler, breeder farms, hatchery & poultry feed plants
36.	Report submission & presentation
37.	Group discussion & viva voce
38.	Examination

III	Sheep and Goat Production and Management (EXL.453)	0+6
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Sl. No.	Contents
1.	Orientation to sheep & goat farming
2.	Writing technical & account records
3.	Identification of body parts of sheep & goat
4.	Identification of different breeds of sheep & goat
5.	Planning for housing of sheep & goat
6.	Handling & control of sheep & goat
7.	Identification of age in sheep & goat
8.	Judging, selection & culling of sheep, goat, ram & buck
9.	Feeding & management of breeding ram & buck
10.	Work evaluation
11.	Breeding of sheep & goat
12.	Feeding & management of lambs & kids – cleaning body, sealing of naval cord, feeding colostrum, milk, concentrate & fodder, deworming, numbering & recording of body weight
13.	Feeding & management of pregnant ewes & does, attending lambing & kidding
14.	Feeding & management of lactating ewes & does,
15.	Clean milking, recording of milk yield from goats & marketing
16.	Clean wool shearing, recording of wool yield from sheep & marketing
17.	Cultivation of grasses, cereal – legume fodders, fodder trees, management of grassland, preparation of silage & hay, storage & enrichment of dry fodder, chaffing of fodder & transport
18.	Grazing & browsing of sheep & goat
19.	Formulation of concentrate feed for sheep & goat, grinding & mixing of concentrate feed ingredients, quality assessment, storing & supply of concentrate feed
20.	Work evaluation
21.	Exposure to first aid kit & post mortem examination
22.	Identification of endo & ecto parasites, their effects & control measures
23.	Identification of wounds, abscess, cyst, their causes & treatment
24.	Identification & handling of diarrhea, acidosis, bloat, ketosis & eclampsia
25.	Identification & handling of horn, hoof, eye, ear, nose & skin disorders
26.	Identification of bacterial, viral & fungal diseases in sheep, goat & their preventive measures
27.	Identification of fractures, their immobilization, physiotherapy in sprain & strain cases
28.	Handling of reproductive disorders like dystokia, retention of placenta, prolapse & metritis
29.	Preparing sheep & goat for exhibition & their marketing
30.	Work evaluation
31.	Exposure to slaughtering of sheep & goat for clean meat production, chemical composition, grading, packing, marketing of mutton & sanitary measures in slaughter house
32.	Preparation of mutton tanduri, grill mutton, packing & marketing
33.	Grading, preparation of woolen products, packing & marketing
34.	Cleaning & washing of animal sheds, surroundings & sanitary measures, washing

	of sheep & goat
35.	Preparation of farm yard manure & vermicompost, value addition, packing & marketing
36.	Economics of sheep & goat farm & project preparation
37.	Visit to sheep & goat farms, feed plants, slaughter house & animal market
38.	Report submission & presentation
39.	Group discussion & viva voce
40.	Examination

5. Bio-inputs

I	Bio-pesticides (Bio-fungicides and bio-insecticides are combined (EXL.461)	0 + 7
II	Bio-fertilizers (EXL.462)	0 + 7
III	Vermi-composting (EXL.463)	0 + 6

I	Bio-pesticides (Bio-fungicides and bio-insecticides are combined (EXL.461)	0+7
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Plant Pathology (0+4)

Sl. No.	Contents
1.	Exposure to laboratory and instruments for bio-control production unit and agribusiness book keeping, records and accounts
2.	Isolation of <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
3.	Sub culturing of <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
4.	Maintenance of <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
5.	Mass Multiplication : Culturing of <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
6.	Mass Multiplication : Mixing of <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
7.	Mass Multiplication : Packing and labeling of <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
8.	Self life study of : <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
9.	Bio-efficacy in lab: <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
10.	Field Bio-efficacy: <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
.11.	Quality control : Feed back on field functionaries : <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus subtilis</i> / <i>Paecilomyces lilacinus</i>
12.	Registration: Guide lines: <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens</i> / <i>Bacillus</i>

	<i>subtilis/Paecilomyces lilacinus</i>
13.	Registration: Requirement: <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens/Bacillus subtilis/Paecilomyces lilacinus</i>
14.	Registration : CIB registration : <i>Trichoderma</i> sps./ <i>Pseudomonas fluorescens/Bacillus subtilis/Paecilomyces lilacinus</i>
15.	Risk analysis of Bio-agents
16.	Marketing of bio fungicides: Survey
17.	Marketing of bio fungicides: Compilation of data and feed back study
18.	Marketing of bio fungicides and market analysis of bioagents
19.	Quality assessment: Sample drawing, analysis of sample,
20.	Quality assessment: Regulation of inspection (quality parameters) and quarantine aspects
21.	Estimation of cost and returns, capital requirement, operational costs, preparation of balance sheet, income and cash flow statement
22.	Identification of market channels and estimation of marketing costs and margins
23.	Visit to bio-control production units: Government, Private, NGOs, etc.
24.	Report submission and examination

Agril. Entomology (0+3)

Sl. No.	Contents
1.	Basic insectary facilities and equipments to promote biological control, Agribusiness book keeping-records and accounts
2.	Mass rearing techniques of rice moth
3.	Mass rearing techniques and field release of <i>Cryptolemus mountazerei</i>
4.	Mass rearing techniques and field release of <i>Crysopepla cornea</i>
5.	Mass rearing techniques and field released of <i>Dipha aphidivora/Micromus igoratus</i>
6.	Mass rearing techniques and field release of <i>Phytoseid mites</i>
7.	Mass rearing technique and field release of <i>Trichogramma</i> spp.
8.	Mass rearing techniques and field release of <i>Goniozus neantidis, Bracon brevicornis/Campoletus chloridae</i>
9.	Mass rearing techniques and field release of weed killer, <i>Zygogramma bicolarata</i>
10.	Mass rearing techniques and field release of aquatic weed killer, <i>Cyrtobogus salvinia</i>
11.	Acquaintance with Entomopathogens
12.	Preparation of culture media, culturing and spore counting of <i>Neumeria releyi/Beaveria bassiana</i>
13.	Preparation of culture media, culturing and spore counting of <i>Metarhizium anisoplia/Verticilium lecanii</i>
14.	Production of HaNPV/SLNPV and counting of Pob
15.	Production of Bt
16.	Formulation of microbial insecticides and application
17.	Preparation of NSKE
18.	Preparation and use of biodigester, panchagavya and aqueous extract of plant materials and GCK, Use of cow urine and dung
19.	Conservation measures of natural enemies

20.	Visit to Biocontrol laboratories Estimation of cost and returns, report submission and examination
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II. Biofertilizers (EXL.462)

(0+7)

Sl. No.	Contents
1.	Isolation, characterization and screening for efficient <i>Rhizobium</i> strains from nodules of leguminous plants: Preparation of media, collection of effective nodules from legumes, surface sterilization techniques, crushing of nodules and their plating. Purification of the isolates. Characteristics of the isolates. Screening of the isolates for higher BNF potentials (Leonard Jar technique) Agribusiness book keeping –records and accounts
2.	Isolation, characterization and screening for efficient <i>Azotobacter</i> strains from rhizosphere soil: Preparation of media, collection of rhizosphere soils, serial dilution technique and their plating. Purification of the isolates. Characteristics of the isolates. Screening of the isolates for higher BNF potentials.
3.	Isolation, characterization and screening for efficient <i>Gluconacetobacter diazotrophicus</i> (<i>Acetobacter diazotrophicus</i>) strains from roots of sugarcane. Preparation of media, collection of rhizosphere soils, serial dilution technique and their plating. Purification of the isolates. Characteristics of the isolates. Screening of the isolates for higher BNF potentials.
4.	Isolation, characterization and screening for efficient <i>Azospirillum</i> strains from roots. Preparation of media, collection of root samples, surface sterilization techniques, implanting of root bits in the media. Purification of the isolates. Characteristics of the isolates. Screening of the isolates for higher BNF potentials.
5.	Isolation, characterization and screening for efficient <i>Frankia</i> strains from nodules of <i>Casuarina</i> : Preparation of media, collection of effective nodules from <i>Casuarina</i> , surface sterilization techniques, crushing of nodules and their plating. Characteristics of the isolates. Screening of the isolates for higher BNF potentials.
6.	Isolation, characterization and screening for efficient Phosphate solubilizing bacteria and fungi from rhizosphere soil:Preparation of media, collection of rhizosphere soils, serial dilution technique and their plating. Purification of the isolates. Characteristics of the isolates. Screening of the isolates for higher MPS activity.
7.	INTERIM EVALUATION Isolation, characterization and screening for efficient plant growth promoting rhizobacterial strains (PGPR) from rhizosphere soil: Preparation of media, collection of rhizosphere soils, serial dilution technique and their plating. Purification of the isolates. Screening of the isolates for plant growth promotional and antagonistic activities (antifungal and antibacterial activities)

8.	Competitiveness of microbial inoculants: Assessment of root colonization abilities of the efficient strains.
9.	Mass production of these microbial inoculants: Media preparation, inoculation, Fermentation, mixing with carrier materials, packing and product development.
10.	Quality control and ISI standards of different biofertilizers.
11.	Marketing of biofertilizers
12.	Evaluation of shelf life of the inoculants Registration formalities of the inoculants Effect of microbial inoculants on plant growth A pot expt. will be conducted to show the effect of these inoculants on seed germination and plant growth (with and without inoculants) MIDTERM EVALUATION
13.	Liquid biofertilizers- importance and advantages: Production and quality control aspects. Media preparation, inoculation, Fermentation, packing and product development.
14.	Different biofertilizer application methods: seed, soil and seedling dip methods.
15.	Azolla biofertilizer: Their maintenance, Azolla nurseries, mass production methods and application methods.
16.	Cyanobacterial biofertilizers : Their maintenance, mass production and application methods.
17.	Mycorrhizal fungi: Types, Significance, Mass production techniques for VAM. Formulations and packing. Mycorrhiza Inoculation Techniques.
18.	Development of Inoculum consortia: Compatibility amongst the microbial inoculants, and also with the commonly used pesticides.
19.	Rapid Composting of Organic Residues: Methods of composting of different organic residues and use of microbial inoculants in composting for rapid decomposition.
21.	Mass production of rapid decomposing fungi. Media preparation, inoculation, Fermentation, mixing with carrier materials, packing and product development. Enrichment of compost using rock phosphate, <i>Azotobacter</i> , <i>Azospirillum</i> , P-solubilizers, PGPR etc.,
22.	Biogas spent slurry as a source of organic manure.
23.	Visit to a biofertilizer production unit:
24.	Project preparation: Studying the requirements in setting up of a biofertilizer production unit, marketing strategies, economics etc
25.	Estimation of cost and returns Estimation of investment capital requirement Estimation of operational costs Preparation of balance sheet, income and cash flow statement Market survey for estimation of demand and sources of supply Identification of market channels and estimation of marketing costs and margins Report submission and examination

Sl. No.	Contents
1.	Morphology of taxonomy Vermicomposting of earthworms. Agribusiness book keeping –records and accounts
2.	Biology of Vermicomposting earthworms
3.	Collection, preservation and population assessment of earthworms from natural habitat
4.	Evaluation of organic wastes for Vermicomposting
5.	Pre-decomposition of organic waste for Vermicomposting
6.	Methods of Vermicomposting - indoor and outdoor
7.	Shading of vermiculturing beds and moisture management
8.	Natural enemies of earthworms and their management
9.	Harvesting of vermicompost
10.	Enrichment and packing of vermicompost
11.	Extraction of Vermiwash techniques storage and its use in Agriculture
12.	In situ vermiculturing
13.	Field application of vermicompost and Vermiwash and their effect on crop growth and pest incidence
14.	Physical and chemical properties of vermicompost and Vermiwash
15.	Preparation of cost estimate for entrepreneurship
16.	Effect of agrochemicals on earthworms
17.	Vermicomposting technique from household / municipal waste
18.	Transportation of earthworms and cocoons
19.	Preparation of animal feed (Vermi meal) from earthworms
20.	Visit to vermicompost unit. Estimation of cost and returns Estimation of investment capital requirement Estimation of operational costs Preparation of balance sheet, income and cash flow statement Market survey for estimation of demand and sources of supply Identification of market channels and estimation of marketing costs and margins Report submission and examination

6. Commercial Agriculture

I	Seed Production (EXL.471)	0+7
II	Tissue Culture (EXL.472)	0+7
III	Mushroom cultivation, Sericulture & Apiculture (EXL.473)	0+6

Selected crops
Seed production of Cereal Crops-Sorghum /Maize / Bajra
Seed production of Oilseed Crops-Sunflower / Groundnut / Castor
Seed production of Pulse Crops-Redgram/Soybean/Cowpea/ Greengram
Seed production of Vegetable Crops- Tomato/ Brinjal/ Chilli/ Okra
Seed production of Fibre crops – Cotton

I	Seed Production (EXL.471)	0+7
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Sl. No.	Contents
1.	Book keeping of records and accounts of Seed Production
2.	Assessment of market demand and selection of varieties/ hybrids including their parents of the chosen crops grown in the region
3.	Acquaintance of seed classes, seed sources, labels, purchase norms, field and seed standards, quality tests required under certification scheme.
4.	Planning and layout of seed production plot under field conditions.
5.	Application and amplication of land and isolation requirements as per certification standards
6.	Preparation of land and application of manures and fertilizers, etc. Preparation and raising of nursery beds/seedling raising in polythene bags, etc.
7.	Acquaintance of different methods of sowing / transplanting - use of pre-sowing seed treatments-growth regulators/chemicals /rhizobium /other microbial inoculants, etc.
8.	Application of planting ratios and border rows and marking of parental rows Block method of planting in hybrid seed production plot
9.	Application of staggered sowings and manipulation of fertilizers/ growth regulators/micronutrients, etc. on synchrony of parental flowering in hybrid seed production.
10.	Application of cultural and nutrient managements for control of physiological shredding of floral buds/fruits/ pods, etc
11.	Timely management of after care operations at various growth stages.
12.	Diagnostic identification and management of pest and disease attacks at various growth stages.
13.	Diagnostic identification and characterization of A, B, R lines in hybrids of different crops viz. sorghum / sunflower / bajra / redgram / okra / chilli, etc. and their maintenance.
14.	Carrying out de-tasseling operation in maize hybrid seed production
15.	Carrying out hand emasculation and hand pollination operations in hybrid seed production of cotton /tomato /brinjal /chilli /okra, etc.
16.	Application of supplementary pollination methods at flowering time to enhance hybrid seed setting and yield Provision of honey bee colonies, etc. in sunflower, etc.

	-Observations on seed setting on female parental line
17.	Acquaintance and application of roguing index based on diagnostic morphological characters at pre- and post-harvest stages.
18.	Acquaintance of different methods of conducting field inspections by taking field counts to conform to prescribed field standards at different growth stages.
19.	Acquaintance of manual apical bud pinching in okra - nipping of vegetative branches of female plants after crossing period in cotton, etc.
20.	Determination of physiological maturity and application of different methods of harvesting/ picking in varietal and hybrid seed production
21.	Acquaintance of working designs of threshers, cleaners, driers, processing and packaging machineries, etc.
22.	Acquaintance of manual method of sorting and grading in cobs /pods /fruits, etc as per minimum certification standards and procedures.
23.	Acquaintance of different methods of shelling /seed ginning / seed extraction and recovery, etc.
24.	Management of different methods of threshing/ drying/ processing/ treating/ packaging/ labeling/ sealing/ storing, etc., as per minimum certification standards and procedures.
25.	Management of storage pests by different seed treatment methods – fungicides/ insecticides/ botanicals, etc. Management of seed store sanitation
26.	Visit to farmer's seed production plots undertaken by NSC /KSSC / Private Sector Seed Companies/ UAS Seed Unit, etc.
27.	Visit to UAS Seed plots /ARS Farms / Crop schemes/ Poly houses/ High tech Hort., etc.
28.	Visit to GOT farms of KSSC /KSSCA/ Seed Unit, etc.,
29.	Visit to NSC /KSSC/KSSCA/ Seed Dealer, etc
30.	Visit to Seed Processing Units/ Seed Testing Laboratory /Seed ware houses/ Cold storage units, etc.,
31.	Estimation of cost and returns/ Economics of Seed Production /cost benefit ratio
32.	Estimation of Investment Capital requirements and operational costs
33.	Preparation of Balance Sheet Income and Cash flow statements
34.	Market Survey for estimation of demand and sources of supply. Identification of market channels and the estimation marketing costs and margins.
35.	Report writing and submission, Examination

II	Plant Tissue Culture (EXL.472)	0+7
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Sl. No.	Contents
1.	Book keeping of records and accounts of Plant Tissue Culture
2.	Requirements of plant tissue culture lab - GLP Financial implications of a commercial tissue culture facility
3.	Sterilization and disinfection techniques
4.	Plant tissue culture media: Components and Stock preparations and growth regulator stock preparation
5.	Plant Tissue Culture Media (MS) Preparation and sterilization.
6.	Aseptic manipulation of different types of explants and their inoculation

Various commercial tissue culture methods	
7.	Direct organogenesis- Pigeonpea / Tomato. a. Media preparation for germination and sterilization
8.	b. Seed sterilization and inoculation
9.	c. Media preparation for regeneration
10.	d. Explants preparations and inoculations
11.	e. Subculture I
12.	f. Subculture II
13.	g. Rooting
14.	h.. Hardening and acclimatization
15.	Callus mediated Regeneration-sugarcane a. Media preparation for callus induction
16.	b. Inoculation of the explants after surface sterilization
17.	c. Subculture of the callus
18.	d. Shoot morphogenesis
19.	e. Root morphogenesis
20.	f. Hardening/ Acclimatization
21.	Meristem culture – Banana a. Media preparation and inoculation of the explants
22.	b. Shoot Multiplication
23.	c. Subculture I and II
24.	c. Rooting
25.	d. Hardening and Acclimatization
26.	Mid term review of the progress
27.	Shoot tip culture- Micropropagation a. Media preparation and inoculation of the explants
28.	b. Shoot Multiplication
29.	c. Subculture I
30.	d. SubcultureII
31.	e. Rooting
32.	f. Hardening / Acclimatization
33.	Economics of micropropagation
34.	Secondary metabolite production using callus/ cell suspension culture - carrot. Media preparation for callus induction
35.	b. Explant inoculation
36.	c. Subculturing I and II
37.	d. induction of cell suspension cultures
38.	Hairy root cultures for secondary metabolite production-carrot a. explant preparation, infection with Agrobacterium rhizogenes, and culturing
39.	b. Washing of explants and sub culturing
40.	c. Subculturing
41.	d. Observation/ analysis
42.	Visit to established tissue culture laboratory
43.	Estimation of cost and returns/ Economics of Plant Tissue Culture.
44.	Estimation of Investment Capital requirements and operational costs

45.	Preparation of Balance Sheet Income and Cash flow statements
46.	Market Survey for estimation of demand and sources of supply. Identification of market channels and the estimation marketing costs and margins.
47.	Compilation and submission of Project report
48.	Examination

III	Mushroom Cultivation, Sericulture and Apiculture (EXL.473)	0+6
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Mushroom Cultivation (0+2)

Sl. No.	Contents
1.	Book keeping of records and accounts of mushroom cultivation
2.	Morphology of different types of mushrooms Differentiation of poisonous and edible mushrooms.
3.	Preparation of Media and Slants.
4.	Isolation and pure culture maintenance of Mushroom cultures. Mushroom culture preservation techniques.
5.	Cultivation of Oyster Mushrooms. Spawn preparation- boiling grains, sterilization and inoculation. Materials required for mushroom cultivation- Different substrates preparation, sterilization, spawning, maintenance of optimum conditions, harvesting and packing. INTERIM EVALUATION
6.	Cultivation of Paddy straw Mushrooms. Spawn preparation- boiling grains, sterilization and inoculation. Materials required for mushroom cultivation- Different substrates preparation, sterilization, spawning, maintenance of optimum conditions, harvesting and packing.
7.	Cultivation of Button Mushrooms Spawn preparation- boiling grains, sterilization and inoculation. Materials required for mushroom cultivation- Composting and pasteurization, spawning, maintenance of optimum conditions, harvesting and packing.
8.	Cultivation of milky white Mushrooms. Spawn preparation- boiling grains, sterilization and inoculation. Materials required for mushroom cultivation- Different substrates preparation, sterilization, spawning, casing, maintenance of optimum conditions, harvesting and packing.
9.	MIDTERM EVALUATION Diseases and pests of Mushrooms. Their identification and management.
10.	Post harvest handling of Mushrooms by different methods -drying and low temperature.
11.	Enumeration of microbial population in Spawn, substrate and casing material.
12.	Visit to mushroom farms.
13.	Estimation of cost and returns/ Economics Mushrooms Cultivation
14.	Preparation of Balance Sheet Income and Cash flow statements

15.	Preparation and Submission of Reports and examination
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Sericulture (0+2)

Sl. No.	Contents
1.	Mulberry leaf production
2.	Planning for chawki and late age silkworm rearing house, requirement of rearing appliances and their acquaintance.
3.	Disinfection and hygiene in sericulture.
4.	Silkworm races, procurement of silkworm eggs, their transportation and incubation.
5.	Rearing of chawki silkworm and its methods
19.	Inspection and handling of Apis cerena bee colonies.
20.	Estimation of cost and returns/ Economics of Bee keeping
21.	Estimation of Investment Capital requirements and operational costs
22.	Preparation of Balance Sheet. Income and Cash flow statements
23.	Market Survey for estimation of demand and sources of supply. Identification of Market channels and estimation of marketing costs and margins.
24	Visit to apiaries and honey processing unit. Writing and submission of Reports, Examination
13	Procurement and selection of seed cocoons, production of silkworm disease free layings and cold sotrage of silkworm eggs.
14	Cost economics of cocoon production
15	Visit to commercial silk worm rearing, grainage and silk reeling units and cocoon markets. Writing and submission of Reports, Examination

Note: Each student should rear at least five dfls from egg to egg and silk reeling

Apiculture (0+2)

Sl. No.	Contents
1.	Book keeping of records and accounts of Bee keeping
2.	Acquaintance with important species of honey bees and bee colony.
3.	Uses of bee keeping appliances.
4.	Capturing and transferring the colony from the natural habitat.
5.	Inspection and handling of Apis cerena bee colonies.
6.	Study and acquaintance of nectar and pollen yielding flora.
7.	Establishment and maintenance of apiary.
8.	Transport of bee colony and Migratory bee keeping.
9.	Management of colony during different seasons.
10.	Division and uniting of colonies.
11.	Introduction of queen into queen less colony.
12.	Use of honey bees as pollinators in different crops.
13.	Pests of honey bees and their management.
14.	Diseases of honey bees and their management.
15.	Extraction, packing and storage of honey, analysis of honey for its quality.
16.	Extraction of wax from deserted colonies.

17.	Management of wild bees in human habitat for honey extraction and wax yield.
18.	Effect of pesticides on honey bees.
19.	Do
20.	Estimation of cost and returns/ Economics of Bee keeping
21.	Estimation of Investment Capital requirements and operational costs
22.	Preparation of Balance Sheet. Income and Cash flow statements
23.	Visit to apiaries and honey processing unit. Writing and submission of Reports, Examination