COURSE CONTENTS
B.Sc. (Ag) Third Year Odd Semester

S. No.	Course Title	Credit Hrs	Theory		Practical	Total
			Ex.	Int.		
1.	Poultry Management	2+1	35	15	25	75
2.	Mushroom Cultivation	1+1	35	15	25	75
3.	Elementary Crop Physiology	2+1	35	15	25	75
4.	Farm Machinery and Power	2+1	35	15	25	75
5.	Farm Mgt. and Natural Resource Economics	2+1	35	15	25	75
6.	Fundamental and Rural Development	2+1	35	15	25	75
7.	Post Harvest Mgt. & Processing of Fruit and Vegetables	2+1	35	15	25	75
8.	Practical Crops Production-I	0+2	0	0	75	75
Total		**13+9=22**	**245**	**105**	**250**	**600**

Paper I. Poultry Management

Characteristics of important breed of poultry, their methods of rearing, breeding, feeding and management. Incubation, hatching and brooding, vaccination and prevention of diseases. Preservation and marketing of eggs, its economics and keeping quality. Broiler production and rearing, hatchery management.

Practical

Visit to poultry farm, economics of poultry management, identification of important poultry breeds.

Paper II. Mushroom Cultivation

First record of cultivation edible fungi, definition of mushrooms, present scenario of mushroom cultivation, uses; nutritional and medicinal values of mushrooms, general morphological features and important characters for identification of different edible mushrooms and biological backgrounds for mushroom breeding. Definition of spawn and their type, methods of spawn production raising cultures, preparation of spawn media/master culture/ commercial grade spawn characteristics of good spawn, storage of spawn. Cultivation of *Agricus* species: Compost and its formulations, preparation of compost using short and long methods of composting, turning schedules, compost micro flora and different temperatures zones. Spawning and methods of spawning. Preparation of casing mixture and its sterilization, identification, isolation and management of different disease, pests and competitions/moulds. Methods of harvesting mushrooms, after care of harvested fruit bodies, after care of beds and crop room on termination

of crop. Cultivation of *Pleurotus, Volvareilla, Lentinus* and *Auricularia* spp: Types of substrate, substrate preparation and its sterilization; spawn and methods of spawning, spawn run and cropping, harvesting and packing, processing of mushrooms: Different methods-canning, dehydration, freeze dry and bringing etc.

Practical

Preparation of spawn, preparation of casing material, identification of various type of edible mushroom. Post harvest handling of various kinds of mushroom such as caning, dehydration, drying etc.

Paper III. Elementary Crop Physiology

An introduction to plant physiology, plant cell-an introduction, laws of thermodynamics, diffusion and osmosis, the concept of water potential, cell water relations, absorption of water, transpiration, stomatal physiology, ascent of sap, ion uptake and metabolic utilization of mineral ions, deficiencies of mineral ions in plants, photosynthesis, respiration, fat metabolism, physiology of growth and development, growth regulators, physiological parameter influencing the productivity of major cereal, pulse and oilseed crops.

Practical

Cell structure, process of diffusion osmosis and plasmolysis, structure and distribution of stomata in monocot and dicot leaves, process of transpiration with the help of cobalt chloride paper and other methods, demonstration of the measurement of photosynthetic rates by infra red gas analyzer, factor affecting the process of photosynthesis, separation of photosynthetic pigments by paper chromatography, process of root pressure by exudation method and manometer, detection of certain essential micro and macro-mineral elements in crop plants, process of aerobic respiration in germinated seed and alcoholic fermentation, tropism and movement.

Paper IV. Farm Machinery and Power

Sources of farm power including non-conventional sources, farm mechanization, tillage, primary and secondary tillage equipment, specialized tillage tools, seeding and fertilizer machinery, specialized sowing and planting machine, inter culture equipment, plant protection equipment, harvesting and threshing, chaff cutter. Estimation of operating cost of farm equipments. Basic engine types, parts of I.C. engine, working of different engine systems, types of tractors, working of different tractor systems.

Practical

Study and identification of a country plough, mould board plough, disc plough and different types of harrows, study of seed-cum-fertilizer drill and its calibration. Study of sugarcane and potato planter, identification of different plant protection equipments, study of tractor drawn reaper and different type of threshers. Identification of different types of engines and their parts. Acquaintance of different system and controls. Tractor and practice in tractor driving. Practice in tractor driving.

Paper V. Farm Management and Natural Resources Economics

Meaning, concept, objectives, nature and scope of farm management. Meaning and definition of farm, structure and characteristics of farm business. Different types of farm and factors determining types and size of farm.

Basic principles of farm management-factor-factor and product-product relationships, law of equi-marginal return and law of comparative advantage. Meaning and concept of cost, types of cost and their importance in farm management decision making.

Concepts of farm returns. Farm business analysis and various measures of efficiency. Importance of farm business records and accounts, inventory, balance sheet, Profit and loss account of farm. Status of farm inputs-land, labour and capital. Farm planning and budgeting, meaning and importance of farm plan and farm budgets, partial and complete budgeting, formulation of farm plan and budget. Concept, subject matter and importance of natural resource economics.Classification of natural resources and basic term; ecosystem, biomass, biosphere reserves, rate of use, environment, pollution etc. and concept of natural resource economics-ecology. Natural resource management and conservation, issues in natural resource problems. Time element in decision making and B/b analysis. The basic theory of natural resource economics- efficiency in private market economy, externalities in natural resource use and alternative solution thereof.

Important issues in economics and management of land, water and forest resources and the environment. Natural resources administration and policy formulation.

Practical

Preparation of farm layout including determination of cost of fencing, application of different farm management principles concerning resources allocation, determination of most profitable level of input use, least cost combination of inputs, optimum enterprises combination through empirical data and computation. Application of cost principles in the estimation of cost of crop and livestock enterprises and preparation of farm plan the area. Collection and analysis of

relevant data on various natural resources in the country and review & discussion of case studies. Methodology of economic analysis of project in the context of natural resource projects.

Paper VI. Fundamentals of Extension Education and Rural Development

Meaning, concept and process of extension education. Objective, principles and philosophy of extension. History of extension work in India. Education -formal and non-formal. Components of behavior-knowledge, attitude, skill and motivation. Principles and steps in teaching-learning process, learning situation. Implication of teaching.

Concept, need and steps in programme planning. Principle of programme planning, Programme planning process. Panchayati Raj Institution, organization and its role in programme planning. Extension evaluation -its meaning, principles, steps, techniques and criteria. Critical analysis various extension programme.

Meaning and importance of rural leadership, types, selection and qualities, training of leadership.

Meaning of administration, public administration and extension administration. Coordination and team work, Organization, POSDCORB, Organization and management of NES and recognized extension system. Rural development programme: an over view of CD programs before 1952, agricultural/ rural development programme- IAAP, CADP, HYVP, SFDA, hill area development programme, integrated tribal development project, integrated dryland farming project, integrated child development scheme, IRDP, TRYSEM, JRY, DWCRA, Mahila uthan yojana, Sunishchit rojgar yojana. Role of voluntary organizations in rural development, women in agriculture and rural development.

Practicals

Visit and study of Panchayati Raj Institution; block/ extension training centre, Study about extension teaching aids and methods. Preparation extension teaching aids like folder, pamphlets, poster etc. Acquaintance with university extension system and study of rural development programs in villages, evaluation of extension programme.

Paper VII Post Harvest Management & Processing of Fruit and Vegetables

Importance of PHM for fruit and vegetable. Total production, consumption pattern and post harvest losses in fruit and vegetables. Maturity and ripening process, biochemical changes after harvesting, quality management for fresh marketing and processing. Storage of fruit and vegetables-ambient, law temperature and controlled atmosphere storage system. Packaging of fresh and processed products. Transportation system, mode of marketing, sorting, grading and handling. Pre treatment of fresh produce for marketing and processing. General principles and

methods of preservation of jam, marmalade, tomato products-pickles and chutney, drying fruit and vegetables, fruit beverages-juices, squashes, nectars, cordials, by products of fruit and vegetable processing industries such as vinegar, cider. Canned fruit and vegetable products, frozen fruit and vegetables, government policies-regulation and specifications for fresh and processed products. Export promotion agencies and their role in export of fresh and processed products.

Practical

Determination of respiration rate and detection of post harvest disorders/ disease. Marketing losses in fresh produce. Calculation of refrigeration lode for processing/ storage. Effect of packaging material/ transport system on their quality. Preparation of jam, jellies, chutneys/ sauces, ketchup and pickles. Canning, dehydration and freezing on fruit and vegetables. Chemical analysis of fresh and processes products and visit to mandi, export terminals and processing industries.

Paper VIII. Practical Crops Production-I

Complete practical acquaintance relating to scientific production technique of major field crops of the season including sowing weeding, hoeing, fertilizer and manure application, harvesting etc.