आज दिनांक 13.07..2011 को विश्वविद्यालय परिसर में निम्न विषय की पाठ्यक्रम समिति की एक आवश्यक बैठक हुई, जिसमें निम्न प्राध्यापकगण उपस्थित हुए :–

Date :- 13.07.2011 Subject :- Agriculture Committee Place :- Committee Hall

1. Dr. Rajesh Chauhan
2. Dr. Ramesh Singh
3. Dr. S. F. Pal
4. Dr. Rajesh Agarwal
5. Dr. Ramakant
6. Dr. V. K. Singh

B.Sc. Ag., SEMESTER-I

Sl. No.	Department	Credit Hours	Title of the course
1.	English Department	1+1=2	Structural & Spoken English
2	Agronomy	2+1=3	Principles of crop Production Principles of Agronomy (ICAR)
3	Ag. Chemistry	2+1=3	Fundamentals of Soil Science
4	Ag. Botany	1+1=2	Elements of Genetics
5	Statistics	1+1=2	Elementary Statics and applied mathematics elements of Statistics (ICAR)
6	Soil Conservation	1+1=2	Agricultural Meterology
7	Agriculture Extension	1+1=2	Rural Sociology and Educational Psychology
8	Horticulture	2+1=3	Fundamentals of Horticulture
9.	Physical Department	0+1=1	Physical Education (Only Practical No. Syllabus by ICAR)

Course-I

Semester- I **1+1=2**

STRUCTURAL & SPOKEN ENGLISH

(A) ELEMENTS OF ENGLISH GRAMMER : A REVISION

1. Study and use of Articles: Pronouns and Prepositions.
2. Tenses in English

(B) SENTENCE STRUCTURE

1. Sentence formation
2. Some common varieties of sentence structure (including errors).

(C) READING COMPREHENSION

Six specified lessons from the following text book:

Name : Glimpses of English Prose.

Author : Dr. O.P. Dixit

Publisher : Sahitya Niketan, Kanpur

(D) WRITTEN COMMUNICATION

1. Letter and application writing
2. Report writing.

(E) VOCABULARY

1. Synonyms and antonyms
2. One word substitution
3. Affixes, prefixes and suffixes

PRACTICALS

1. Speech mechanism-speech event, production of speech, speech organs.
2. Phonetic sounds and symbols-pure vowels, diphthongs and constants (voiceless/voiced, accented/u naccented, aspirated/u naspirated).
3. Stress and intonation-word-accent (syllable, consonant clusters), stressshift, compound words, word accent in Indian English v/s R.P., rules for accentual patterns.
4. Accent in connected speech-rhythm, weak forms, intonation etc.
5. Listening comprehension
6. Reading comprehension.

Course- II

Semester-I **2+1=3**

PRINCIPLES OF CROP PRODUCTION
PRINCIPLES OF AGRONOMY (ICAR)

1. Definition and scope of Agronomy.
2. Classification of Crops of Different basis.
3. General principles of Crop production : Climate, soil, preparation, seed and sowing, post sowing-tillage, water management, nutrition, plant protection measures, harvesting, threshing and storage.
4. Crop sequences and system with emphasis on mixed cropping and inter cropping.
5. Nutritional management of crops including application of meanures, fertilisers and bio-fertilisers. Concept of integrated nutrient supply system.

Practical

1. Study of weather and weather forecasting.
2. Identification of crops, manures and fertilisers.
3. Framing of crop rotations and preparation of cropping schemes for varying agro-climatic conditions.
4. Preparation of seed bed based on important inter-cropping systems.
5. Calculation of fertiliser requirement, fertiliser mixtures and unit values.
6. Methods of fertiliser application.

Course- III

semester- I **2+1=3**

FUNDAMENTALS OF SOIL SCIENCE

1. Definition of Soil, Components of Soil and their role in agriculture.
2. Soil forming rocks and minerals, Development, of Soil profile, Soil formation, factors affecting soil formation, soil forming processes.
3. Soil reaction and its measurements and significance.
4. Chemistry of clay minerals with special reference to Kaoinite, Montmorrillonite and little.
5. Physical properties of soil, and their significance.
6. Chemical properties of soil, cation and anion exchange phenomenon and their importance in agriculture.
7. Soil organic matter, humus formation and its importance in soil fertility, management and maintenance of organic matter in soils.
8. Soil of U.P. classification, distribution, characteristics.
9. Elementary idea of soils of India-occurrence, characteristics, physicochemical properties of chernozems, pobzol and laterite soil.
10. Basic idea of comprehensive system (7th approximation) of soil classification.
11. Elementary idea of soil survey and Land capability classification.
12. Occurrence, distribution and functions of Soil Micro-organism. Biological Nitrogen Fixation (Symbiotic and Non symbiotics), Nitrification, Microbial decomposition of orgame Matter in soil,
13. Role and use of Biofertilizers.in Crop Production,
14. Role and use of Biofertilizers in Crop Production,
15. Classification and use of Insecticide, Fungicides and herbicides eg. BNC, DDT, Malthion, 2,4,D.

Practical:

1. Preparation of HCL extract of Soil
2. Determination of FeO, R203, Ca and P in HCL extract

3. Determination of soil O.M.
4. Estimation of Cl, C03, HCO3 in soil extract
5. Determination of total nitrogen in soil.

Course- IV

Semester- I **1+1=2**

ELEMENTS OF GENETICS

1. Definition, significance and historical development in genetics.
2. Mendel's Law's of heredity.
3. Chromosomal theory of inheritance, melosis and mitosis.
4. Linkage and crossing over-types, mechanism and significance,
5. Nucleic acid as genetic material-structure, replication, genetic code and translation.
6. Mutation-spontaneous and induced.
7. Chromosomal changes-molecular structure and numerical.
8. Multiple factor inheritance and multiple alleles, blood groups in man and body coat colour in rabits.
9. Sex chromosomes and its determination in man and droisophila, sex linked characters.
10. Cytoplasmic inheritance-plasma and nuclear, gene inter-action.

Practical

1. Preparation of temporary cytological slides (mitosis and meiosis)
2. Genetical problems on monoand dihybrid ratios with their modifications.
3. Chi-square test and goodness of fit of Mendelian modified ratios.
4. Practical record
5. Viva-voce

Course- V

Semester- I **1+1=2**

ELEMENTARY STATISTICS AND APPLIED MATHEMATICS

ELEMENTS OF STATISTICS (ICAR)

STATISTICS

Definition, Aims, Characteristics and Limitations of statistics, Classification and Tabulation of data.

Definition, advantages and disadvantages of Arithmetic Mean, Median, Mode; Geometric Mean, Harmonic Mean and Weighted Mean as measures of central tendency; and Range, Quartile Deviation, Mean Deviation, Variance, Standard Deviation and Coefficient of variation as measures of dispersion.

Definition of probability, Additive and Multiplicative Laws of probability and simple problems based on them. Definition, merits and demerits of sampling and Random Sampling. Concept of Standard Error. Basic concepts used in tests of Significance like Null Hypothesis, Degrees of freedom and Level of significance. Definition and uses of z and t-tests in testing significance of difference between two means; F-test in testing equality of two variances and (x2= test as a test of independence of attributes in 2x2 contingency table only.

Bais principles of Experimental Design. Description and Analysis of Completely Randomised Design (C.R.D.), Randomised Block Design (R.B.D.) and Latin Square Design (L.S.D.)

MATHEMATICS

Binomial Theorem for positive integral index only. Uses of Natural and common Logarithems. Exponetial Series. Limits and Differentiation (Without differentiation by first principles). Differentiation of algebraic, trigonometrical, logarithmic and exponential functions only, Logarithmic differentiation. Differentiation of products, quotients, function of functions, implicit and explicit functions.

Practical

Based on

1. Measures of Central Tendency
2. Measures of Dispersion
3. Tests of Significance
4. Analysis of CRD, RBD and LSD

Course-VI

Semester- I **1+1=2**

AGRICULTURAL METEROLOGY

Different meteorological variables related to agriculture.

Rainfall- Hydrologic cycle and it's components. Types and forms of precipitation. Storms, occurrence, variation and measurement of rainfall. Rain guages, Computation and analyses of data. Plotting of mass curve and rainfall, intensity curve.

Run-off- Definition, types, factors affecting, estimation and measurement of run-off.

Atmosphere - Definition and structure, climatre and weather, atmospheric pressure, factors affecting, measurement.

Elementary idea of insolation, Temperature, kinds and measuring instruments, evaporation, factors affecting, measurement

Humidity, definition, windvane, Anemo-meter.

Indian Agro Climatic Zones

Elementry idea of weather forecasting.

Practical

1. Computation of average rainfall.
2. Mass Curve
3. Plotting Bargraph for rainfall data.
4. Rainfall intensity curve.
5. Measurement of rainfall by Raingauge.
6. Measurement of Atmospheric Pressure.
7. Plotting line graphs for illustrating climatic factor such as temperature.
8. Measurement of Relative Humidity.
9. Study of wind vane and Anemometer.
10. Measurement of Evaporation by USDA evaporation pan.

Course-V

Semester- I **1+1=2**

RURAL SOCIOLOGY AND EDUCATIONAL PSYCHOLOGY

1. Definition and scope of rural sociology.
2. Basic concept of society, community and groups
3. Characteristics and Differences of rural and Urban communities
4. Basic rural institutions and their role in Agriculture development.
5. Definition and types of rural leadership and their role.
6. Definition, nature and importance of psychology in the development of human behaviour.
7. Meaning of habit and habit development.
8. Basic Psychological concepts; motivation, Social Interaction, Attitudes, Emotions, Prejudices and Social Perception.
9. Personality- definition and development.

Practical

1. Socio-economic survey of village communities.
2. Developing schedules and questionnaires.
3. Practical knowledge about the working of basic rural institutions.
4. Identification of important value systems in the rural setting as a means of social control.
5. Identification of rural personality traits that affect the development of personality in rural situation.

Course-VIII

Semester- I **2+1=3**

FUNDAMENTALS OF HORTICULTURE

Introductory knowledge of main branches of horticulture and their importance; Botanical classification of fruits; climatic fruit zones of Uttar Pradesh and fruits grown therein; Establishment of orchards; Selection of site, systems of planting; Orchard soil management; Systems of irrigation; Principles of pruning and systems of training of fruit plants; Unfruiffulness, its causes and measures to overcome it; fruit drop, its causes and measures to control it; rejuvenation of orchards, Brief studies of polyembryony, parthenocarpy and incompatibility.

Practical

1. Identification of garden tools and plants;
2. Preparation of orchard layouts for different climatic zone of U.P.;
3. Practice of propagation of major fruit plants;
4. Preparation and seed beds and raising of seedlings;
5. Practice of lifting and packing of nursery plants;
6. Visit to nurseries, gardens and research stations.

B.Sc. Ag., SEMESTER-II

Sl. No.	Department	Credit Hours	Title of the course
1.	Agriculture Engineering	1+1=2	Cereals Millets, and pulses crops (field crops Kharif Crops)
2	Agriculture Extension	2+1=3	Principal of plant breeding
3	Agriculture Botany	2+1=3	Form power and Machinery, farm Structures, Power and Machinery (ICAR)
4	Agriculture Entomology	1+1=2	Environmental Science Agro Ecology
5	Plant pathology	1+1=2	Agriculture marketing, export and cooperation
6	Agriculture soil	3+1=4	Vegetable Production
7	Agriculture Soil Chemistry	3+1=4	Elementary Microbiology and Soil microbiology

Course- I

Semester- II **1+1=2**

IRRIGATION AND WATER MANAGEMENT

1. Importance of water in crop production.
2. Soil Moisture constants.
3. Water requirement of crops and factors affecting it.
4. Approaches of irrigation scheduling.
5. Systems and methods of irrigation
6. Quantity and quality of irrigation.
7. Measurement of irrigation water.
8. Elementary idea of drainage on farms.

Practical

1. Measurement of irrigation water.
2. Determination of soil moisture content and quality of water.
3. Calculation on consumptive use of water.
4. Numerical exercises on drainage and irrigation requirement.
5. Calculation of irrigation water use efficiency
6. Visit to irrigation and drainage projects.

Course- II

Semester- II **2+1=3**

FUNDAMENTALS OF EXTENSION EDUCATION AND RURAL DEVELOPMENT

1. Extension Education:

(a) Meaning, definition, objectives, Principles, Scope, Philosophy and its distinguishing features.

(b) Extension Teaching and Learning : Teaching, Teaching Elements, steps in Teaching, Learning, Learning Situation, Basic Principles of Teaching and Learning.

(c) Early Extension Efforts in India.

(d) Comparative study of Extension Service in India and USA.

2. Community Development:

(a) Meaning, Definition and objectives of community development.

(b) Organisational set up and Activities of Community devIopment at State, District, Block and Village level.

(c) Extension and Rural Development Programmes : Including T & V system, National Demonstration, IRDP, Jawahar Rojgar Yozana.

3. Extension Programme Planning, Monitoring and Evaluation:

(a) Meaning, Principles and Procedure of Programme Planning.

(b) Definition : purpose, types, criteria and steps involved in monitoring and evaluation.

Practical

1. Practice in Conducting Survey
2. Practice in preparing schedule and Questionnaire for studying the organisational set up of community development.
3. Contact with the farmers and educating them in new technology of Agriculture.
4. Development programme for a village & a Block.
5. Preparation of an outline and practice on evaluation of a programme.
6. Classification, Tabulation and diagrammatic representation of data.
7. Writing study Reports.

Course- Ill

Semester- II **2+1=3**

ELEMENTARY CROP-PHYSIOLOGY

1. Role of plant physiology in agriculture.
2. Cell structure and function.
3. Physico-chemical phenomenon-diffusion, osmosis and imbibitions.
4. Essential nutrient elements, their role, deficiency sysptoms, mineral salt, absorption.
5. Photosynthesis - light and dark reactions.
6. Mechanism of respiration, transpiration
7. Fat metabolism, synthesis of fatty acids, glycerole and their condensation.
8. Assimilation of nitrogen in plants.
9. Plant growth substances, photoperiodism and vernalization.

Practical

1. Experiments on diffusion, osmosis and imbibition.
2. Determination of transpiration rate by potometers.
3. Extraction of photosynthetic pigments, separation of chlorophyll “a” and “b” and carotenoides.
4. Experiments on factors affecting rate of photosynthesis (CC, light and temperature).
5. Determination of photosynthetic and respiration rates through portable CO2 gas analyser.

Course- IV

Semester- II **1+1=2**

INTRODUCTORY ENTOMOLOGY

1. General introduction to Phylum-Arthropoda, its various classes and their distriguishing characters with particular reference to class lnsecta
2. Insect Morphology: Body wall-structure, composition and functions; Body divisions-Head (Structure and its appendages; structure, functions and modifications of antinae; Mouthparts-Biting and chewing, piercing and sucking, sponging, siphoning, chewing, and lapping); Thorax-its structure and appendages, modifications and functions of legs and wings, wing coupling apparatus and wing venation; Abdomen-its segements and appendages.
3. Anatomy: Digestive, Excretory, Reproductive, circulatory, respiratory and nervous systems of grass hopper.
4. Sense organs : Structure and functions of ocelli, compound eye and johonston's organ.
5. Post-embryonic development including ecdysis, instars, types of larvae and pupae. Different types of metamorphosis.
6. Taxonomy: Insect Classification upto the level of families of agricultural importance of following orders:

Orthoptera : Acrididae;

lsoptera : Termitidae;

Hemiptera : Coreidae, Pyrrhocoreidae, Lophopidae, Aleurodidae, Jassidae, aphidae, Coccidae, Lacciferidae,

Coleoptera : Dermestidae, Coccinellidae, Bruchidae Chrisomelidae; Curculionidae, Tenebrionidae, Scarabaeidae;

Lepidoptera : Gelechiidae, Pyralididae, Noctuidae, Cymbidae, Papilionidae, arctiidae and Bombycidae;

Hymenoptera: Tenthredinidae and Apidae

Diptera : Trypetidae

Practical

1. Dissection of Grasshopper for the study of digestive, reproductive and nervous system.
2. Study and Temporary mounting of external parts of grasshopper.
3. Identification and comments upon the various Arthropods with special reference to class lnsecta.
4. Collection and preservation of insects.
5. Viva-voce and practical records.

Course- V

Semester- II **1+1=2**

INTRODUCTORY PLANT PATHOLOGY

1. Definition and importance of plant pathology.
2. Causes of plant diseases.
3. Classification of plant diseases according to cause and occurrence.
4. Plant Pathogens:

(a) Fungis

(i) Economic importance and general characteristics.

(ii) Morphology of different vegetative structures (thallus, mycelium, haustoria, etc.)

(iii) Reorduction

(iv) Different types of spores.

(v) Levels of parasitism

(vi) Nomenclature

(vii) Classification of fungi with special reference to genera listed under item (viii) Life histories of Pythium, albugo. Erysiphe, Ustilago Clareicaps and Puccinia.]

(ix) Diagnositic characters of the following genera, Phytophthora, Peronospora, Sclerospora, Ustilago, Sphacelotheca, Tolyposporium, Melampsora, alternaria, Cerospora, Fusarium, Helminthosporium Pyricularia, Rhizoctonia, Colletrotrichum.

(b) Bacteria:

(i) Brief history of bacteria as plant pathogens.

(ii) Morphology and Cell structure.

(iii) Vegetative reproduction.

(iv) Brief outline of classification of plant pathogenic bacteria.

(v) A brief account of mycoplasma.

(c) Viruses

(i) Nature and properties.

(ii) Transmission of plant virus

(d) Phanerogamic parasites: Cucuta, Loranthuus, Orobanche and striga.

Practical

1. Temporary slide preparation of representative genera of disease causing fungi for morphological studies
2. Simple staining of bacteria from milk and curd
3. Preparation of PDA
4. Practical record
5. Viva voce

Course- VI

Semester- II **3+1=4**

ELEMENTARY PLANT BIOCHEMISTRY AND CHEMISTRY OF PLANT PRODUCTS

1. Scope of biochemistry.
2. Carbohydrates - Definition, Classification, Chemistry and Structural formula of the following

(a) Monosaccharides - D Glucose, D. fructose, D. Galactose

(b) Oligosaccharides - Sucrose, Maltose, Lactose.

(c) Polysaccharides - Starch, Cellulose, Inulin.

3. Proteins - definition, classification, composition, important functions Primary and secondary Structure of protein, Biological significance of proteins.
4. Amino acids - Classification, properties of Amino acids structure of the following amino acids- Glycine, Tryptophane, Aspartic acid, serine, lysine, Histidine, Methionine, protein; Essential and non-essential amino acids, Nutritional significance of amino acids.
5. Lipids- Definition, classification, properties and structural formula of the following saturated fatty acids (Butyric acid, caproic acid, palmitic acid, stearic acid) and unsaturated fatty acid (oleic acid, Liniolenic acid, erucic acid).
6. Enzyme - Occurrence, nomenclature, classification, mechanism of action, general properties and factors effecting the rate of enzyme action, coenzyme-A.
7. Vitamins - Classification, biochemical functions and structural formula of vit. A, thiamine, raboflavin, Vit. B12 Ascorbic acid, vit. D.
8. Phytohormones - Occurrence, structure and functions of important plant growth substances viz. Auxins, gibberellins, cytokimuis and Abscisic acid.

9. Alkaloids - Occurrence, classification, uses general properties and Biological significance of alkaloids. Structural formula of Conine Nicotine and Papaverine.
10. Nucleic acid - structural formula of Pyrimidines and Purines, Nucleosides and N<ucleotides Watson and crick model of DNA.

Practical

1. Qualitative test of important sugars, proteins and alkaloids.
2. Estimation of starch in plants.
3. Estimation of reducing and non reducing sugars in cane juice and jaggery.
4. Separation and identification of amino acid by paper chromatography.
5. Iodometric titration.
6. Estimation of Diastase enzyme in plants.
7. Estimation of Ca by EDTA method.

Course- VII

Semester- II **3+1=4**

INTRODUCTION TO AGRICULTURAL AND NATURAL RESOURCE ECONOMICS AND FARM MANAGEMENT ECONOMICS

A. Natural Resource Economics

1. Definition, subject matter and scope of economics.
2. Micro Economics and Macro Economics within both static and dynamic framework.
3. Definition, subject matter and significance of agricultural economics.
4. Primitive and scientific Agriculture. Characteristics and Indian agriculture; major problems including causes of low productivity.
5. Economic Development, role of agriculture Technological change in agriculture and various inter-relationships.
6. Task of an economic system, role of economic theory in agriculture.

Production:

Basic production problems production function, productivity curves; relationships thereof, intensity of resource use, law of diminishing returns, output- elasticity, homogeneity in production functions.

Consumption:

Theory of demand, demand curves, consumption function, Elasticity, Utility Analysis, Indifference Curve, Consumer's surplus.

B. Natural Resources

Meaning, Geographical situations, Topography and crops (Agro zones), Temperature and plant growth, Land and land use, culturable waste land crop rotations, cropping scheme and cropping intensity. Forest- Classification, causes of deforestration. Functions of forests. Forestry programmes of the Indian Government Water Irrigation sources, progress, Misuse of irrigation water. Application of economic laws to irrigation, growth and utilization of irrigation potential, Command Area-meaning and Functions of water Managements. Management of irrigation water. Ongoing projects including watershed management programme. Utilized groundwater resources.

C. Farm Management Economics

1. Definition and scope of farm economics and management
2. Farm Management and production economics. Agricultural Economics and industrial Economics-Similarities and differences.
3. Management decisions and cultivators' holdings. Economic Principles their role in farm management. Application of economic Principles/Laws.
4. Law of Diminishing, Returns/Principle of variable Proportions laws of return, scale properties, Law of Equi-mangiral Returns, Law of such situation, opportunity cost/opportunity Returns, Law of comparative advantage.

5. Production Function, productivity curves, least cost combination of inputs, Principle of conbining Enterprises Determination of Optumum output.
6. Cost concepts and Principles, Cost Relationship and curves.
7. Time Comparison (Compounding and discounting of costs). Allocation of Over-head and command costs.
8. Profit Maximization.
9. Measures of form profit.
10. Farm Records and Accounts.
11. Methods of valuation and depreciation of assets.
12. Types of farming : Diversified, General farm, subsistence or Marginal farming, specialized farms, Mixed farming, Ranching and Dry farming.
13. Systems of farming Cooperative farming, peasant farming, state farming, collective farming, capitalistic farming.
14. Tools of Farm Management : Farm Budgeting (Complete and partial budgeting) and farm planning, Linear Programming (Graphical method).
15. Definition of Institute and University Types of uncertainty in agriculture (Price uncertainty, yield uncertainty, innovation uncertainty Social and legal frame as a source of uncertainty). Diversification (complementary and supplementary relationships) as a mechanism to minimize uncertainty), crop and cattle insurance, pumpset insurance Arguments for and against.

Practical:

1. Socio-economic survey and collection of data, classification and tabulation with special reference to natural resources of a village.
2. Study of a farm holding (resources, enterprises, costs, profit and complete farm economy) of the allotted farmer by cost-accounting method.
3. Preparation of an alternative farm plan for the farmer.
4. Submission of Report.

B.Sc. Ag., SEMESTER-III

Sl. No.	Department	Credit Hours	Title of the course
1.	Agronomy	2+1=3	Cereals Millets, and pulses crops (field crops Kharif Crops)
2	Agriculture Botany	2+1=3	Principal of plant breeding
3	Agriculture Engineering	2+1=3	Form power and Machinery, farm Structures, Power and Machinery (ICAR)
4	Soil Conservation	2+1=3	Environmental Science Agro Ecology
5	Agriculture Economics	2+1=3	Agriculture marketing, export and cooperation
6	Horticulture	2+1=3	Vegetable Production
7	Agriculture Soil Chemistry	2+1=3	Elementary Microbiology and Soil microbiology
8	Agronomy	0+1=1	Practical crop production

Course- V

Semester- III **2+1=3**

CEREALS MILLETS, AND PULSES CROPS

(Field Crops Kharif Crops)

Importance, origin, distribution climate varieties soil practices, manuring and irrigation, plant protection, harvesting and processing of the following crops, under different agroclimatic conditions of U.P.

A.	Cereal Crops	:	Paddy, Maize
B.	Millet Crops	:	Sorglum,
C.	Oil seed	:	Groundnut, Til, caster
D.	Pulses Crops	:	Pigeon Pea, Urobean, Moongbean, Soyboan, Cowpeft.
E.	Fibre Crops	:	Cotton, Jute, Suhhemp, Mesta
F.	Green Manure crops	:	Sun hemp and Dhencha
G.	Fodder Crops	:	Sorghum, Pearhmillet, Maize, Napier, Sudan grass, cluster, bean, cowpen
H.	Cash crops	:	Sugarcane, Tobaceo

Practical

1. Identification of crop-seeds, plants associated weeds.
2. Practical knowledge of operations from sowing to harvesting of kharif crops included in theory course.
3. Judging of maturity and estimation of yields.
4. Study of crop production techniques at different farms.
5. Calculation of seed and fertilizer requirement of crops.
6. Preparation of seed beds of important crops.
7. Visit to farms of University and Institutes.

Course- II

Semester- III **2+1=3**

PRINCIPLES OF PLANT BREEDING

1. Plant Breeding-history, objectives and scope.
2. Mode of reproduction in crop plants in relation to breeding techniques.
3. Plant variation kind and causes.
4. Genetic consequences of self and cross pollinated crops.
5. Plant Introduction and exploration.
6. Breeding cross pollinated cropspureline, mass selection, pedigree, bulk and back cross methods.
7. Male sterility and its importance.
8. Breeding of asexually propagated crops, Clonal selection and apomixsis.
9. Polyploidy and mutation breeding.

Practical

1. Technique of emasculation and artificial pollination in important crops.
2. Skeleton of different breeding procedures.
3. Practical record.
4. Viva-voce.

Course- VI

Semester- III **2+1=3**

FARM POWER AND MACHINERY

FARM STRUCTURES, POWER AND MACHINERY (ICAR)

1. Farm structures farm site, food storage structure Breeding materials farm house, dairy building poultry housing.
2. Elementary knowledge about the engineering terminology and calculations on piston displacement compression ratio, hip and Licenses of engines construction and working of four stroke and two stroke cyclic engines common engine tables causes and their remodes.
3. classification of tractors elementary knowledge about following main components of tractor and their functions steering clutches, transmission different and final drive brakes, bolt, pulley PTO, shift and hydraulic lift methods of starting and stopping of tractors. General care and maintenance.
4. Study of simple parts operation and installation of anelectric meter (Induction type, eniyl, calculation of HP units consumed Role of switches fuses and strater,
5. Study of construction working principles toubles and adjustments of the following machines.

Discplough dischonow seed drill planter reaper mower threshers combine spresyes and dusters calculation of area covered power requirement and efficiency of above machines.

Practical:

1. Preparation of layout for farm houses dairy barn and poultry housing.
2. Study of construction of four stroke and two stroke cycle engines operating and running of diesel engines.
3. Study of tractors systems tractor driving practice.

4. Study of disc plough, study of seed drill plants and its calibration, study of throsher and combine.
5. Visits to places of engineering interest.
6. Identification of different work shop tools and machines and their used.

Course- IV

Semester- Ill **2+1=3**

ENVIRONMENTAL SCIENCE AGRO ECOLOGY

1. Ecology - definition, division and significance.
2. The Environment - environmental management and control of pollution, affecting plant growth a biotic and blanic isotere interaction.
3. Ecosstom major ecosystems, energy and its flow in ecosystem biochemical cycles and nutrient cycles.
4. Plant community - classification composition, and study of plant community structure.
5. Plant adoption - ecological classification of plants and their morphological anatomical and pysiological adaptations to adverse environments hyd rophytes, xerophytes, mesophytes, apiphytes and holophyos
6. Ecological problems of major crops-cereals, millets, pulse and oilseeds Practical

1. To record temperature, relative humidity and light intensity value of the atmosphere.
2. To study the community by quadrat method by determining plant structure different specie crops.
3. To study the getution of the givne area by a phyoloycoinic method biological spectrum method.
4. To determine the biomass producers in the given area.
5. To record abiotic components- pH, temperature, light intensity, turbidity is pond ecosystem.

Course- VII

Semester- III **2+1=3**

AGRICULTURE MARKETING, EXPORT AND COOPERATION

A. Agricultural Marketing:

1. Market, Meaning, scope and classification of markets. Definition of agricultural marketing, demand, supply and price.
2. Marketable surplus, marketed surplus. Integrated marketing.
3. General theory of markets and marketing.
4. Demand for agricultural products.
5. Production and market supply.
6. Price Determination and price analysis under different market structures.
7. Marketing Functions and services.
8. Marketing costs margins and efficiency.
9. Defects of Present system of marketing of agricultural produce. Steps taken by the Indian Government and possibilities of improvements.
10. Fixation of agricultural Prices.
11. Marketing Institutions: Regulated and cooperative markets.
12. Market Research.

B. Export.

1. The concept of export as a district business activity in agricultural sector of the Indian economy, its importance and role in economic development.
2. Policies of export of food grains and agricultural commodities pursued by the ndian Government.
3. mport vs. export value of cereals and other agricultural commodities.
4. gencies engaged in exporting agricultural goods.

C. Cooperation

1. Maning and Concept of Cooperation, principles of Cooperation (Equality,niversality, distributive, justice, democracy, unity, honorary

services voluntaryism). Place of thrift in cooperation, economic planning and cooperation.

2. History and Progress of cooperative movement in India.
3. Structure and organisation of agricultural cooperation in India.
4. National cooperative federations, courses of slow growth of agricultural cooperatives, suggestions for rapid development. National Bank for Agriculture and Rural development (1982).
5. Cooperative farming : Meaning thereof, New classification cooperative farming, cooperative joint farming, cooperative collective farming. Advantages thereof. Reasons for apathy of farmers in adopting cooperative joint farming.

Practical

1. Survey of a market (mandi) both primary and secondary (atleast one each).
2. Case studies of marketing of a minor and a major commodity w.r.t. marketing channels costs margin and price spread over.
3. Study of a (i) cooperative marketing society (ii) a warehouse functioning market (iii) a regulated market and (iv) a cold storages.
4. Submission of a report on the above four aspects.

Course- VI

Semester- III **2+1=3**

VEGETABLE PRODUCTION

Importance and scope of vegetable production in India; Classification of vegetables. Types of vegetable gardens; Culture and seed production of major vegetable like Potato, Brinjal, chillies, tomato, Cauliflower, Cabbage, Onion, Bottle, gourd, Musk melon, watermelon, Okra, Radish, Carrot and Pea.

Practical

1. Nursery raising of vegetable crops.
2. Production of seeds in vegetable available at the time of course.
3. Cost of cultivation studies in Potato, Tomato, Cauliflower and Okra.
4. Production oriented training in cultivation of vegetable crops.

Course- VII

Semester- III **1+1=2**

ELEMENTARY MICROBIOLOGY AND SOIL MICROBIOLOGY

1. Definition, scope and importance of microbiology.
2. A brief survey of microbiology:
   (i) Prokaryotes and Eukaryotes.
   (ii) Types of microorganisms : algae, protozoa, fungi, bacteria and viruses.
   (iii) Size relationships.
3. Simple staining and gram staining techniques of bacteria.
4. Characteristics of gram positive and gram negative bacteria.
5. Classification of bacteria (only important groups)
6. An elementary idea of general characteristics, classification and reproduction of fungi, algae and protozoa.
7. Biogeochemical cycles: Nitrogen, Carbon, Sulphur and Phosporous cycles.
8. General structure of bacteriophage and replication.
9. Sterilization and disinfection.

Practical

1. Study of different parts of light compound microscope and their functions.
2. Gram staining of bacteria.
3. Preparation of nutrient broth, Czapek's and Richard's media.
4. Identification of algae, fungi and protozoa.
5. Practical record
6. Viva voce.

Course- VIII

Semester- III **0+1=1**

PRACTICAL CROP PRODUCTION

In this course, team of about 10 students will be given a sizable plot of land (100 sq.m. minimum) for a full year. The team will manager crop production enterprise from a to z including maintenance of account and preparation of balance sheet. No paid labours will be supplied and other inputs will be supplied on loan and their cost will be deducted from the receipt of the enterprise. The net profit will be distributed among the students. To cope with natural calemilies a revolving fund will be raised by deducting 10% amount from net profit every year. The evaluation of students will be done on the basis of actual working units, share in profit, oral examination and maintenance of accounts and records.

B.Sc. Ag., SEMESTER-IV

Sl. No.	Department	Credit Hours	Title of the course
1.	Agronomy	2+1=3	Oil seeds commercials crops fields crops-II Rabi crops (ICAR)
2	Agriculture Botany	2+1=3	Breeding of field crops
3	Soil Conservation	2+1=3	Principles of soil physics and conservation soil survey/land planning and remote sensing (ICAR)
4	Animal Husbandry	2+1=3	Livestock production and management (including poultry) lives stock production India poultry swine and goa farming along with animal diseases (ICAR)
5	Entomology	2+1=3	Economic Entomology, Economic entomology including crops (ICAR)
6	Horticulture	2+1=3	Fruit production fruit production including plantation crops (ICAR)

Course- I

Semester- IV **2+1=3**

OIL SEEDS COMMERCIALS CROPS

Field Crops II

RABI CROPS (ICAR)

Importance, origin, distribution, climate, varieties improved, agronomic practices managing and irrigation, plant protection, harvesting and processing of the following crops under various agroclimatic conditions of U.P.

A.	Cereal Crops	:	Wheat, Barley, Oat
B.	Oilseed Crops	:	Rapeseed and mustard Linseed, Sunflower
C.	Pulse crops	:	Chickpea, fieldea Lantil, Rajmash
D.	Fodder Crops	:	Oat, Berseem Lucene
E.	Cash Crops	:	Potato Mentha

Practical

Studies the practical course for the field crops I with suitable allegation of crops included in the syllabus.

Course- I

Semester- IV **2+1=3**

BREEDING OF FIELD CROPS

1. Origin, distribution and objectives.
2. Breeding problems, systematic description and economic importance.
3. Breeding methods adopted and achievements with reference to following crops:

(a)	Cereals	:	Wheat, rice and maize
(b)	Millets	:	Sorghum and pennisetum
(c)	Pulses	:	Gram, Pea and arhar
(d)	Oil-seeds	:	Mustard, groundnut and sunflower
(e)	Others	:	cotton and potato

Practical

1. Identification of important varieties of above mentioned cvorps.
2. Systematic description and artificial hybridiation and above mentioned crops.
3. Significant research advances made in above mentioned corps.
4. Practical record
5. Viva-voce.

Course- I

Semester- IV **2+1=3**

PRINCIPLES OF SOIL PHYSICS AND CONSERVATION

SOIL SURVEY/LAND PLANNING AND REMOTE SENSING (ICAR)

Physical properties of soil and their determination.

Definition and importance of soil conservation in agriculture. History and soil conservation in India.

Soil survey, definition Land use capability classification different types of soil in India.

Soil erosion, definition types, mechanics and causes of eerosion. Factors affecting soil erosion. Agronomical practices for soil and water conservation. Engineering practices for erosion control such as bunding, terracing, temporary and permanent structure for Gully control. Grassed water ways. Water harvesting.

Wind erosion mechanics, control, sand dune fixation, shifting cultivation.

Survey, measurement of distance direction and elevation.

Role of grosses and forests in soil conservation, farm forestry, social forestry.

Practical

1. Fomiliarization with chain survey equipments.
2. Exercises on chain survey.
3. Familiarization with prismatic compass (P.C.)
4. Open traversing by chain and P.C.,
5. Closed traversing by Chain and P.C.
6. Calculation of included angles.
7. Study and adjustment of Dump level (D.L.)
8. Differential leveling by D.L.
9. Profile leveling by D.L.
10. Calculation of Reduced level.
11. Construction and design of bunds with calculation of earth work.]

12. Calculation of infiltration rate and bulk density.
13. Visit to soil conservation research centre for erosion and control.

Course- IV

Semester- IV **2+1=3**

LIVESTOCK PRODUCTION AND MANAGEMENT (INCLUDING POULTRY)

LIVES STOCK PRODUCTION INDIA POULTRY SWINE AND COAT FARMING ALONGWITH ANIMAL DISEASE (ICAR)

General:

Importance of livestock in Agriculture Relationship of plants with animal husbandry. Dairying under specialized and mixed farming. Livestock and milk Production statistics, milk distribution.

Dairy cattle & Buffalows management:

Breeds, Breeding methods and systems, care and management of milich cows at after calving; Raising of calves, management of heifers and bulls maintenance of livestock records milking methods and principles. Clean milk production. Pasture management. Housing for dairy animals.

Pig Management

Importance, important Breeds, raising piglets upto age of slaughter. General aspects of breeding, care of sow and boqr.

Seep/goat management:

Importance, important breeds, raising to kids/lambs, breeding, feeding of goats/sheep

Poultry production:

Importance, important breeds, General aspects management of raising broilers and layers, feeding of different class of birds, Grading of eggs and preservation.

Diseases:

Signs of illness, control measures of disease, classification of diseases. Modes of transmission, prevention and treatment of disease of bovine (HS, RP, BO, Anthrax, Brucelloses, Johne's. Mastitis, Milk fever, FMD), Sheep and goats (enterotoxaemia, coccidiiosis, ascariasis), pigs (Swine fever, Hog

chotern) and poultry (Ranikhet, fowl pox, CRD, Marex, Gumbaro). Vaccination programme for cattle and poultry.

Practical

Study of external body parts, study of phenotypic and physiological different between cow and buffaloes, zebu, vs. Taurus, estimation of body weight measurements, marking for identification castration, dehorning. Estimation of judging cost of milk production problems on soil capacity, computation of mediation ration mixing of feeds, casting and throwing, Grooming, Preparing scheme of round the year defermining temperature pulse and animals.

Course- III

Semester- IV **2+1=3**

ECONOMIC ENTOMOLOGY

ECONOMIC ENTOMOLOGY INCLUDING FISHERY (ICAR)

1. Economic importance of insects, nature and extent of damage, life history and management of the major insect pests of following crops as mentioned against them:

Paddy	Leptocorisa variconis, Hieroglyphus Spp., Nilaparvata lugens, Nephotetix, spp., Mythimna separate.
Jower Maize	Chilo partellus, Atherigona varascoccate.
Sugarcane	Tryporyza novella, Emmalocera depressella, Pyrilla prepussila, Aleurolobus barodensis.
Cotton	Pectinophora gossypiella, Earias Spp., Sylepta derogala, Dysdercus Spp., Bomisia tabci, Amrasca blouttula.
Oilseeds	Lipaphis erysimi, Athalia proxima Bagrada Cruciferarun Dasyneura lini.
Pulses	Helicoverpa armigera Agrotis Spp., Etiella Zinckenella, Melanagromyza obtuse, Phytomyze atriornis.
Pests of Fruit crops	Drosicha Mangiferae idioscopus Spp., Papilio Demeclius, Diaphorina citri Phyllocnistis citrelia, Otheris Spp. Virechois isocrates. Eriosoma lanigerum. Quadraspidiotus permincousus.
Pest of Vegetable Crops	Leucinodes orbonalis, Epitachna viontioclopunctate. Raphidoplapa foveicollis, Dacus Cucurbitae, Plutella Xylostella.
Pests of Stored Grains	Sitophilus oryzae, Trogoderma granarium, Tribullum castaneum, sitotroga cerealella, callsobruchus

	chinensis
Polyphagus pests	Odontotermes abesus, Schistocerca gregaria, Holotirichia consanquincea spilosoma oblique, spodoptera litura, Amsecta Spp.

2. Elementary knowledge of agriculture and lac culture.

Practical

1. Collection, mounting and preservation of insect pests of crops stages.
2. Filed and laboratory acquaintance withinsect pests, the various srages and damaged materials.
3. Technical knowledge of honey, silk and lac prodsuction.
4. Filed application of insecticidal formulations.
5. Practical records and Viva-voce.

Course- VII

Semester- IV **2+1=3**

FRUIT PRODUCTION FRUIT PRODUCTION INCLUDING PLANTATION CROPS (ICAR)

Importance, scope and present position of fruit and plantation corps in India, Practices involved in the production of truits : Mango, Guava, Kagzi lime, banana, Grape, Litchi, Papaya, Loquat, Aonla, Ber, Jack Fruit, Apple and Peach; Production techniques of plantation crops : Coconut, Cashew nut, Tea and coffee.

Practical

Identification of fruits; and plantation crops; Orchard layout and palnting; Practice of different propagation methods with special reference to fruits; Practice of training and pruning of fruit plants; Plant protection practices; visit to orchards, nurseries and research centers of fruits and plantation crops.

B.Sc. Ag., SEMESTER-V

Sl. No.	Department	Credit Hours	Title of the course
1.	Botany	1+1=2	Introduction to plant biotechnology
2	Dairy	2+1=3	Milk and milk processing, principles of food science and human nutrition (ICAR)
3	Horticulture	2+1=3	Preservation of fruits and vegetables post harvest management of fruits and vegetables (ICAR)
4	Entomology	2+2=4	Crop pests and integrated pest management crops pests and management (ICAR)
5	Agronomy	1+1=2	Weed management.
6	Pathology	2+2=4	Crop disease and their management plant pathology : crop diseases and management (ICAR)
7.	Soil Chemistry	2+1=3	Soil fertility, fertilize and integrated nutrient management (ICAR)

Course- I

Semester- V **1+1=2**

INTRODUCTION TO PLANT BIOTECHNOLOGY

1. Definition scope and importance of plant biotechnology.
2. Outlines of basic steps involved in plant, biotechnology/genetic engineering such as:
   (a) Isolation of plant DNA and vector DNA
   (b) Restriction of DNA of endonucleasses.
   (c) Electrophoresis of restricted DNA fragements.
3. Cloning vectors for recombinant DNA such as-
   (a) Ti-plasmic vector for higher plants.
   (b) Plant viruses such as cauliflower mosaic virus (Ca MV), tobacco mosaic virus (TMV) and gemineae virus as vectors.
4. Application of plant genetic engineering in crop improvement.
5. Plant tissue culture.
   (i) Culture media used in plant tissue culture.
   (ii) Somaclonal and gametoclonal variation in plants.
   (iii) Micro-propagation of plants.
   (iv) Application of plant tissue culture in crop improvement.

Semester- V **1+1=2**

MILK AND MILK PROCESSING PRINCIPLES OF FOOD SCINCE AND HUMAN NUTRITION (ICAR)

1. Milk and its secretion, composition of colostrums and milk of differect species. Physical properties of clostrum, cow and buffalo milk. Factors affecting the quantity and quality of milk produced. Clean milk production, microorganism of milk and their functions. Agencies engaged in handling and transportation of milk pricing of milk.
2. Processing the milk. Filteration, Clarification bactofugation pasteurization ultra high temperature treatment, homogenization, sterillzation, cooling and chilling of milk. Membrane filteration and revese oxmosin processes. Common adultery ants and preservatives used in milk and their detection.

Practical

1. Sampling of milk
2. Determination of specific gravity by lactometer and west phal balance. Fact test by Gerber's method solid and SNF percentage by Richmond's scale and formula.
3. Assessment of quality of milk by simple casts like C.O.B. Alcohal test, and Sediment test.
4. Determination of acidity of milk.
5. Calculations on standardization and adultereation of milk.
6. Detection of common milk adulterants.

Course-III

Semester- V **1+2=3**

PRESERVATION OF FRUITS AND VEGETABLES POST HARVEST MANAGEMENT OF

Importance and scope of post harvest management of fruits and vegetables post, harvest deterioration of fruits and vegetables Techniques of prolonging the life of fruits and vegetables; handing grading and packing of fruits and vegetables.

Fruits Preservation

Causes of Spoilage of Fruits and Vegetables principles and methods of fruits and vegetables preservation canning of pea; Dehydration of fruits and vegetables; tomato products; jam, jelly and squash; preserve of Aonla and Bael; pickles of mango citurs, chillies and mixed vegetables.

Practical

Practical knowledge of harvesting, handling, grading. Precooling, waxing and use of chemicals to prolong the post harvest life of fruits and vegetables. Visit to storage and centers carrying improved practices of post harvest handling.

Bottling of green peas; dehydration of seasonal fruits and vegetables, preparation of apple jam, guava and karonda jellies; preparation of lime and orange squashes, Aonla and Beal preserve. Tomato Juice and ketchup.

Course-IV

Semester- V **1+1=2**

CROP PESTS AND INTEGRATED PEST MANAGEMENT

CROPS PESTS AND MANAGEMENT (ICAR)

1. Basic principles of pest out- breaks and their economic status.
2. Methods of insect control; including mechanical. Physical, cultural, biological, legal and chemical control use of insecticides repellents and antifieedants. Attractants. Chemosterilants. Pheromones, insect growth regulators.
3. Basic concept of integrated pest management.
4. Elementary knowledge of plant protection equipments.
5. Plant protection organization at the state and national level.
6. General account of non-insect pests with particular reference to rodents. Naeatodes. Mites and mollusks.
7. Insect vectors transmitting plant diseases.

Practical

1. Collection and preservation of established predators and parasistes.
2. Field and laboratory acquaintance with non-insect pests and their damaged materials.
3. Dilution and application of insecticides.
4. Handling of plant protection equipments.
5. Practical record and viva-voce.

Course-V

Semester- V **1+1=2**

WEED MANAGEMENT

(A) Definition, classification and general characteristics of weeds, Losses caused by weeds.

(B) Principles and methods of solving weed problem.

(C) Weed control schedules for important field corps of U.P.

(D) Integrated weed management system and its importance.

(E) Control of Abnoxious weeds viz. Sedge grass, Kane, Baisuri and satyanasi.

1. Identification and preservation of important weeds of locality.
2. Calculation on quantities of herbicides, weed control efficiency and weed index.
3. Calculation of cost involved in different weed control schedules.

Course-VI

Semester- V **2+2=4**

CROP DISEASE NAD THEIR MANAGEMENT PLANT PATHOLOGY: CROP DIEASES AND MANAGEMENT (ICAR)

1. General Symptoms of plant diseases.
2. Methods of plant diseas control.
3. Preliminary knowledge of different groups of fungicides.
4. Study of the symptoms, etiology, mode of perpetuation and control of the following disease:
   - (i) Early and late blights of potato.
   - (ii) White rust of crucifers.
   - (iii) Green ear disease and Ergot of bajra.
   - (iv) Powdery mildew, loose smut, karnal bunt and rusts of wheat.
   - (v) Coveredd smut of barely.
   - (vi) Grian smut of Jowar
   - (vii) Bajra smut
   - (viii) Rust of linseed
   - (ix) Let shos of tikka disease of groundnut
   - (x) Wilt of arher
   - (xi) Stripe diease of barely
   - (xii) Red rot of sugarcane
   - (xiii) Blast of rice.
   - (xiv) Citrus canker
   - (xv) Kharia disease of paddy and Black tip of mango.
   - (xvi) Tobacco mosaic
   - (xvii) Yellow vein mosaic
   - (xviii) Yellow vein mosaic of bhindi
   - (xix) Bean common Mosaic
   - (xx) Mosaics of potato
   - (xxi) Little leaf of brinjal.

Practical

(i) Diagnosis of important disease by studying symptoms.

(ii) Microscopic examination of diseased parts.

(iii) Preparation of Bordeaux mixture.

(iv) Practical record

(v) Viva voce.

Course-VII

Semester- V **2+1=3**

SOIL FERTILITY, FERTILIZES AND INTEGRATED NUTRIENT MANAGEMENT (ICAR)

1. Soil fertility concept, soil productivity, cactors influencing soil fertility, maintenance of soil productivity.
2. Essential plant nutrients, Criteria of essentiality, functions, deficiency Symptoms, Critical levels of deficiency and toxicity.
3. Mechanism of uptake and transport of minerals salts in plants.
4. Soil fetility evaluation, soil and plant analysis, tissue tests.
5. Mineralization and immoblilization of N and fixation and availability of P and K in soil.
6. Fertilizers- definition, classification, characteristics, reactions of fertilizer in soil, important fertilizer elements- Nitrogen, phosphorus, potassium, sulphur, zinc, Mixed and complex fertilizers Manufacture of urea, ammonium sulphate, superphoshate and marinate of potash. Organic sources of nutrients, digested sludge, manure, compost and green manures.
7. Elementary idea of biofertilizers.
8. Integrated nutrient management (INM) concept. Elementary idea of INM models, integrated nutrient management and soil health.

Practical

Analysis of N. P. and K in fertilizers. Determination of availability of NPK and S in soil. Elementary idea of determination of micronutrients in soil. Plant Tissue tests.

B.Sc. Ag., SEMESTER-VI

Sl. No.	Department	Credit Hours	Title of the course
1.	Botany	1+1=2	Principles of seed technology oil seed and commercial corps (ICAR)
2	Dairy	2+1=3	Dairy products technology
3	Engineering	2+1=3	Post Harvest Engineering.
4	Agronomy	2+0=2	Farming system and sustainable agriculture crop planning farm manage and sustainable agriculture. (ICAR)
5	Agriculture Economic	2+1=3	Agriculture Finance, Business management and trade
6	Agriculture Extension	2+1=3	Communication, Diffusion of agriculture innovation History and development of agri. Research and communication and difiusion of agri. Innovation (ICAR)
7.	Pathology	0+1=1	Plant Pathology: Mushroom cultivation Mushroom culture and elementary plant nemeology (ICAR)

Course-I

Semester- VI **1+1=2**

PRINCIPLES OF SEED TECHNOLOGY OIL SEED AND COMMERCIAL CROPS- (ICAR)

1. History and importance of seed technology.
2. Classes of seeds.
3. Characteristics of quality seeds and its importance.
4. General technique of seed production in important agricultural crops.

(i)	Cereals	-	wheat, rice, barley
(ii)	Pulses	-	maize, sughum and bajra
(iii)	Pulses	-	chichkpea, pigeonpea, fieldpea, urdbean, mung bean and lentil
(iv)	Oil Seeds	-	raps seed, mustard, groundnut, sesamum, Castor, sunflower and soybean.
(v)	Commercial corps	-	sugarcane, jute and coconut.

5. Factors affecting seed longevity and quality.
6. Causes of seed deterioration with reference to genetic and storage.
7. Seed resting- importance, procedures, purity, viability and germination.
8. Certification procedure for important filed crops.

Practical

1. Maintenance of seed purity in the field.
2. Field inspection procedure in important crops.
3. Demonstration of seed processing of important corps.
4. Viability and vigour test.
5. Analysis of purity, moisture and germination of seed samples and communication of results.

Course-II

Semester- VI **2+1=3**

DAIRY PRODUCTS TECHNOLOGY

1. Definition, composition and method of manufacture of cream, butter, dahi, khoa, Chhena, lce cream, condensed milk powder, cheddar and cottage chease, common adulterants of Ghee and khoa and their detection, cleaning and saitization of dairy equipments.
2. Basic principles of refrigeration and cold storage of milk products, Principles. Of cooling and heating head transfer equipments.
3. Nutritive value to milk and milk products.

Practical

1. Demonstration of cream separation.
2. Demonstration of preparation of butter, Ghee, Khoa, Chhena, Ice Cream and dahi.
3. Calculation on Ice cream mix.
4. Calculation on standardization and Neutritralization of cream, run of butter and ice cream.
5. Comparative study of cost of different milk products.

Course-V

Semester- VI **2+1=3**

POST HARVEST ENGINEERING

1. Importance and advantages of processing of agriculture produce.
2. Study of process and equipments involved in cleaning drying. Storage of farm produce. Rice milling, Pulse-milling, wheat milling, oilseed milling, soyabeen processing cane- crushing, Chaff cutting and animal feed grinding.
3. Utilization of agricultural by products such as rice husk and straws, rice bran and Arhar Stalk.
4. Processing and Preservation of foods and seeds.
5. Biomethanation of agricultural and municipal wastes.

Practical

1. Determination of moisture content of grains.
2. Sieve analysis of ground materials.
3. Study of construction, operation, care and maintenance of different processing equipments.
4. Study of Biogas Plants.
5. Visits of place related to processing of farm produce.

Course-IV

Semester- VI **2+0=2**

FARMING SYSTEM AND SUSTAIBLE AGRAICLTURE CROP LANNING FARM MANAG AND SUSTANBALE AGRI (ICAR)

1. Farming systems- Definition, types and methods of farming.
2. Divination, scope and advantage of sustainable agriculture.
3. Modern agriculture in relation to sustainable agriculture.
4. Sustainable agriculture in relation to tillage fertilizers, irrigation, weed management and plant protection measures.
5. Important cropping systems for sustainable agriculture.

Course-V

Semester- VI **2+1=3**

AGRICULTURAL FINANCE, BUSINESS MANAGEMENT AND TRADE

A. Agricultural Finance

1. Credit, Meaning, Importance and credit control.
2. Definition, need for finance in agriculture, characteristics of good agriculture finance (credit)
3. Decision on the use of credit, Principles of farm credit (Equity or increasing Risk, Added Cost and Added Return, Cost of Credit and no loss no profit goal of farming and opportunity cost Principle)
4. Types of loans and classification of agricultural credit.
5. Qualifications of a borrower, Analysis and three R's and crdit (Return, Repayment Capacity and Risk-Bearing Capacity). Analysis of three G's of credit (character, capacity and capital).
6. Types of loan, according to liquidity, budgeted loan, loan amortization, Even payment method, Decreasing method.
7. Crop index reflecting use and farm finance.
8. Role and Rural Credit Institutions (Recommendations of the Banking Commission integrated Scheme of Rural Finance (Credit), Institutional Agencies, Taccan.
9. Sources of agricultural finance (Commercial banks, RRB, Lead Bank, Lead) Bank, NABARD, Cooperative Credit (PACs, Land Development Banks, National cooperative Federation, Farmers Service Cooperatives).

B. Business Management

1. Meaning of management, functions of management role of mangers and scope of management in agricultural business. Role and objectives in management references.
2. Decision making by individuals as also by groups.

3. Functional areas of management and their relationship with agriculture production, finance, marketing and human resources as coordination thereof.
4. Importance and nature of planning, useful generalization of planning forecasting technique with the help of a planning model, components of management, a technique for planning use of manager's owntime.
5. Leadership in Management, Types an Leadership for production, planning and control activities (inventory control quality control, cost control) and financial management, financial forecasting and planning acquisition of funds.
6. Acquaintance of book-keeping and cash accounts(s).

Knowledge of business environment for operation of bank account cheques, bank draft etc.

Course-VI

Semester- VI **2+1=3**

COMMUNICATION, DIFFUSION OF AGRICULTURE INNOVATION HISTORY AND DEVEL OF AGRI, RESEARCH AND DIFFUSION OF AGRI INNOVATION (ICAR)

Meaning and definition of communication. Communication process, elements and models of communication process. Types of communication. Key communicator Audio visual aids, their use and effectiveness.

Extension teaching methods- classification, merits and demerits, factors affecting selection and use of extension teaching methods,. Mass Media in Extension.

Meaning and definition of innovation, diffusion, adoption, diffusion effect and rate of adoption, stages of adoption, factors affection adoption, elements of difference between diffusion and communication. Innovation decision process, categories of adopters, characteristics of innovations.

Practical

1. Preparation, procurement and handling of aids.
2. Organizing group discussion, campaign, seminar, exhibition and demonstration.
3. Practices in writing news letter, circular letter, radio and television scripts on different farm practices.
4. Identification of farmers and their categories them in to different adopters categories.
5. Collection of information from farmers regarding different characteristics of innovations.
6. Collection of data regarding rate of adoption for the adoption of different farm practices in different years.

Course-VII

Semester- VI **0+1=1**

PLANT PATHOLOGY: MUSHROOM CULTIVATION MUSHROOM CULTURE AND LELEMENTARY PLANT NEMEOLOGY (ICAR)

Morphology of edible mushrooms and their classification. Swawn and its preparation. Methods of Cultivation of different types of edible mushrooms. Mushroom diseases and ests. Mushroom recipies.

Practical

(i) Practical record

(ii) Viva voce

Course-IV

Semester- VI **2+1=3**

ORNAMENTAL HORTICULTURE

Importance and scope of ornamental horticulture in India. Cultivation of annuals and canna. Commercial cultivation of rose, chrysanthemum, marigold and gladiolus; Making and maintenance of Lawn; Making and maintenance of Hadge and deging; Elementary Knowledge of common shrubs, climbers and trees and their various uses. Indoor gardening; Styles of gardens with special reference to Moghul and Japanese gradens: Flower arrangement and techniques to prolong vase life of flowers.

Practical

Identification of ornamental plants : Preparation of herbaceous border ; Practice of making garlands, Bouquet and arrangements in vases; Propagation of ornamental plants; Practice of potting and repotting of plants. Visit to ornamental gardens and research station.

B.Sc. Ag., SEMESTER-VII

Sl. No.	Department	Credit Hours	Title of the course
1.	Agriculture Extension	1+1=2	Rural agricultural work experience all departments related in field work
2	Agriculture Economic	1+1=2	
3	Agriculture Botany	0+1=1	
4	Agriculture Chemistry	0+1=1	
5	Agriculture Dairy	0+1=1	
6	Agriculture Engineering	0+1=1	
7	Agriculture Horticulture	0+1=1	
8	Agriculture Soil conservation	0+1=1	
9	Agriculture Agronomy	0+1=1	
10-	Agriculture Paint Pathology	0+1=1	
11	Agriculture Entomology	0+1=1	

Semester- VIII

RURAL AGRICULTURAL WORK EXPERIENCE

It is often complained that the agricultural graduates lack professional competence and cut a shy figure in facing farmers. Keeping this in view the rural agricultural work experience (RAWE) is included in the programme. Where students will be exposed to rural (Village) environment for strenghtening practical training group of students will be associated to farmers. Agro- industrial units and agricultural research station for this purpose for a period of 3-4 months they will be constantly supervised and evaluated by the faculty and a detailed report of the survey and works of the students for the period is to be submitted by him.

B.Sc. Ag., SEMESTER-VIII

Sl. No.	Department	Credit Hours	Title of the course
1.	Agronomy	2+1=3	Rainfed Agriculture Dry land forming and water shed management (ICAR)
2	Soil conservation	2+1=3	Silviculture and agroforestry Agro forestry and special forestry (ICAR)
3	Horticulture	1+1=2	Production technology of medicinal aromiatic and spices crops Plant corps spices medicinal and aroma crops (ICAR)
4	Agriculture Soil Chemistry	2+1=3	Management of problems soils and water land
5	Animal husbandry and dairy	2+1=3	Dairy Chemistry and animal nutrition animal nutrition including fortage and grasses (ICAR)
6	Computer	1+1=2	Computer Applications

Semester- VIII **2+1=3**

RAINFED AGRICULTURE
DRY LAND FORMING AND WATER SHED MANAGEMENT (ICAR)

1. Definition, Characteristics and extent of rainfed/dry alnd farming areas in the country and the state of U.P.
2. Problems in dryland agriculture.
3. Moisture conservation practices and use of antitranspirants in dryland farming.
4. Watershed management concept, Principles and practices.
5. Selection of suitable crops, crop relations and crop mixtures for various categories of rainfed reas.

Practical

1. Preparation of crop rotations and cropping schemes for rainfed farming and dry land agriculture.
2. Determination of Soil Moisture constants.
3. Studies on moisture depletion pattern and rainfed farming.
4. Study of practical application of antitiranspirants.
5. Visit to Dry farming research stations.
6. Maintenance of practical record.

Semester- VIII **2+1=3**

SILVICLTURE AND AGROFORESTRY AGRO FORESTRY AND SPECIAL FORESTRY (ICAR)

(A) Silviculture:

1. Definition and scope of silviculture, Forestry, its scope and classification.
2. Role of forests- geographic, productive and bioaesthetical.
3. Elementary idea of forest types.
4. Regeneration of forests.
   (a) Natural seed production, seed dispersal, germination and seedling establishment.
   (b) Artificial Afforestation, reforestation and their objectives. Choice of tree species nursery techniques.

(B) Agroforestry

1. Definition, concept and need of agro forestry.
2. Classification of agro forestry systems.
3. Prominent agro forestry system prevailing in Uttar Pradesh.
4. Limitaions of agro forestry, choice of tree species for agro forestry for fuel, fodder and timber requirement.

Practical

1. Afforestation, techniques of problematic sites viz. ravines, saline-alkali soils, waterlogged areas, arid areas, hilly areas; roadside and canal bank plantation
2. Nursery techniques- Numerical problems.
3. Numerical problems on planting and cost of earthwork estimation.
4. Identification of forest tree species.

Semester- VIII **1+1=2**

PRODUCTION TECHNOLOGY OF MEDICINAL AROMIATIC AND SPICES CROPS PLANT CROPS SPICES MEDICINAL AND AROMA CROPS (ICAR)

1. Importance and scope of medicinal, aromatic and spices crops.
2. Cultivation of menthe, citronella, Khus, Ocimum, Rauvolifia and Dioscoria.
3. Cultivation of turmeric, Zinger, Coriander, Zira and Saunf in the North Indian Condition.

Practical

1. Identification of medicinal and aromatic plants.
2. Calculation of the cost of cultivation of menthe, citronella, Rauvolfia and Dioscorea.
3. Practical, Identification and demonstration of spices in the course.
4. Visit to commercial growing places and research stations of the medicinal, aromatic and spices crops.

Semester- VIII **1+1=2**

MANAGEMENT OF PROBLEM SOIL AND WATER LAND

Management of Problem soil

1. Saline and sodic soils- Occurrence classification, formation, diagnosis, characteristics and management.
2. Acid Soils- occurrence, formation, diagnosis, characteristics and management.
3. Waterlogged soils- occurrence, characteristics and management.
4. Eroded soils: Occurrence characteristics and management.

Management of Wasteland

5. Definition, classification, distribution and extent of wastelands in India with particular reference to U.P. and their Management.
6. Factors responsible for land degradation and characteristics of different types of wastelands.
7. Soil Management in Arid and Semiarid areas and sand dune Stabilization.

Practical

1. Determination of pH, EC, gypsum requirement, lime requirement in problem soil.
2. Determination of specific gravity, bulk density, pore space, soil texture.
3. Visit to Area of problem soil.

Semester- VIII **1+1=2**

DAIRY CHEMISTRY AND ANIMAL NUTRITION ANIMAL NUTRITION INCLUDING FORTAGE AND GRASSES (ICAR)

Unit-1 The milk and colostrums, secretion of milk, chemical composition and physio-chemical properties of milk and colostrums, chemical changes occurring during storage of milk, Preservation of milk. Adulteration of milk and its detection.

Unit-II Chemistry of milk constituents viz. lactose, fat protein, enzymes and vitamins.

Unit-III Classification of feeding stuffs, composition of Animal body and feeds, Functions of food constituents, the digestion and absorption of food constituents in ruminates

Unit-IV The metabolism of fat, carbohydrate and protein.

Unit-V Role of minerals, harmons, vitamins and Antibiotics in animals feeding with special reference to deficiency diseases.

Practical

1. Sampling of milk
2. Analysis of milk for TS, SNF, Fat, Total ash, Calcium and Phosphorus,
3. Determination of lactose in milk and proteins.
4. Analysis of feeds for total ash, CaO_1 P_2 O_5 and Proteins.
5. Demonstration of estimation of Ether Extract and crude fibre in feeds.

Course

Semester- VIII **1+1=2**

COMPUTER APPLICATION

Introduction to computer. A brief history of computing. Data Processing and information. Use. Definition, Anatomy, Components, Classification of computers. Capability and limitation of computer. Number systems. Decimal. Binary, octal, hexadecimal. Character codes. ASCH, EBCDIC, BCD. Computer organization-CPU, Input-output devices. Various types of memories. Introduction to DOS (Disk operating system). Fundamentals of DOS commands, Internal, External, Editor, Files and Directory, Elementary Idea of Basic (Computer Language).

Practical

Simple Programming Exercises in BASIC

संशोधनों की संस्तुति

इस बैठक में पूरे प्रदेश में समान पाठ्यक्रम लागू किये जाने के उद्देश्य से संशोधन/सहमति हेतु एक पाठ्यक्रम का प्रारुप प्रस्तुत किया गया। उपस्थित सदस्यों ने प्रस्तुत(प्रस्तावित) पाठ्यक्रम के प्रारुप पर सम्यक विचार विमर्श किया। विचार विमर्श के उपरान्त सभी सदस्यों ने सर्वसम्मति से निर्णय लिया कि,

1. प्रस्तावित पाठ्यक्रम सेमेस्टर प्रणाली पर आधारित है जबकि बी.एस.सी. (कृषि) की डिग्री वार्षिक परीक्षा प्रणाली पर दी जाती रही हैं सेमेस्टर प्रणाली के लिए कालेजों के पास आवश्यक स्टाफ (विषय विशेषज्ञ) तथा अवस्थापना सुविधा की कमी है। क्या यह सम्भव है कि प्रस्तावित सेमेस्टर प्रणाली का सम्पूर्ण पाठ्यक्रम वार्षिक परीक्षा प्रणाली में रूपान्तरित किया जा सकता है। वार्षिक परीक्षा प्रणाली अधिक व्यवहारिक होगी, यह अन्य संकायों में भी चल रही है।
2. प्रस्तावित पाठ्यक्रम में मूंल्याकन प्रणाली स्पष्ट नहीं है क्रेडिट प्रणाली को स्पष्ट करते हुए मूल्यांकन के तरीको को स्पष्ट करें, वर्तमान में बी0एस.सी0 (कृषि) की डिग्री 2400 अंको (24 विषय पाठ्यक्रम) में पूर्ण होती है। यह अंक 4 वर्षों में विभाजित है।
3. प्रस्तावित पाठ्यक्रम में कई त्रृटियाँ पायी गई है। प्रस्तावित पाठ्यक्रम में प्रथम सेमेस्टर में कोर्सेज का क्रम इस प्रकार (जैसा आई.सी.ए. आर. द्वारा सुझाया गया है) होना चाहिए ताकि फण्डामेंटल कोर्सेज को पहले पढ़ाया जाये और बाद के सेमेस्टर में कृषि के व्यवहारिक विषय पाठ्यक्रम (RAWE, PCP आदि) पढ़ाये जायें।

सेमेस्टर–I के पाठ्यक्रम शीर्षकवार निम्नवत होने चाहिए।

Semester I

1- Elementary Statistcs 1+1
2- Agricultural meteology 1+1
3- Farm machinery & Power 2+1
4- Computer application 1+1
5- Structural & Spoken English 1+1
6- Rural Sociology & Education Psychology 1+1
7- Fundamental of Soil Science 2+1
8- Physical Education/NSS/NCC 0+1

Semester II

1. Elementary Plant Biochemistry 3+1
2. Weed Management 1+1

3. Elements of genetics 2+1
4. Principles of Agronomy 2+1
5. Irrigation & Water management 1+1
6. Introductory Entomology 2+1
7. Introductory Plant Pathology 2+1
8. Microbiology 1+1

Total 13+8= 21

अन्य सभी सेमेस्टर के कोर्सेज क्रेडिट सहित संलग्न है।

4. प्रस्तावित पाठ्यक्रम में सेमेस्टर II में Elementary Biochemistry का पाठ्यक्रम से हल्का है अतः आई.सी.ए.आर. के पाइयक्रम को स्वीकार किया जाये।
5. Semester VI में उद्यानिकी विभाग का Ornamental Horiculture course (2+1 credit) रखा जाये। एवं क्रम संख्या–8 पर मुद्रित किया जाये।
6. यदि प्रस्तावित की गयी सेमेस्टर प्रणाली लागू की जाती है तो प्रथम सेसमेस्टर से छात्रों की प्रवेश संख्या दो सेक्शन (60+60=120) से अधिक न की जाये ताकि सेमेस्टर प्रणाली को व्यवहारिक रूप से सफल बनाया जा सके।
7. प्रस्तावित सेमेस्टर प्रणाली का पाठ्यक्रम राज्य में स्थित कृषि विश्वविद्यालयें के बी0एस.सी (कृषि) के पाठ्यक्रम के अनुरूप बनाया जाये ताकि पूरे राज्य में बी0एस.एस0 (कृषि) का समान पाठ्यक्रम लागू हो सके।