

Study Scheme & Syllabus of B. Sc. (Hons) Agriculture Batch 2019 onwards



By

**Board of Studies Agriculture
Department of Academics
IK Gujral Punjab Technical University Jalandhar**

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

Semester – First

| Course code | Course Title | Load Allocation | | Marks Distribution | | Total | Credits |
|-----------------|---|-----------------|----|--------------------------------|----------|-------|------------|
| | | L | P | Internal | External | | |
| BSAG-101-19 | Fundamentals of Horticulture | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-102-19 | Fundamentals of Soil Science | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-103-19 | Introduction to Forestry | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-104-19 | Comprehension & Communication Skills in English | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-105-19 | Fundamentals of Agronomy | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-106-19 (A) | Introductory Biology* | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-106-19 (B) | Elementary Mathematics** | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-107-19 | Agricultural Heritage | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-108-19 | Rural Sociology & Educational Psychology | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-109-19 | Human Values & Ethics | 1 | 0 | Satisfactory / Un Satisfactory | | | Non-Credit |
| BSAG-110-19 | Fundamentals of Horticulture (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-111-19 | Fundamentals of Soil Science (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-112-19 | Introduction to Forestry (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-113-19 | Comprehension & Communication Skills in English (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-114-19 | Fundamentals of Agronomy (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-115-19 | Introductory Biology (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-116-19 | NSS /NCC / Physical Education & Yoga Practices | 0 | 2 | Satisfactory / Un Satisfactory | | | Non-Credit |
| Total | | 14 | 14 | 480 | 720 | 1200 | 19 |

***Remedial course for students who had studied non-medical in 10+2**

**** Remedial course for students who had studied medical in 10+2**

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

Semester – Second

| Course code | Course Title | Load Allocation | | Marks Distribution | | Total | Credits |
|-------------|--|-----------------|----|--------------------|----------|-------|---------|
| | | L | P | Internal | External | | |
| BSAG-201-19 | Fundamentals of Genetics | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-202-19 | Agricultural Microbiology | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-203-19 | Soil and Water Conservation Engineering | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-204-19 | Fundamentals of Crop Physiology | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-205-19 | Fundamentals of Agricultural Economics | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-206-19 | Fundamentals of Plant Pathology | 3 | 0 | 40 | 60 | 100 | 3 |
| BSAG-207-19 | Fundamentals of Entomology | 3 | 0 | 40 | 60 | 100 | 3 |
| BSAG-208-19 | Fundamentals of Agricultural Extension Education | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-209-19 | Communication Skills and Personality Development | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-210-19 | Fundamentals of Genetics (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-211-19 | Agricultural Microbiology (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-212-19 | Soil and Water Conservation Engineering (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-213-19 | Fundamentals of Crop Physiology (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-214-19 | Fundamentals of Plant Pathology (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-215-19 | Fundamentals of Entomology (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-216-19 | Fundamentals of Agricultural Extension Education (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-217-19 | Communication Skills and Personality Development (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| Total | | 16 | 16 | | | | 24 |

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-101-19 Fundamentals of Horticulture

Horticulture - Its definition and branches, importance and scope; horticultural and botanical classification; climate and soil for horticultural crops; Plant propagation-methods and propagating structures; Seed dormancy, Seed germination, principles of orchard establishment; Principles and methods of training and pruning, juvenility and flower bud differentiation; unfruitfulness; pollination, pollinizers and pollinators; fertilization and parthenocarpy; medicinal and aromatic plants; importance of plant bio-regulators in horticulture. Irrigation – methods, Fertilizer application in horticultural crops.

BSAG-102-19 Fundamentals of Soil Science

Soil as a medium of growth, Pedological and edaphological concepts of soil; Soil genesis: soil forming rocks and minerals; weathering, processes and factors of soil formation; Soil Profile, components of soil; Soil physical properties: soil-texture, structure, density and porosity, soil colour, consistence and plasticity; Elementary knowledge of soil taxonomy, classification, soils of India; Soil water retention, movement and availability; Soil air, composition, gaseous exchange, problem and plant growth, Soil temperature: source, amount and flow of heat in soil; effect on plant growth, Soil reaction-pH, soil acidity and alkalinity, buffering, effect of pH on nutrient availability; soil colloids- inorganic and organic; silicate clays: constitution and properties; sources of charge; ion exchange, cation exchange capacity, base saturation; soil organic matter: composition, properties and its influence on soil properties; humic substances - nature and properties; soil organisms: macro and micro organisms, their beneficial and harmful effects; Soil pollution - behaviour of pesticides and inorganic contaminants, prevention and mitigation of soil pollution.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-103-19 Introduction to Forestry

Introduction – definitions of basic terms related to forestry, objectives of silviculture, forest classification, salient features of Indian Forest Policies. Forest regeneration, Natural regeneration -natural regeneration from seed and vegetative parts, coppicing, pollarding, root suckers; Artificial regeneration – objectives, choice between natural and artificial regeneration, essential preliminary considerations. Crown classification. Tending operations – weeding, cleaning, thinning – mechanical, ordinary, crown and advance thinning. Forest mensuration – objectives, diameter measurement, instruments used in diameter measurement; measurement of volume of felled and standing trees, age determination of trees. Agroforestry – definitions, importance, criteria of selection of trees in agroforestry, different agroforestry systems prevalent in the country, shifting cultivation, taungya, alley cropping, wind breaks and shelter belts, home gardens. Cultivation practices of two important fast growing tree species of the region. Rejuvenation of forest trees.

BSAG-104-19 Comprehension and Communication Skills in English

War Minus Shooting- The sporting Spirit. A Dilemma- A layman looks at science Raymond B. Fosdick. You and Your English – Spoken English and broken English G.B. Shaw. Reading Comprehension, Vocabulary- Antonym, Synonym, Homophones, Homonyms, often confused words. Exercises to help the students in the enrichment of vocabulary. Functional grammar: Articles, Prepositions, Verb, Subject verb Agreement, Transformation, Synthesis, Direct and Indirect Narration. Written Skills: Paragraph writing, Precise writing, Report writing and Proposal writing. The Style: Importance of professional writing. Preparation of Curriculum Vitae and Job applications. Synopsis Writing. Interviews: kinds, Importance and process.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-105-19 Fundamentals of Agronomy

Agronomy and its scope, seeds and sowing, tillage and tith, crop density and geometry, Crop nutrition, manures and fertilizers, nutrient use efficiency, water resources, soil-plant-water relationship, crop water requirement, water use efficiency, irrigation- scheduling criteria and methods, quality of irrigation water and its measurement. Weeds- importance, classification, crop-weed competition, concepts of weed management; principles and methods, allelopathy. Growth and development of crops, factors affecting growth and development, plant ideotypes, crop rotation and its principles, adaptation and distribution of crops, harvesting and threshing of crops.

BSAG-106-19(A) Introductory Biology

Introduction to the living world, diversity and characteristics of life, origin of life, Evolution and Eugenics. Binomial nomenclature and classification Cell and cell division. Morphology of flowering plants. Seed and seed germination. Plant systematic- viz; Brassicaceae, Fabaceae and Poaceae. Role of animals in agriculture.

BSAG-106-19(B)

Elementary Mathematics

Straight lines: Distance formula, section formula (internal and external division), Change of axes (only origin changed), Equation of co-ordinate axes, Equation of lines parallel to axes, Slope-intercept form of equation of line, Slope-point form of equation of line, Two point form of equation of line, Intercept form of equation of line, Normal form of equation of line, General form of equation of line, Point of intersection of two st. lines, Angles between two st. lines, Parallel lines, Perpendicular lines, Angle of bisectors between two lines, Area of triangle and quadrilateral. Circle: Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x_1, y_1) & (x_2, y_2) , Tangent and Normal to a given circle at given point (Simple problems), Condition of tangency of a line $y = mx + c$ to the given circle $x^2 + y^2 = a^2$. Differential Calculus: Definition of function, limit and continuity, Simple problems on limit, Simple problems on continuity, Differentiation of x^n , e^x , $\sin x$ & $\cos x$ from first principle, Derivatives of sum, difference, product and quotient of two functions, Differentiation of functions of functions (Simple problem based on it), Integral Calculus: Integration of simple functions, Integration of Product of two functions, Matrices and Determinants: Definition of Matrices, Addition, Subtraction, Multiplication, Transpose and Inverse up to 3rd order, Properties of determinants up to 3rd order and their evaluation.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-107-19 Agricultural Heritage

Introduction of Indian agricultural heritage; Ancient agricultural practices, Relevance of heritage to present day agriculture; Past and present status of agriculture and farmers in society; Journey of Indian agriculture and its development from past to modern era; Plant production and protection through indigenous traditional knowledge; Crop voyage in India and world; Agriculture scope; Importance of agriculture and agricultural resources available in India; National agriculture setup in India; Current scenario of Indian agriculture; Indian agricultural concerns and future prospects.

BSAG-108-19 Rural Sociology & Educational Psychology

Sociology and Rural sociology: Definition and scope, its significance in agriculture extension, Social Ecology, Rural society, Social Groups, Social Stratification, Culture concept, Social Institution, Social Change & Development. Educational psychology: Meaning & its importance in agriculture extension. Behavior: Cognitive, affective, psychomotor domain, Personality, Learning, Motivation, Theories of Motivation, Intelligence.

BSAG-109-19 Human Value and Ethics

Values and Ethics-An Introduction. Goal and Mission of Life. Vision of Life. Principles and Philosophy. Self Exploration. Self Awareness. Self Satisfaction. Decision Making. Motivation. Sensitivity. Success. Selfless Service. Case Study of Ethical Lives. Positive Spirit. Body, Mind and Soul. Attachment and Detachment. Spirituality Quotient. Examination.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-110-19 Fundamentals of Horticulture (Practical)

Identification of garden tools. Identification of horticultural crops. Preparation of seed bed/nursery bed. Practice of sexual and asexual methods of propagation including micro-propagation. Layout and planting of orchard. Training and pruning of fruit trees. Preparation of potting mixture. Fertilizer application in different crops. Visits to commercial nurseries/orchard

BSAG-111-19 Fundamentals of Soil Science (Practical)

Study of soil profile in field, Study of soil sampling tools, collection of representative soil sample, its processing and storage, Study of soil forming rocks and minerals, Determination of soil density, moisture content and porosity, Determination of soil texture by feel and Bouyoucos Methods, Studies of capillary rise phenomenon of water in soil column and water movement in soil, Determination of soil pH and electrical conductivity, Determination of cation exchange capacity of soil, Study of soil map, Determination of soil colour, Demonstration of heat transfer in soil, Estimation of organic matter content of soil.

BSAG-112-19 Introduction to Forestry (Practical)

Identification of tree-species. Diameter measurements using calipers and tape, diameter measurements of forked, buttressed, fluted and leaning trees. Height measurement of standing trees by shadow method, single pole method and hypsometer. Volume measurement of logs using various formulae, age determination of trees, Nursery lay out, seed sowing, vegetative propagation techniques. Forest plantations and their management. Visits of nearby forest based industries.

BSAG-113-19 Comprehension and Communication Skills in English (Practical)

Listening Comprehension: Listening to short talks lectures, speeches (scientific, commercial and general in nature). Oral Communication: Phonetics, stress and intonation, Conversation practice. Conversation: rate of speech, clarity of voice, speaking and Listening, politeness & Reading skills: reading dialogues, rapid reading, intensive reading, improving reading skills. Mock Interviews: testing initiative, team spirit, leadership, intellectual ability. Group Discussions and extempore.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-114-19 Fundamentals of Agronomy (Practical)

Identification of crops, seeds, fertilizers, pesticides and tillage implements, study of agro-climatic zones of India, Identification of weeds in crops, Methods of herbicide and fertilizer application, Study of yield attributing characters and yield estimation, Seed germination and viability test, Numerical exercises on fertilizer requirement, plant population, herbicides and water requirement, Use of tillage implements-reversible plough, one way plough, harrow, leveler, seed drill, Study of soil moisture measuring devices, Measurement of field capacity, bulk density and infiltration rate, Measurement of irrigation water.

BSAG-115-19 Introductory Biology (Practical)

Morphology of flowering plants – root, stem and leaf and their modifications. Inflorescence, flower and fruits. Cell, tissues & cell division. Internal structure of root, stem and leaf. Study of specimens and slides. Description of plants - Brassicaceae, Fabaceae and Poaceae.

BSAG-116-19 NSS / NCC / Physical Education and Yoga Practices

1. Teaching of skills of Football/basketball/kabaddi/badminton/table tennis/yoga – demonstration, practice of the skills, correction, involvement in game situation, teaching of rules of the game (For girls teaching of Tennis)
2. Teaching – Meaning, Scope and importance of Physical Education
3. Teaching – Definition, Type of Tournaments
4. Teaching – Physical Fitness and Health Education
5. Construction and laying out of the track and field (*The girls will have Tennis and Throw Ball).

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

**BSAG201-19 Fundamentals of Genetics
(Theory)**

Pre and Post Mendelian concepts of heredity, Mendelian principles of heredity.

Architecture of chromosome; chromonemata, chromosome matrix, chromomeres, centromere, secondary constriction and telomere; special types of chromosomes. Chromosomal theory of inheritance- cell cycle and cell division- mitosis and meiosis. Probability and Chi-square.

Dominance relationships, Epistatic interactions with example.

Multiple alleles, pleiotropism and pseudoalleles, Sex determination and sex linkage, sex limited and sex influenced traits, Blood group genetics, Linkage and its estimation, crossing over mechanisms, chromosome mapping. Structural and numerical variations in chromosome and their implications, Use of haploids, dihaploids and doubled haploids in Genetics. Mutation, classification, Methods of inducing mutations & CIB technique, mutagenic agents and induction of mutation. Qualitative & Quantitative traits, Polygenes and continuous variations, multiple factor hypothesis, Cytoplasmic inheritance. Genetic disorders. Nature, structure & replication of genetic material. Protein synthesis, Transcription and translational mechanism of genetic material, Gene concept: Gene structure, function and regulation, Lac and Trp operons.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG202-19

Agricultural Microbiology

Theory

Introduction. Microbial world: Prokaryotic and eukaryotic microbes. Bacteria: cell structure, chemoautotrophy, photo autotrophy, growth. Bacterial genetics: Genetic recombination transformation, conjugation and transduction, plasmids, transposon.

Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and Sulphur cycles. Biological nitrogen fixation- symbiotic, associative and asymbiotic. Azolla, blue green algae and mycorrhiza. Rhizosphere and phyllosphere. Microbes in human welfare: silage production, biofertilizers, biopesticides, biofuel production and biodegradation of agro-waste.

Theory

Introduction to Soil and Water Conservation, causes of soil erosion. Definition and agents of soil erosion, water erosion: Forms of water erosion. Gully classification and control measures. Soil loss estimation by universal Loss Soil Equation. Soil loss measurement techniques. Principles of erosion control: Introduction to contouring, strip cropping. Contour bund. Graded bund and bench terracing. Grassed water ways and their design. Water harvesting and its techniques. Wind erosion: mechanics of wind erosion, types of soil movement. Principles of wind erosion control and its control measures.

BSAG204-19

Fundamentals of Crop Physiology

Theory

Introduction to crop physiology and its importance in Agriculture; Plant cell: an Overview;
Diffusion and osmosis; Absorption of water, transpiration and Stomatal Physiology; Mineral nutrition of Plants: Functions and deficiency symptoms of nutrients, nutrient uptake mechanisms;
Photosynthesis: Light and Dark reactions, C₃, C₄ and CAM plants; Respiration: Glycolysis, TCA cycle and electron transport chain; Fat Metabolism: Fatty acid synthesis and Breakdown;
Plant growth regulators: Physiological roles and agricultural uses, Physiological aspects of growth and development of major crops: Growth analysis, Role of Physiological growth parameters in crop productivity.

Theory

Economics: Meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macro economics, positive and normative analysis. Nature of economic theory; rationality assumption, concept of equilibrium, economic laws as generalization of human behaviour. Basic concepts: Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare. Agricultural economics: meaning, definition, characteristics of agriculture, importance and its role in economic development. Agricultural planning and development in the country.

Demand: meaning, law of demand, schedule and demand curve, determinants, utility theory; law of diminishing marginal utility, equi-marginal utility principle. Consumer's equilibrium and derivation of demand curve, concept of consumer surplus. Elasticity of demand: concept and measurement of price elasticity, income elasticity and cross elasticity.

Production: process, creation of utility, factors of production, input output relationship. *Laws of returns:* Law of variable proportions and law of returns to scale. *Cost:* concepts, short run and long run cost curves. *Supply:* Stock v/s supply, law of supply, schedule, supply curve, determinants of supply, elasticity of supply. *Market structure:* meaning and types of market, basic features of perfectly competitive and imperfect markets. Price determination under perfect competition; short run and long run equilibrium of firm and industry, shut down and break even points. *Distribution theory:* meaning, factor market and pricing of factors of production. Concepts of rent, wage, interest and profit.

National income: Meaning and importance, circular flow, concepts of national income accounting and approaches to measurement, difficulties in measurement.

Population: Importance, Malthusian and Optimum population theories, natural and socioeconomic determinants, current policies and programmes on population control. *Money:* Barter system of exchange and its problems, evolution, meaning and functions of money, classification of money, supply, general price index, inflation and deflation. *Banking:* Role in modern economy, types of banks, functions of commercial and central bank, credit creation policy.

Theory

Introduction: Importance of plant diseases, scope and objectives of Plant Pathology. History of Plant Pathology with special reference to Indian work. Terms and concepts in Plant Pathology.

Pathogenesis. Causes/factors affecting disease development: disease triangle and tetrahedron and classification of plant diseases. Important plant pathogenic organisms, different groups: fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa, phanerogamic parasites and nematodes with examples of diseases caused by them. Diseases and symptoms due to abiotic causes.

Fungi: general characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual). Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi. Key to divisions, sub-divisions, orders and classes.

Bacteria and mollicutes: general morphological characters. Basic methods of classification and reproduction.

Viruses: nature, structure, replication and transmission. Study of phanerogamic plant parasites.

Nematodes: General morphology and reproduction, classification, symptoms and nature of damage caused by plant nematodes (*Heterodera*, *Meloidogyne*, *Anguina*, *Radopholus* etc.)

Growth and reproduction of plant pathogens. Liberation / dispersal and survival of plant pathogens. Types of parasitism and variability in plant pathogens. Pathogenesis. Role of enzymes, toxins and growth regulators in disease development. Defense mechanism in plants. Epidemiology: Factors affecting disease development. Principles and methods of plant disease management. Nature, chemical combination, classification, mode of action and formulations of fungicides and antibiotics.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG207-19

Fundamentals of Entomology

History of Entomology in India. Major points related to dominance of Insecta in Animal kingdom. Classification of phylum Arthropoda upto classes. Relationship of class Insecta with other classes of Arthropoda. Morphology: Structure and functions of insect cuticle and molting. Body segmentation. Structure of Head, thorax and abdomen. Structure and modifications of insect antennae, mouth parts, legs, Wing venation, modifications and wing coupling apparatus. Structure of male and female genital organ. Metamorphosis and diapause in insects. Types of larvae and pupae. Structure and functions of digestive, circulatory, excretory, respiratory, nervous, secretory (Endocrine) and reproductive system, in insects. Types of reproduction in insects. Major sensory organs like simple and compound eyes, chemoreceptor.

Insect Ecology: Introduction, Environment and its components. Effect of abiotic factors— temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents. Effect of biotic factors – food competition, natural and environmental resistance.

Systematics: Taxonomy –importance, history and development and binomial nomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order. Classification of class Insecta upto Orders, basic groups of present day insects with special emphasis to orders and families of Agricultural importance like Orthoptera: Acrididae, Tettigonidae, Gryllidae, Gryllotalpidae; Dictyoptera: Mantidae, Blattidae; Odonata; Isoptera: Termitidae; Thysanoptera: Thripidae; Hemiptera: Pentatomidae, Coreidae, Cimicidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Lophophidae, Aleurodidae, Pseudococcidae; Neuroptera: Chrysopidae; Lepidoptera: Pieridae, Papilionidae, Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae, Saturnidae, Bombycidae; Coleoptera: Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidae, Bruchidae, Scarabaeidae; Hymenoptera: Tenthredinidae, Apidae. Trichogrammatidae, Ichneumonidae, Braconidae, Chalcididae; Diptera: Cecidomyiidae, Tachinidae, Agromyziidae, Culicidae, Muscidae, Tephritidae.

Theory

Education: Meaning, definition & Types; Extension Education- meaning, definition, scope and process; objectives and principles of Extension Education; Extension Programme planning- Meaning, Process, Principles and Steps in Programme Development. Extension systems in India: extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-independence era (Etawah Pilot Project, Nilokheri Experiment, etc.); various extension/ agriculture development programmes launched by ICAR/Govt. of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND,NATP, NAIP, etc.). New trends in agriculture extension: privatization extension, cyber extension/ e-extension, market-led extension, farmer-led extension, expert systems, etc.

Rural Development: concept, meaning, definition; various rural development programmes launched by Govt. of India. **Community Dev.-**meaning, definition, concept & principles, **Philosophy of C.D.** **Rural Leadership:** concept and definition, types of leaders in rural context; **extension administration:** meaning and concept, principles and functions. **Monitoring and evaluation:** concept and definition, monitoring and evaluation of extension programmes; **transfer of technology:** concept and models, capacity building of extension personnel; **extension teaching methods:** meaning, classification, individual, group and mass contact methods, **ICT Applications in TOT (New and Social Media),** media mix strategies; **communication:** meaning and definition; **Principles and Functions of Communication,** models and barriers to communication. **Agriculture journalism;** **diffusion and adoption of innovation:** concept and meaning, process and stages of adoption, adopter categories.

Theory

Communication Skills: Structural and functional grammar; meaning and process of communication, verbal and nonverbal communication; listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures.

Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations, impromptu presentation, public speaking; Group discussion. Organizing seminars and conferences.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG210-19 Fundamentals of Genetics (Practical)

Study of microscope. Study of cell structure. Mitosis and Meiosis cell division. Experiments on monohybrid, dihybrid, trihybrid, test cross and back cross, Experiments on epistatic interactions including test cross and back cross, Practice on mitotic and meiotic cell division, Experiments on probability and Chi-square test. Determination of linkage and cross-over analysis (through two point test cross and three point test cross data). Study on sex linked inheritance in *Drosophila*. Study of models on DNA and RNA structures.

BSAG211-19 Agricultural Microbiology (Practical)

Introduction to microbiology laboratory and its equipments; Microscope- parts, principles of microscopy, resolving power and numerical aperture. Methods of sterilization. Nutritional media and their preparations. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes. Methods of isolation and purification of microbial cultures. Isolation of *Rhizobium* from legume root nodule. Isolation of *Azotobacter* from soil. Isolation of *Azospirillum* from roots. Isolation of BGA. Staining and microscopic examination of microbes.

BSAG212-19 Soil and Water Conservation Engineering (Practical)

General status of soil conservation in India. Calculation of erosion index. Estimation of soil loss. Measurement of soil loss. Preparation of contour maps. Design of grassed water ways. Design of contour bunds. Design of graded bunds. Design of bench terracing system. Problem on wind erosion.

BSAG213-19 Fundamentals of Crop Physiology (Practical)

Study of plant cells, structure and distribution of stomata, imbibitions, osmosis, plasmolysis, measurement of root pressure, rate of transpiration, Separation of photosynthetic pigments through paper chromatography, Rate of transpiration, photosynthesis, respiration, tissue test for mineral nutrients, estimation of relative water content, Measurement of photosynthetic CO₂ assimilation by Infra Red Gas Analyser (IRGA).

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG214-19 Fundamentals of Plant Pathology (Practical)

Acquaintance with various laboratory equipments and microscopy. Collection and preservation of disease specimen. Preparation of media, isolation and Koch's postulates. General study of different structures of fungi. Study of symptoms of various plant diseases. Study of representative fungal genera. Staining and identification of plant pathogenic bacteria. Transmission of plant viruses. Study of phanerogamic plant parasites.

Study of morphological features and identification of plant parasitic nematodes. Sampling and extraction of nematodes from soil and plant material, preparation of nematode mounting.

BSAG215-19 Fundamentals of Entomology (Practical)

Methods of collection and preservation of insects including immature stages; External features of Grasshopper/Blister beetle; Types of insect antennae, mouthparts and legs; Wing venation, types of wings and wing coupling apparatus. Types of insect larvae and pupae; Dissection of digestive system in insects (Grasshopper); Dissection of male and female reproductive systems in insects (Grasshopper); Study of characters of orders Orthoptera, Dictyoptera, Odonata, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Neuroptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG216-19 Fundamentals of Agricultural Extension Education (Practical)

To get acquainted with university extension system. Group discussion- exercise; handling and use of audio visual equipments and digital camera and LCD projector; preparation and use of AV aids, preparation of extension literature – leaflet, booklet, folder, pamphlet news stories and success stories; Presentation skills exercise; micro teaching exercise; A visit to village to understand the problems being encountered by the villagers/ farmers; to study organization and functioning of DRDA and other development departments at district level; visit to NGO and learning from their experience in rural development; understanding PRA techniques and their application in village development planning; exposure to mass media: visit to community radio and television studio for understanding the process of programme production; script writing, writing for print and electronic media, developing script for radio and television.

BSAG217-19 Communication Skills and Personality Development (Practical)

Listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards
Semester–Third

| Course code | Course Title | Load Allocation | | Marks Distribution | | Total | Credits |
|-------------|---|-----------------|----|--------------------|----------|-------|---------|
| | | L | P | Internal | External | | |
| BSAG-301-19 | Crop Production Technology – I (Kharif Crops) | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-302-19 | Fundamentals of Plant Breeding | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-303-19 | Agricultural Finance and Cooperation | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-304-19 | Agri- Informatics | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-305-19 | Farm Machinery and Power | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-306-19 | Production Technology for Vegetables and Spices | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-307-19 | Environmental Studies and Disaster Management | 3 | 0 | 40 | 60 | 100 | 3 |
| BSAG-308-19 | Statistical Methods | 1 | 0 | 40 | 60 | 100 | 1 |
| BSAG-309-19 | Livestock and Poultry Management | 2 | 0 | 40 | 60 | 100 | 2 |
| BSAG-310-19 | Crop Production Technology – I (Kharif Crops) (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-311-19 | Fundamentals of Plant Breeding (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-312-19 | Agricultural Finance and Cooperation (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-313-19 | Agri- Informatics (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-314-19 | Farm Machinery and Power (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-315-19 | Production Technology for Vegetables and Spices (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-316-19 | Environmental Studies and Disaster Management (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-317-19 | Statistical Methods (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| BSAG-318-19 | Livestock and Poultry Management (Practical) | 0 | 2 | 20 | 30 | 50 | 1 |
| Total | | 14 | 18 | 540 | 810 | 1350 | 23 |

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-301-19 Crop Production Technology – I (Kharif Crops)

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Kharif crops; Cereals – rice, maize and sorghum; Pulses - pigeonpea, mungbean, urdbean and soybean; Oilseeds- groundnut; Fibre crops- cotton & jute; Forage crops- sorghum, cowpea, cluster bean and napier

Recommended books

1. Handbook of agriculture – ICAR
2. Package of practices for kharif crops- PAU
3. Text book of field crop production- food grains – ICAR
4. Text book of field crop production – commercial crops - ICAR

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-302-19 Fundamentals of Plant Breeding

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

Recommended books

1. Plant Breeding Principles and Methods by B. D. Singh – Kalyani publishers
2. Principles and Practices Plant Breeding by J. R. Sharma - McGraw Hill Publishing company Limited
3. Introduction to Plant Breeding by R. C. Choudhary- Oxford and IBH. Publishing Company

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-303-19 Agricultural Finance and Cooperation

Agricultural Finance- meaning, scope and significance; Credit needs and its role in Indian agriculture. Agricultural credit: meaning, definition, need and its classifications. Credit analysis: 4 R's, and 3C's of credits. Sources of agricultural finance: institutional and non-institutional sources, commercial banks, social control and nationalization of commercial banks, Micro financing including KCC. Lead bank scheme, RRBs, Scale of finance and unit cost. An introduction to higher financing institutions – RBI, NABARD, ADB, IMF, World Bank, Insurance and Credit Guarantee Corporation of India. Cost of credit. Recent developments in agricultural credit. Preparation and analysis of financial statements – Balance Sheet and Income Statement. Basic guidelines for preparation of project reports- Bank norms – SWOT analysis. Agricultural Cooperation – Meaning, brief history of cooperative development in India, objectives, principles of cooperation, significance of cooperatives in Indian agriculture. Agricultural Cooperation in India- credit, marketing, consumer and multi-purpose cooperatives, farmers' service cooperative societies, processing cooperatives, farming cooperatives, cooperative warehousing; role of ICA, NCUI, NCDC, NAFED.

Books recommended

1. Cooperation in India- .F. Banerjee
2. Agricultural Economics by Joginder Singh – Kalyani publishers
3. All-India Rural Credit Survey Review Committee Report – RBI
4. All India Debt and Investment Survey, various issues, NSSO

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-304-19 Agri- Informatics

Introduction to Computers, Operating Systems, definition and types, Applications of MS Office for document creation & Editing, Data presentation, Interpretation and Graph creation, Statistical analysis, Mathematical expressions, Database, concepts and types, uses of DBMS in Agriculture, World Wide Web (WWW): Concepts and components. Introduction to computer programming languages, concepts and standard input/output operations. e-Agriculture, concepts and applications, Use of ICT in Agriculture. Computer Models for understanding plant processes. IT application for computation of water and nutrient requirement of crops, Computer-controlled devices (automated systems) for Agri-input management, Smartphone Apps in Agriculture for farm advises, market price, postharvest management etc; Geospatial technology for generating valuable agri-information. Decision support systems, concepts, components and applications in Agriculture, Agriculture Expert System, Soil Information Systems etc for supporting Farm decisions. Preparation of contingent crop-planning using IT tools.

Recommended books

Extension communication and Management – G.I. Ray

Education and Communication for Development – O.P.Dharma and O.P.Bhatnagar

Extension Education – Ranjit Singh

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-305-19 Farm Machinery and Power

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

Recommended books

1. 'Farm Machinery and Equipment', Tata McGraw Hill Publishing Co.
2. 'Farm Power and Machinery', Kitab Mahal.
3. S.C Jain and C.R. Rai, 'Tractor Engine'.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-306-19 Production Technology for Vegetables and Spices

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

Recommended Books

1. H.C. and W.C. Kelly, 'Vegetables Crops', Tata McGraw Hill.
2. D.V.S. Chauhan, 'Vegetable Production in India', Ram Prasad & Sons, Agra.
3. T.K. Bose, 'Vegetables', Naya Prokash, Calcutta.
4. S.P. Singh, 'Production Technology of Vegetables Crops', Agril. Res. Communication Centre, Karnal.
5. B. Choudhary, 'Vegetables', NBT, New Delhi.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-307-19

Environmental Studies and Disaster Management

Multidisciplinary nature of environmental studies Definition, scope and importance. Natural Resources: Renewable and non-renewable resources, Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources-Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles. Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem. Ecological succession, Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and bio-geographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. Environmental Pollution: definition, cause, effects and control measures of: a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Social Issues and the Environment: From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Dues. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

Disaster Management:

Natural Disasters- Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level rise, ozone depletion. Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents. Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community –based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

Recommended books

1. Changing Scenario of Punjab Agriculture-An Ecological Perspective- Joginder Singh, G.S.Dhaliwal & N.S.Randhawa CRRID Nov.1997.

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

2. Environmental Hazards and Disasters: Contexts, Perspectives and Management - [Bimal Kanti Paul](#) John Wiley & Sons
3. Disaster Management and Risk Reduction: Role of Environmental Knowledge - Anil K. Gupta, Sreeja S. Nair, Sandhya Chatterji, Narosa Publishing House

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-308-19 Statistical Methods

Introduction to Statistics and its Applications in Agriculture, Graphical Representation of Data, Measures of Central Tendency & Dispersion, Definition of Probability, Addition and Multiplication Theorem (without proof). Simple Problems Based on Probability. Binomial & Poisson Distributions, Definition of Correlation, Scatter Diagram. Karl Pearson's Coefficient of Correlation. Linear Regression Equations. Introduction to Tests of Significance, One sample & two sample test t for Means, Chi-Square Test of Independence of Attributes in 2×2 Contingency Table. Introduction to Analysis of Variance, Analysis of One Way Classification. Introduction to Sampling Methods, Sampling versus Complete Enumeration, Simple Random Sampling with and without replacement, Use of Random Number Tables for selection of Simple Random Sample.

Recommended books

1. Statistical methods for agricultural workers- R.S. Chandel
2. Research Methodology – C R Kothari and Gaurav Garg

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-309-19 Livestock and Poultry Management

Role of livestock in the national economy. Reproduction in farm animals and poultry. Housing principles, space requirements for different species of livestock and poultry. Management of calves, growing heifers and milch animals. Management of sheep, goat and swine. Incubation, hatching and brooding. Management of growers and layers. Important Indian and exotic breeds of cattle, buffalo, sheep, goat, swine and poultry. Improvement of farm animals and poultry. Digestion in livestock and poultry. Classification of feedstuffs. Proximate principles of feed. Nutrients and their functions. Feed ingredients for ration for livestock and poultry. Feed supplements and feed additives. Feeding of livestock and poultry. Introduction of livestock and poultry diseases. Prevention (including vaccination schedule) and control of important diseases of livestock and poultry.

Recommended books

1. A textbook of Animal Husbandry- G.C. Banerjee
2. Dairy Bovine Production – C.K.Thomas and NSR Shastry
3. Livestock Production Management – CK Thomas and NSR Shastry
4. Handbook of Animal Husbandry – ICAR Publication
5. Poultry Production Management- R A Singh

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-310-19 Crop Production Technology – I (Kharif Crops) (Practical)

Rice nursery preparation and, transplanting, sowing of soybean, pigeonpea and mungbean. maize, groundnut and cotton, effect of seed size on germination and seedling vigour of kharif season crops, effect of sowing depth on germination of kharif crops, identification of weeds in kharif season crops, top dressing and foliar feeding of nutrients, study of yield contributing characters and yield calculation of kharif season crops, study of crop varieties and important agronomic experiments at experimental farm, study of forage experiments, morphological description of kharif season crops, visit to research centres of related crops.

BSAG-311-19 Fundamentals of Plant Breeding (Practical)

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

BSAG-312-19 Agricultural Finance and Cooperation (Practical)

Determination of most profitable level of capital use. Optimum allocation of limited amount of capital among different enterprises. Analysis of progress and performance of cooperatives using published data. Analysis of progress and performance of commercial banks and RRBs using published data. Visit to a commercial bank, cooperative bank and cooperative society to acquire firsthand knowledge of their management, schemes and procedures. Estimation of credit requirement of farm business – A case study. Preparation and analysis of balance sheet – A case study. Preparation and analysis of income statement – A case study. Appraisal of a loan proposal– A case study. Techno-economic parameters for preparation of projects. Preparation of Bankable projects for various agricultural products and its value added products. Seminar on selected topics.

BSAG-313-19 Agri- Informatics (Practical)

Study of Computer Components, accessories, practice of important DOS Commands. Introduction of different operating systems such as windows, Unix/ Linux, Creating, Files & Folders, File Management. Use of MS-WORD and MS Power-point for creating, editing and presenting a scientific document. MS-EXCEL - Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data. MS-ACCESS: Creating Database, preparing queries and reports, demonstration of Agri-information system. Introduction to World Wide Web (WWW). Introduction of programming languages. Hands on Crop Simulation Models (CSM) such as DSSAT/Crop-Info/CropSyst/ Wofost; Computation of water and nutrient requirements of crop using CSM and IT tools. Introduction of Geospatial Technology for generating valuable information for Agriculture. Hands on Decision Support System. Preparation of contingent crop planning.

BSAG-314-19 Farm Machinery and Power (Practical)

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

B.Sc. (Hons) Agriculture Syllabus Batch 2019 Onwards

BSAG-315-19 Production Technology for Vegetables and Spices (Practical)

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

BSAG-316-19 Environmental Studies and Disaster Management (Practical)

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

BSAG-317-19 Statistical Methods (Practical)

Graphical Representation of Data. Measures of Central Tendency (Ungrouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Central Tendency (Grouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Dispersion (Ungrouped Data).

Measures of Dispersion (Grouped Data). Moments, Measures of Skewness & Kurtosis (Ungrouped Data). Moments, Measures of Skewness & Kurtosis (Grouped Data). Correlation & Regression Analysis. Application of One Sample t-test. Application of Two Sample Fisher's t-test. Chi-Square test of Goodness of Fit. Chi-Square test of Independence of Attributes for 2×2 contingency table. Analysis of Variance One Way Classification. Analysis of Variance Two Way Classification. Selection of random sample using Simple Random Sampling.

BSAG-318-19 Livestock and Poultry Management (Practical)

External body parts of cattle, buffalo, sheep, goat, swine and poultry. Handling and restraining of livestock. Identification methods of farm animals and poultry. Visit to IDF and IPF to study breeds of livestock and poultry and daily routine farm operations and farm records. Judging of cattle, buffalo and poultry. Culling of livestock and poultry. Planning and layout of housing for different types of livestock. Computation of rations for livestock. Formulation of concentrate mixtures. Clean milk production, milking methods. Hatchery operations, incubation and hatching equipments. Management of chicks, growers and layers. Debeaking, dusting and vaccination. Economics of cattle, buffalo, sheep, goat, swine and poultry production.