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1. Fundamentals of Agronomy

3(2+1) AG-101

Theory

Agronomy and its scope. seeds and sowing, tillage and tilth, 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. Weeds- importance. classification, crop weed competition, concepts of weed management- principles and methods, herbicides- classification, selectivity and resistance, 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.

Practical

Identification of crops, seeds, fertilizers, pesticides and tillage implements. Identification of weeds in crops, Methods of herbicide and fertilizer application. Study of yield contributing characters and yield estimation. Numerical exercises on fertilizer requirement, plant population. herbicides and water requirement, Study of soil moisture measuring devices, Measurement of irrigation water.

2. Fundamentals of Genetics

3(2+1) AG-102

Theory

Pre and Post Mendelian concepts of heredity, Mendelian principles of heredity. Architecture of chromosome; special types of chromosomes. Chromosomal theory of inheritance; cell cycle and cell

division - mitosis and meiosis. Chi-square test; Dominance relationships, pistatic interactions; 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 & CLB 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 (DNA). Protein synthesis. Transcription and translational mechanism of genetic material. Gene concept: Gene structure, function and regulation.

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.

3. Fundamentals of Soil Science

3 (2+1) AG-103

Theory

Soil as a natural body, 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 of 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. EC, 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 pollution-behaviour of pesticides and inorganic contaminants, prevention and mitigation of soil pollution.

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 method. Determination of soil pH and electrical conductivity. Study of soil map. Estimation of organic matter content of soil. Estimation of CO_3 and HCO_3 in soil water

4. Fundamentals of Horticulture (NEW)

2(1+1) AG-104

Theory

Horticulture-Its definition and branches, importance and scope; horticultural and botanical classification; climate and soil for horticultural crops; Plant propagation-methods and propagating structures; principles of orchard establishment; Principles and methods of training and pruning, juvenility and flower bud differentiation; unfruitfulness; pollination, pollinizers and pollinators; fertilization and parthenocarpy; use of plant bioregulators in horticulture, irrigation and fertilizers applications-method and quality.

Practical

Identification of garden tools. Identification of horticultural crops. Preparation of seed bed/nursery bed. Practice of sexual and asexual methods of propagation Layout and planting or orchard plants. Training and pruning of fruit trees transplanting and care of vegetable seedlings making of herbaceous and shrubby borders. Preparation of potting mixture potting and repotting. Fertilizer application in different crops. Visits to commercial nurseries/orchard.

5. Rural Sociology & Educational Psychology

2(1+1) AG-105 Theory

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. Rural Leadership: concept and definition, types of leaders in rural context. Educational psychology: Meaning & its importance in agriculture extension. Behavior: Cognitive, affective. psychomotor domain, Personality, Learning, Motivation, Theories of Motivation, Intelligence.

Practical

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

6. Introduction to Forestry (New)

2(1+1) AG-106 Theory

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, 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.

Practical

Identification of tree-species. Diameter measurements using calipers and tape. Volume measurement of logs using various formulae. Nursery lay out, seed sowing, vegetative propagation

techniques. Forest plantations and their management. Visits of nearby forest based industries.

7. Introductory Animal husbandry

3(2+1) AG-107

GENERAL : Importance of livestock in Agriculture and Economy. Dairying under specialized and mixed farming. Livestock and milk production statistics.

DAIRY CATTLE AND BUFFALOES MANAGEMENT : Cattle and buffalo Breeds. Breeding methods & systems, Care and Management of pregnant and milch cow, Raising of calves, Management of heifers and bulls. Maintenance of livestock records, Milking methods and principles, Clean milk production, Feeds and feeding, Conservation of fodder, Housing for dairy animals.

PIG MANAGEMENT : Importance, Important breeds, Raising of piglets up to age of slaughter, General aspects of breeding, Care of sow and boar.

SHEEP AND GOAT MANAGEMENT : Importance, Important breeds, Raising of kids and lambs, Breeding, Feeding of goats and sheep.

HEALTH MANAGEMENT : Common animal diseases of cattle, buffalo, goat, sheep and swine viz. Anthrax. BQ, HS, Brucellosis, Mastitis, Milk fever. Bloat. Swine fever and Enterotoximeia, Vaccination schedule.

Practical

Study of external body parts, Study of phenotypic and physiological difference between cow and buffaloes. Estimation of body weight by measurements, Identification of animals. Castration, Dehorning, Estimation of cost of milk production, Problems on computation of ration, casting and throwing, Grooming, Scheme of fodder production round the year, Recording temperature, pulse rate and respiration rate of animals.

8. Comprehension and Communication Skills in English

2(1+1) AG-108 Theory

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 based on TOEFL and other competitive examinations. 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.

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.

9. Agricultural Heritage Theory

1(1+0) AG-109

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; Crop significance and classifications; National agriculture setup in India; Current scenario of Indian agriculture; Indian agricultural concerns and future prospects.

10. General Agriculture-I

2(1+1) AG-110A

Agriculture of Intermediate standard including Agronomy, Soil Science, Horticulture, Plant Pathology

11. General Agriculture-II

2(1+1) AG-111A

Agriculture of Intermediate standard including Ag Engg. Animal Husbandry and economics

12. Introductory Biology

2(1+1) AG-110B

Theory 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. **Practical** Morphology of flowering plants - root, stem and leaf and their modifications. Inference, 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.

13. Elementary Mathematics

2(2+0) AG-111B Theory

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 diameter 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^n , $\sin x$ & $\cos x$ from first principle, Derivatives of sum, difference, product and quotient of two functions, Differentiation of functions of functions (Simple problem based on it), Logarithmic differentiation (Simple problem based on it), Differentiation by substitution method and simple problems based on it. Differentiation of Inverse Trigonometric functions. Maxima and Minima of the functions of the form $y=f(x)$ (Simple problems based on it). Integral Calculus : Integration of simple functions, Integration of Product of two functions, Integration by substitution method, Definite Integral (simple problems based on it), Area under simple well-known curves (simple problems based on it). 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.

14. National Service Scheme 1 Introduction and basic components of NSS: AG-112A

Orientation: history, objectives, principles. symbol, badge; regular programmes under NSS, organizational structure of NSS, code of conduct for NSS volunteers, points to be considered by NSS volunteers awareness about health **NSS programmes and activities**

Concept of regular activities, special camping, day camps, basis of adoption of village/slums, conducting survey, analysing guiding financial patterns of scheme, youth programme/ schemes of GUI, coordination with different agencies and maintenance of diary

Understanding youth

Definition, profile. profile, categories, issues and challenges of youth; and opportunities for youth who is agent of the social change

Community mobilisation

Mapping of community stakeholders, designing the message as per problems and their culture; identifying methods of mobilisation involving youth-adult partnership

Social harmony and national integration

Indian history and culture, role of youth in nation building, conflict resolution and peace-building

Volunteerism and shramdan

Indian tradition of volunteerism, its need, importance, motivation and constraints; shramdan as part of volunteerism

Citizenship, constitution and human rights

Basic features of constitution of India, fundamental rights and duties, human rights, consumer awareness and rights and rights to information Family and society

Concept of family, community (PRIs and other community based organisations) and society

Semester I:

National Cadet Corps

AC-112B

1. Aims. objectives. organization of NCC and NCC song. DG's cardinals of discipline.
2. Drill- aim, general words of command, attention, stands at ease, stand easy and turning.
3. Sizing, numbering. forming in three ranks, open and close order march and dressing.
4. Saluting at the halt, getting on parade, dismissing and falling out.
5. Marching, length of pace. and time of marching in quick/slow time and halt. Side pace, pace forward and to the rear.
6. Turning on the march and wheeling. Saluting on the march.
7. Marking time, forward march and halt.
8. Changing step, formation of squad and squad drill.
9. Command and control, organization, badges of rank, honours and awards
10. Nation Building- cultural heritage, religions, traditions and customs of India. National integration.
11. Values and ethics, perception, communication, motivation, decision making, discipline and duties of good citizen.
12. Leadership traits, types of leadership. Character/personality development.

13. Civil defense organization, types of emergencies. fire fighting. protection.
14. Maintenance of essential services, disaster management, aid during development projects.
15. Basics of social service, weaker sections of society and their needs, NGO's and their contribution. contribution of youth towards social welfare and family planning.
16. Structure and function of human body, diet and exercise, hygiene and sanitation.
17. Preventable diseases including AIDS, safe blood donation, first aid, physical and mental health.
18. Adventure activities
19. Basic principles of ecology. environmental conservation, pollution and its control.
20. Precaution and general behaviour of girl cadets, prevention of untoward incidents, vulnerable parts of the body, self defense.

Semester 1:

Physical Education and Yoga Practices

2(0+2) AG-112C

1. Teaching of skills of Football - demonstration. practice of the skills, correction, involvement in game situation (For girls teaching of Tennikoit)
2. Teaching of different skills of Football - demonstration, practice of the skills, correction, involvement in game situation (For girls teaching of Tennikoit)
3. Teaching of advance skills of Football - involvement of all the skills in game situation with teaching of rules of the game
4. Teaching of skills of Basketball - demonstration, practice of the skills, correction of skills, involvement in game situation
5. Teaching of skills of Basketball - demonstration, practice of the skills, involvement in game situation
6. Teaching of skills of Basketball - involvement of all the skills in game situation with teaching of rule of the game
7. Teaching of skills of Kabaddi - demonstration, practice of the skills, correction of skills, involvement in game situation
8. Teaching of skills of Kabaddi - demonstration, practice of the skills, correction of skills, involvement in game situation
9. Teaching of advance skills of Kabaddi - involvement of all the skills in game situation with teaching of rule of the game
10. Teaching of skills of Ball Badminton - demonstration, practice of the skills, correction of skills, involvement in game situation
11. Teaching of skills of Ball Badminton - involvement of all the skills in game situation with teaching of rule of the game
12. Teaching of some of Asanas - demonstration, practice, correction and practice
13. Teaching of some more of Asanas - demonstration_ practice, correction and practice
14. Teaching of skills of Table Tennis - demonstration, practice of skills, correction and practice and involvement in game situation
15. Teaching of skills of Table Tennis - demonstration, practice of skills, correction and practice and involvement in game situation
16. Teaching of skills of Table Tennis - involvement of all the skills in game situation with teaching

of rule of the game

17. Teaching - Meaning, Scope and importance of Physical Education
18. Teaching - Definition, Type of Tournaments
19. Teaching - Physical Fitness and Health Education
20. Construction and laying out of the track and field (*The girls will have Tennikoit and Throw Ball).
 1. Teaching of skills of Hockey - demonstration practice of the skills and correction.
 2. Teaching of skills of Hockey - demonstration practice of the skills and correction. And involvement of skills in games situation
 3. Teaching of advance skills of Hockey - demonstration practice of the skills and correction. Involvement of all the skills in games situation with teaching of rules of the game
 4. Teaching of skills of Kho-Kho - demonstration practice of the skills and correction.
 5. Teaching of skills of Kho-Kho - demonstration practice of the skills and correction. Involvement of the skills in games situation
 6. Teaching of advance skills of Kho-Kho - demonstration practice of the skills and correction. Involvement of all the skills in games situation with teaching of rules of the game
 7. Teaching of different track events - demonstration practice of the skills and correction.
 8. Teaching of different track events - demonstration practice of the skills and correction.
 9. Teaching of different track events - demonstration practice of the skills and correction with competition among them.
 10. Teaching of different field events - demonstration practice of the skills and correction.
 11. Teaching of different field events - demonstration practice of the skills and correction.
 12. Teaching of different field events - demonstration practice of the skills and correction.
 13. Teaching of different field events - demonstration practice of the skills and correction with - competition among them.
 14. Teaching of different asanas - demonstration practice and correction.
 15. Teaching of different asanas - demonstration practice and correction.
 16. Teaching of different asanas - demonstration practice and correction,
 17. Teaching of different asanas - demonstration practice and correction.
 18. Teaching of weight training - demonstration practice and correction.
 19. Teaching of circuit training - demonstration practice and correction.
 20. Teaching of calisthenics - demonstration practice and correction.

Note:

- Compulsory Uniform: Half pants, Tee Shirts, Shoes and socks all white (Girls will have white Tee Shirt and Track pants)
- The games mentioned in the practical may be inter changed depending on the season and facilities.