## DIPLOMA IN ANIMAL HUSBANDRY & DAIRYING (DAHD) SEMESTER WISE COURSE & CREDIT HOURS DISTRIBUTION

(Total duration 2 years)

<table>
<thead>
<tr>
<th>Title of Subject</th>
<th>Subject Code</th>
<th>Credits Hours (Th + Pr)</th>
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<td><strong>SEMESTER - I</strong></td>
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<tr>
<td>Paper–I : General Livestock Management</td>
<td>D - AH - 111</td>
<td>2 + 1</td>
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<tr>
<td>Paper–II : Fundamentals of Veterinary Physiology</td>
<td>D - AP - 111</td>
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<td>Paper–V : Pig, poultry, goat and sheep husbandry</td>
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<td>Paper VII : Introduction to Health Management</td>
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<td><strong>SEMESTER - II</strong></td>
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<td><strong>SEMESTER - III</strong></td>
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<td><strong>SEMESTER - IV</strong></td>
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Semester wise course & Syllabus

Semester – I

Paper – I: General Livestock Management
Subject Code: - D - AH – 111
Credits Hours ( T + P ) : - (2 + 1)

Theory
Routine management practices like grooming, washing, dipping, shearing and exercising. Common vices of animals, their prevention and care. Routine dairy farm operations. Determination of age by dentition, Body Weight determination of animals.

Practical
Preparation of animals for show and judging. Familiarization with routine farm operations. Methods of disbudding. Record keeping.

Paper – II: Fundamentals of Veterinary Physiology
Subject Code: - D - AP – 111
Credits Hours ( T + P ) : - (2 + 1)

Theory
Structures and Functions of Animal: Tissues; Elementary knowledge of morphology, anatomy and functions of different systems. Basic osteology of ruminant and non-ruminant livestock species. Physiology of muscles, General Physiology and Biochemistry of body fluids and digestive system, digestive glands e.g. salivary glands, gall bladder, pancreas and their functions. General Physiology and Biochemistry of respiratory and circulatory system, basic knowledge on excretory system.

Practical
Collection of blood from farm animals, Measurement of body temperature, pulse and heart rate, Study on Animal Hematogram

Paper – III: Nutrients, Feeds and Feeding of Farm Animals
Subject Code: - D - AN -111
Credits Hours ( T + P ) : - (2 + 1)

Theory
Components of Plants and Animals, Role of Water, Carbohydrate, Lipid and Protein in Animal Nutrition, Physiological Functions and Deficiency Symptoms of minerals and Vitamins. Classification of Feeds and Fodder, Dry Roughages, Green Fodder, Concentrate Ingredients, Feed Supplements, Additives & Implants, Non Conventional Feed Resources, Agro Industrial By products, Tree Fodder, Aquatic fodder, Methods of Nutritional Evaluation of Feed

Practical
Preparation of chart/write up/presentation on sources, physiological functions and deficiency symptoms of carbohydrates, proteins and fat, essential minerals and vitamins, Identification of sources of different nutrients. Identification of feeds and fodder, Collection and processing of samples of feed and fodder, Proximate evaluation of feeds and fodder in terms of DM, OM, CP, EE, NFE, Total Ash. Demonstration of Mineral Estimation

Paper – IV: Introduction of Forge Corp production
Subject Code: - D - FP - 111
Credits Hours ( T + P ) : - (1 + 1)

Theory
Practical:

Paper V: Pig, poultry, goat and sheep husbandry
Subject Code: D - AH – 112 Credits Hours (T + P) : - (2 + 1)

Theory
Breeds of pig, goat and sheep; Space requirement and housing; Feeds and feeding management; vaccination, deworming and health and reproductive management;
Commercial strains of Broilers; starter and grower mash – nutritive value, feed formulation, and preparation; Deep litter rearing; vaccination, health management and marketing;
Commercial strains of Layer, housing, feeds and feeding management; vaccination, deworming and health management of brooder, grower and layer; Egg collection and grading, marketing; factors affecting egg production; Cannibalism; summer stress and its management in poultry birds; debeaking; hatchery operations

Practical
Observations on day to day managemental operations in piggery, goatery, broiler and layer farming. Calculation of economics of goatery, piggery and poultry rearing; exposure to hatchery management operations.

Paper VI: Introduction to Computer Application
Subject Code: D - CS – 111 Credits Hours (T + P) : - (2 + 1)

Theory
Introduction to Computers, Hardware and software concepts, Basic applications of computer, Introduction about Operating Systems, Programming languages. Introduction to commonly used MS Office application softwares – MS Word, Power Point, Excel. Concept of Internet; Applications of Internet; Connecting to Internet; World Wide Web (WWW); Web Browsing softwares, Search Engines; Understanding URL; Domain name; IP Address. Basics of Electronic mail;

Practical
Understanding the Parts and Components of Computers. Use of word processing software for creating reports and presentation. Use of Power point presentation software for creating reports and presentation. Use of Excel software for entering data and presentation. Exploring the Internet: Web Browsing/ Searching etc. Preparation and presentation of Multimedia files.

Paper VII: Introduction to Health Management
Subject Code: D - AH – 114 Credits Hours (T + P) : - (2 + 1)

Theory
Clinical examination of sick animal, Signs of health and disease in different animals, Significance of Temperature, Respiration and Pulse in animals, Care of sick animals and care of neonates. Etiology, symptoms, treatment, prevention and control of some major diseases of livestock. Anthelmintics, deworming schedule, vaccination schedule, castration in farm animals, introduction to mastitis and its management

Practical
Clinical Attendance, Administration of drugs, care and management of sick indoor and outdoor animals, Diagnoses of the disease by recording symptoms, temperature, pulse, respiration, Cleansing & sterilization of surgical items. Different staining methods.
Semester – II

Paper–I: Production and Shelter Management of Livestock
Subject Code: - D - AH – 121  Credits Hours ( T + P ) : - (2 + 1)
Theory
Management of animals - during and after parturition, and post–parturient care.

Practical
Milking of farm animals. Disinfection of animal house and milking utensils. Visit to different animal farms/ demonstration centres/ individual rural, urban and peri-urban animal units. Layout plans for dairy and sheep/goat/pig farms.

Paper–II: Digestion, Absorption and Metabolism of Nutrients
Subject Code: - D - AN – 121  Credits Hours ( T + P ) : - (2 + 1)
Theory
Ruminant and non-ruminant digestive system, Factors affecting rumen development, Microbial ecology of the rumen, Digestive enzymes; Digestion, absorption and metabolism of carbohydrate, protein and fat in ruminant and mono-gastric animals, Essential amino-acids and Essential fatty-acids: their role in animal nutrition, Anti-nutrients, Metabolic Disorders.

Practical

Paper–III: Physiology of Reproduction & Lactation
Subject Code: - D - AP – 121  Credits Hours ( T + P ) : - (2 + 1)
Theory
General Endocrinology, Different kinds of hormones, secretion, functions etc. Female Reproductive Physiology: Puberty, oogenesis ovulation, formation of corpus luteum, estrous cycle and parturition; Male Reproductive Physiology: Erection, ejaculation, male hormones, factors affecting working of testis, spermatogenesis, spermatozoa Lactation Physiology - Structure of udder, milk secretion, galactopoesis, letdown of milk, formation of colostrum, milk fat and milk protein, agalactia.

Practical
Physiological assessment of Farm animals, Physiological assessment of different reproductive organs, Estimation of hormones, Physiology of milk letdown, Somatic Cell Count in milk

Paper–IV: Introductory Animal Genetics and Breeding
Subject Code: - D - AGB – 121  Credits Hours ( T + P ) : - (2 + 1)
Theory
Basic concept of Quantitative and Qualitative Genetics. Mendel's classical genetics and its principle, Physical basic of inheritance, Heredity-its definition, classification etc. Chromosome morphology, System of mating, Concepts of Heritability and Repeatability, Selection- definition, methods, Breeding value, Importance and maintenance of different farm records etc.

Practical
Practical aspects on mono and di-hybrid crosses, blood group data. Calculation of gene and genotype frequencies, Estimation of genotypic and phenotypic parameters, Estimation of coefficient of inbreeding and relationship, etc.
Paper–V:  **Forage Crop Production**  
*Subject Code:* - D - FP -121  
*Credits Hours (T + P) :* - (1 + 1)  

**Theory:**  

**Practical:**  
Visit to fodder tree/shrub/pasture crop fields. Preparation of Herbarium on fodder trees/shrubs/pasture crops & weeds found in agricultural crop fields. Project/Demonstration on *Azolla* production, Vermicomposting. Demonstration of preservation of surplus forage crops as hay and silage. Region specific fodder crop calendar preparation. Preparation of fodder crop calendar and scheme for a given dairy farm.

Paper - VI:  **Animal Husbandry Extension**  
*Subject Code:* - D - AHE - 121  
*Credits Hours (T + P) :* - (2 + 1)  

**Theory**  
Basics of Extension education, its meaning, Scope & objective, Rural Sociology & its importance to the extension workers, Audio-Visual aids, Animal husbandry awareness programmes: Meeting, Seminars and Camps etc., Adoption and communication of innovation.

**Practical**  
Preparation of model, Chart, & different audio-Visual programmes, Visit to KrishiMela, exhibition stalls, Animal husbandry awareness programmes in villages, Different techniques of PRA- Transect walk, Resource map, Agro-ecological map, mobility map, Preparation of extension materials to organise Deworming, Vaccination, Infertility camps etc. in villages.

Paper VII:  **Artificial Insemination in Farm Animals**  
*Subject Code:* - D - AH – 122  
*Credits Hours (T + P) :* - (1 + 1)  

**Theory**  
Semen collection in farm animals- different methods and their advantages, Evaluation of semen for quality parameters, Preservation of semen - different methods, extenders and storage temperature, Cryobiology of semen preservation, Functional anatomy of reproductive organs in farm animals. Estrus detection methods, synchronization of estrus cycle and fixed time AI, Methods of pregnancy diagnosis.

**Practical**  

Semester – III

Paper–I:  **Health Management in Farm Animals**  
*Subject Code:* - D - AH – 211  
*Credits Hours (T + P) :* - (2 + 1)  

**Theory**  
Brief account on Parasitic diseases (internal and external), Wound types and management, use of different antiseptics, Etiology, symptoms, treatment prevention and control of major infectious diseases of farm animals. Poisons (types, effects, treatment, etc.) - Arsenic, lead, cyanide, nitrate, nitrite, etc.

**Practical**  
Method of collection and examination of blood, faeces, urine, milk from animals for laboratory diagnosis. Collection of blood samples and Separation of serum and plasma from blood. Preparation of blood smears and Microscopic examinations for laboratory diagnosis. Different methods of administration of vaccines in animals.
Paper II: Applied Animal Nutrition  
Subject Code: - D - AN – 211  
Credits Hours (T + P) : - (2 + 1)  
Theory  
Nutrient Requirements & Feeding Standards, Nutritive Value of Feeds and Fodder, Mineral Mixture, Ration Formulation for different Species of Farm Animals, Feed Processing, Silage Making, Hay Making, Nutritional enrichment of Fibrous crop residue, Utilization of non protein nitrogenous (NPN) compound in ruminant diet, Bypass Protein and Fat, Scarcity Feeding.  
Practical  
Formulation of rations for different categories of animals, Urea treatment of Straw, Concentrate mixture preparation.

Paper III: Basics of Milk Processing  
Subject Code: - D - DT – 211  
Credits Hours (T + P) : - (1 + 1)  
Theory  
Practical  
Acquaintance with apparatus and glass ware, Preparation of acid solutions, Estimation of fat, SNF and Total Solids, Separation of cream using cream separator, Estimation of fat and SNF of skim milk and cream. Visit to dairy plants for knowing the operation of the plants for different product manufacture.

Paper IV: Farm Economics and Marketing  
Subject Code: - D - FE – 211  
Credits Hours (T + P) : - (2 + 1)  
Theory  
Economics: Definition, Microeconomics, Macroeconomics; Farm Economics: Definition, Type of Farm, Farm Resources: Land, Cattle Shed, Milch Animals, Implements, Labour and Capital, Cost Concept: Fixed Cost, Variable Cost, Cost Benefit Analysis, Farm Planning: Definition, Farm Budget, Accounts and Book Keeping, Market: Definition, Market Agents, Type of Market, Market Channel, Price analysis and Market Cost.  
Practical  
Farm Planning and Budgeting, Cost Benefit analysis, Record keeping, Cost concepts.

Paper V: Introduction to Applied Animal Biotechnology  
Subject Code: - D - BT – 211  
Credits Hours (T + P) : - (2 + 1)  
Theory  
Introduction to gamates (oocytes and sperms), Female reproductive system, Fertilization process (In vivo and in vitro) and early embryonic development, Sexing of sperms/embryos and its application in livestock, Application of cloning, transgenesis and stem cells in livestock development.  
Practical  
Isolation and grading of immature oocytes from cattle ovaries, In vitro Maturation of oocytes, In vitro sperms capacitation and In vitro fertilization of oocytes.

Paper VI: Reproductive Management in Farm Animals  
Subject Code: - D - AH – 212  
Credits Hours (T + P) : - (2 + 1)  
Theory  
Parturition and care of parturient cows, Dystocia, uterine torsion, uterine prolapse, retention of foetal membranes, metritis-causes and their management, Infertility and its management, economic losses due to infertility, Anoestrus and other functional causes of infertility, Repeat breeder cow – causes and management.  
Practical  
Examination genital organs- slaughter house specimen, Rectal examination of reproductive organs in dairy cows, White side test, Estrus detection,
Paper VII : English Communication, Soft Skills & Personality Development
Subject Code: - D - ENG – 211 Credits Hours (T + P ) : - (2 + 1)

Theory

Practical:
Public Speaking ,Extempore, Debate, Group discussion, Mock Interview.

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Semester – IV

Paper I: Introductory Pharmacy
Subject Code: - D - AH – 321 Credits Hours (T + P ) : - (3 + 1)

Theory
Definitions of terms: Pharmacology, Pharmacy, Chemotherapy, Therapeutics, Toxicology, Posology, Metrology etc. Sources and nature of drugs ; Routine Pharmaceutical processes ; Various dosage forms with suitable examples ; Principles of compounding and dispensing of drug preparations ; Different methods for the administration of drugs ; Pharmacy weights and measures- Apothecary & metric system; Household measures ; Prescription reading- parts of prescription and commonly used Latin abbreviations in prescription writing ; Broad therapeutic classification of drugs employed in Vety. Practice- Definitions examples and therapeutic uses in animals.

Practical
Identification of common drugs; Labeling and storage of common drugs: Compounding and dispensing of pharmacy preparations.

Paper II: Elementary Medicine
Subject Code: - D - AH – 322 Credits Hours (T + P ) : - (3 + 1)

Theory
Preliminary knowledge about signs of diseases; Clinical methods of examination and detection of abnormalities ; Abnormal body discharge ; Body temperature, pulse and respiration ; Methods of injecting drugs, sera, vaccine etc ; Use of canula, passing stomach tube, probang, teat syphon and other instruments for treatment ; General agents responsible for causing diseases: Bacteria, Viruses, Fungi and Parasites ; General principles of prevention and control of diseases ; Utilization and disposal of carcasses ; Elementary clinical diagnostic methods, history and general examination.


Practical
Cleaning of slides, glass wares and other laboratory equipments ; Techniques of staining and preparation of blood smears ; Collection, processing for examination of blood, urine, faeces; Collection, preservation, fixation and dispatch of morbid material for laboratory examination; Treatment of different infectious and noninfectious diseases in the farm.

Paper III: Introduction to Surgical Procedures
Subject Code: - D - AH – 323 Credits Hours (T + P ) : - (2 + 1)

Theory
Introduction and common terms used in Surgery: Sterilization in surgical practice; Introduction to superficial surgical ailments (Abscess, Fistula, Sinus, Wounds, Gangrene Cyst); Introduction to hoof management; First aid management of fracture, bloat, haemorrhage; Introduction to post operative management; Application and uses of various antiseptics, lotions, ointments and tinctures in surgical practice.

Practical
Identifications of various surgical instruments; Physical restraint of animals for surgery; Various injections; Burdizzo castration; Preparing animals for surgery; Application of counter irritants, heat, cold fomentation. Preparation of pack for autoclaving; Surgical attires and their uses by the Surgeon; Operation room discipline; Dressing of wounds and bandages.

Paper IV: Introduction to clinical procedures and animal farm practices
Subject Code: - D - AH – 324
Credits Hours (T + P): - (0 + 9)

Practical
Recording of temperature, pulse and respiration; Methods of drug administration; Practice of compounding and dispensing of various drugs; Intramammary infusions; Dressing of wounds; Acquaintance with various gynecological and surgical instruments with their uses; Sterilization of instruments etc.; Demonstration of gynecological and surgical problems; Preparation and handling of surgical pack; Collection of clinical material for laboratory examination; Burdizzo castration of calf, sheep and goat. Prophylaxis measure against common domestic animals & Poultry diseases.

Farm activities and farm routines followed in different livestock farms- cattle, sheep, goat, pig and poultry.

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