Mahakaushal University, Jabalpur (M.P.)

Scheme & Syllabus

For

Diploma In

Veterinary Pharmacy

Faculty of Veterinary Science
&
Animal Husbandry

Mahakaushal University
Village-Aithakheda, Mukunwara Road, Post-Tilwara
Jabalpur (M.P.) 482003

Course Curriculum

Semester wise Course Curriculum for Diploma in Veterinary Pharmacy

Course No.	Name of the course	Credit Hours
Semester I		
DVP-111	Anatomy of Livestock and Poultry	0+2
DVP-112	Introduction to Livestock Management	1+2
DVP-113	Introduction to Livestock Breeds and Economic traits	2+1
DVP-114	Basics of Animal Nutrition and Health	2+1
DVP-115	Basics of Animal Physiology	2+1
DVP-116	Elementary Microbiology	1+1
	Credit Hours	**8+8**
Semester II		
DVP-121	Fundamentals of Computer and its Application	0+2
DVP-122	Basics of Clinical Pathology	1+2
DVP-123	Elementary Parasitology	2+1
DVP-124	Fundamentals of Pharmacology	1+2
DVP-125	Introduction to Clinical Biochemistry	2+1
DVP-126	Introduction to Gynaecology and Obstetrics	2+1
	Credit Hours	**8+9**

Semester III

DVP-211	Basics of Clinical Veterinary Medicine	2+1
DVP-212	Introduction to Andrology and Artificial Insemination	2+1
DVP-213	Introduction to Animal Husbandry Extension	1+1
DVP-214	Preliminary Surgical Procedures and Care	1+2
DVP-215	Community Veterinary Pharmacy	2+1
DVP-216	Basic Concepts of Pharmacy and Toxicology	2+1
	Credit Hours	**10+7**

Semester IV – Hands on Trainings

DVP-221	Veterinary Pharmacist Jurisprudence	1+0
DVP-222	Practical Laboratory Diagnosis	0+3
DVP-223	Clinical Pharmacy	0+3
DVP-224	Veterinary Hospital Pharmacy	0+3
DVP-225	Farm Management Practices	0+3
DVP-226	Exposure to Polyclinics	0+3
	Credit Hours	**1+15**
	Total Credit Hours	**27+39=66**

Course Curriculum (Syllabus) details for the Diploma in Veterinary Pharmacy

Semester I

Anatomy of Livestock and Poultry (DVP-111) **(0+2)**

Introduction to the structures of skeletal system, digestive system, respiratory system, uro - genital system, circulatory system and superficial lymph nodes, nervous system including the sense organs.

Introduction to Livestock Management (DVP-112) **(1+2)**

THEORY

Terminology related to Cattle, Buffalo, Sheep, Goat, Equine, Camel and pig management, their classification based on utility. Knowledge about exotic and cross bred cows. Care of animals during and after parturition, housing of animals, calf rearing, care of new born calf, routine management practices like grooming, washing, dipping, casting and shearing, exercising, castration, dehorning and debudding. Raising and feeding of farm animals. Signs of health in different animals. Care of sick animals. Milking management. Control of animal vices. Importance of poultry farming and backyard poultry in rural India. Elementary knowledge of incubation and hatchery management, Management of chicks, growers and layers. Poultry housing and feeding. Vaccination against livestock and poultry diseases.

PRACTICAL

External body parts of different animals. Methods of approaching and handling of animals. Milking farm animals. Methods of age judging, grooming, identification, debudding, drenching of animals, casting and restraining of farm animals. Feeding of dairy animals. Methods of recording temperature, pulse and respiration, Record keeping and routine farm operations like incubation and hatching, fumigation, candling, wing banding, leg banding, brooding of chicks; litter management, feed mixing cavitations, debeaking and record keeping. Bio-security measures to prevent the contagious diseases in poultry farming, compost making, cleaning and disinfection of animal house.

Introduction to Livestock Breeds and Economic Traits (DVP-113) **(2+1)**

THEORY

Introduction to various breeds of cattle, buffalo, sheep, goat, horse, camel, pigs and poultry. Concepts of their classification with economic characters. Various types of livestock records with their importance. Procedures and objectives of culling. Schemes of livestock improvement in country. Breeding – definition and importance. Variation, sources of variation, implication. System of breeding, in-breeding, close breeding,

line breeding, out breeding and cross breeding.

PRACTICAL

Identification of breed characters. Maintenance of records including breeding records related to farm and dairy animals. Judging of animals. Procedures for the culling of livestock and poultry. Visit to cattle breeding farms. Analysis of breeding records of different livestock farms. Procedures for the culling of livestock and poultry. Methods of selection of dairy animals and breeding bulls.

Basics of Animal Nutrition and Health (DVP-114) **(2+1)**

THEORY

Composition of animal body and Plants. Nutritional terms and definitions. Carbohydrates their digestion, absorption and metabolism in ruminants. Protein and amino acids, their digestion, absorption and metabolism in ruminants. Lipids and their importance. Importance of vitamins, their deficiency symptoms. Feed additives in ration of livestock, antibiotics, hormonal compounds and others growth stimulants. Probiotics, their uses and abuses. Mineral elements- their functions and deficiency symptoms. Toxic plants. Elementary description of nutrients and their requirements for maintenance, growth, reproduction, lactation, egg production, wool production and work production. General principles of feeding and common practices for different categories of livestock. Preparation, preservation and storage of hay and silage. Common feed and fodder, their classification and identification. Nutritional deficiency diseases and feeding schedules for farm animals, pets and poultry under stress/ diseases/ deficiency conditions.

PRACTICAL

Elementary knowledge of computation of ration for different types of livestock and poultry. Familiarization of various feed stuff, fodder and their selection. Silage and hay making. Elementary knowledge about common nutritional deficiency diseases

Basics of Animal Physiology (DVP-115) **(2+1)**

THEORY

Elementary knowledge of physiological functions of various organs of livestock and poultry. Clinical relevance of physiological parameters. Functional anatomy of digestive tract of monogastric and ruminant animals, prehension, mastication, deglutition, movements of stomach, small intestine and large intestine. Rumination. Defecation. Physiological functions of various organs of animals and poultry. General function of blood, blood cells, plasma and serum. General physiology of urinary system, general physiology of male and female reproductive system, let down of milk.

PRACTICAL

Recording of various physiological parameters of domestic animals and poultry. Estimation of haemoglobin. Counting of RBC, WBC and ESR in blood. Interpretation of physiological parameters. Collection of blood samples from various animals and poultry. Preservation of defibrinated blood. Counting of rumen mobility. Physiological constituents of urine - estimation of titrable acidity in urine.

Elementary Microbiology (DVP-116) **(1+1)**

THEORY

Microscopy. Morphology and structure of bacteria, shape, size and arrangement of bacteria, morphological variations. Cultivation of bacteria, Isolation of bacteria in pure culture, cultural characteristics on solid medium, aerobic and anaerobic cultivation and identification of bacteria. Sources of infections. Methods of transmission of infections. Sterilization, disinfection, Introduction to fungi. General properties of virus, source of infection, methods of transmission of infection. Bacterial, fungal and viral diseases.

PRACTICAL

Microscopy and routines slide preparation and staining, Preparation and Sterilization of reagents and media. Cultural and morphological characteristics of bacteria and fungi, Sterilization, disinfection, evaluation of disinfectants, asepsis, etc., Equipment and its sterilization. Antibiotic sensitivity test. Sterility testing of pharmaceuticals.

Semester II

Fundamentals of Computer and its Application (DVP-121) **(0+2)**

Basics of computer including components of a computer. Types of computers, Hard ware and soft ware. Types of memories, control units. Inputs and outputs. Execution of a Programme; data types, simple programmes, Use of computer in Epidemiology, use of computer in farm, use of computer in Veterinary Hospital. Graphics. Computer basics- key board, function keys, escape key, control key, shift key, underscore key, enter key, cursor, backspace, end, home, Pg up, Pg dn etc. Simple operations/programmes. Saving of data. Entering biological data into computer. Access data, analysis using data base, Retrieving data for printing, print controls. Anova formulation, Basics of networking.

Basics of Clinical Pathology (DVP-122) **(1+2)**

THEORY

Introduction to Pathology- definitions. Common terminologies of Pathology- health, disease, etiology, pathogensis, symptoms, sign,

lesions, diagnosis, incubation period, prognosis morbidity, mortality, autopsy and biopsy. Causes of diseases. Developmental disturbances, anomalies and monsters. Disturbances of circulation. Disturbances of cell metabolism, necrosis, gangrene and post-mortem changes. Disturbances in growth. Inflammation: definition, etiology, classification and cardinal signs. Immune reactions, hypersensitivity and auto-immunity.

PRACTICAL

Gross study of pathological specimens and recognition of gross pathological lesions. Post-mortem techniques and collection of morbid materials, techniques of preservation and dispatch. Steps of post-mortem examination of dead animals. Post-mortem examination of large animals and small animals. Techniques of post-mortem examination of medico-legal cases. Diagnosis on the basis of post-mortem. lesions. Blood collection; Smear making and staining; Basic microscopy. Complete blood count, Urine examination.

Elementary Parasitology (DVP-123) **(2+1)**

THEORY

Introduction of Parasitology, Classification of parasitology, Types of parasites, Introduction of endo-and ecto-parasites. Economic importance of of parasitic diseases of livestock and poultry.; Prevention, control and treatment of diseases caused by protozoa, trematodes, cestodes, nematodes and arthropods in livestock; Parasites of zoonotic importance and their control. Important insects, Ticks and Mites of Livestock, their life cyle, mode of transmission and control measures.

PRACTICAL

Identification and Demonstration of endo-and ecto-parasites; Collection of samples, Preparation of slides from skin, faeces and blood. Faecal examination and demonstration of eggs/oocysts of parasites. Blood and skin scrapping examination. Preparation of blood smears, their staining and examination of slides for haemoprotozoan parasites. Methods of collection, fixation, preservation and mounting of protozoan parasites.

Fundamentals of Pharmacology (DVP-124) **(1+2)**

THEORY

Definitions of 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 drugs preparations. Different methods of administration of drugs. Pharmacy-Weights and measures, Apothecary and metric system ; Household measures ; Prescription reading – parts of prescription and commonly used Latin abbreviations in prescription writing ; Therapeutic

classification of Indigenous formulations (country medicine), antiseptics and disinfectants in Veterinary Practice – Definition, examples and therapeutic uses in animals. Antibacterial, antifungal, anthelmintics, antiprotozoal agents their classification and uses.

PRACTICAL

Identification of common drugs. Labelling and storage of common drugs. Compounding and dispensing of pharmacy preparations

Introduction to Clinical Biochemistry (DVP-125) **(2+1)**

THEORY

Biochemistry of carbohydrates, lipids and proteins and their classification, structure, function and properties. Metabolism in ruminants and non-ruminants. Biochemical processes in conditions of health and disease as respiration, renal function, stress, shock and digestive disorders. Diagnostic biochemistry- role of blood sugar, ketone bodies, blood urea nitrogen, uric acid in disease diagnosis and enzymes for detection of tissue affections/organ affections.

PRACTICAL

Preparation and standardization of acids and alkalis. Determination of pH, preparation of buffers, colorimetric and electrometric determination of pH, qualitative and quantitative tests and identification of carbohydrates, fat and proteins. Various tests to be conducted on clinical samples. Urine analysis, estimation of blood sugar, estimation of serum, total cholesterol, serum bilirubin determination, blood urea estimation, glucose tolerance test and any other relevant tests.

Introduction to Gynaecology and Obstetrics (DVP-126) **(2+1)**

THEORY

Structure and function of reproductive organs of livestock and poultry. Estrous cycles and reproductive patterns of domestic animals, signs of heat, gestation periods, signs of parturition in domestic animals. Principles and constraints of pregnancy diagnosis, assistance in obstetrical cases. Transport of materials from abortions. Nomenclature of gynaecological and obstetrical conditions. Introduction to infertility and its common causes in livestock. Artificial Insemination –collection, preservation and transport of semen.

PRACTICAL

Rectal palpation of reproductive organs and pregnancy diagnosis. Sterilization of glass wares/laboratory wares used in Intrauterine medication. Use of vaginoscope. Preparation of packs for obstetrical cases. Assistance to parturient animals. Care of new born.

Semester III

Basics of Clinical Veterinary Medicine (DVP-211) **(2+1)**

THEORY

Identification of diseased animals on the basis of gross physical examinations. Various methods of examinations and detection of abnormalities including physiological parameters. Methods of injection of drugs, sera, vaccine etc. Use of canula, passing of stomach tube, probang, teat syphon and other instruments for treatment, General agents responsible for causing diseases-Bacteria, Viruses, Fungi and Parasites; systemic diseases, metabolic diseases and diseases of skin. General principles of prevention and control of diseases; Utilization and disposal of carcasses; Elementary clinical diagnostic methods, history and general examination.

PRACTICAL

Identification of sick animals, handling and transportation of samples for disease diagnosis; Cleaning of slides, glass wares and other laboratory equipments; Techniques of staining and preparation of blood smears ; Care and use of microscopes; Collection and processing of blood, urine, faeces, skin scraping and milk for examination. Collection, preservation, fixation and dispatch of morbid material for laboratory examination.

Introduction to Andrology and Artificial Insemination (DVP-212) **(2+1)**

THEORY

Growth, puberty, sexual maturity, libido. Factors affecting maturity and sex drive in bulls. Sexual behaviour in males. Forms of male infertility. General considerations. Factors affecting infertility in male, its treatment and diagnosis. Diseases, abnormalities and malformations of male genitalia, their diagnosis and treatment of coital injury and infections. Introduction, history, development, advantages and limitations of A.I. Methods of semen collection in various species; technique of A.I. Factors affecting quality and quantity of semen. Tests for evaluation of semen; extension of semen; preservation of semen at different temperatures, storage and shipment of semen. Semen metabolism. Biochemistry of semen.

PRACTICAL

Preparation of artificial vagina., collection of semen, evaluation, dilution, preservation techniques at different temperatures. Freezing of semen. Insemination techniques using liquid and frozen semen. Planning and organization of A.I. centre. Selection, care, training and maintenance of breeding bulls for A.I., recording systems. Care, sterilization, storage and upkeep of equipments used for artificial insemination.

Introduction to Animal Husbandry Extension (DVP-213) **(1+1)**

THEORY

Animal Husbandry Extension and rural welfare. Community development and rural sociology. Principle and objectives of veterinary and animal husbandry extension. Qualities of extension workers. Extension teaching methods. Extension programmes. Motivation in extension. Scope of animal husbandry extension. Dairying as an instrument of change in rural India. Communication process. Concept of communication response, empathy, homophily, heterophily, fidelity, perception, communication system.

PRACTICAL

Uses and principles of various audio visual equipments. Use of written literatures. Group discussion and methods of demonstrating various animal husbandry techniques to livestock owners. Need analysis and awareness campaign on different animal husbandry practices. Identification of key communicators. Methods of motivating individuals for various programmes. Principles and uses of LCD, projector and preparation PPT presentation. Organizing vaccination camps, farmers' meets, exhibition at village level. Report writing.

Preliminary Surgical Procedures and Care (DVP-214) **(1+2)**

THEROY

Classification and development of veterinary surgery, general surgical principles. Pre-operative and Post-operative care and management, Importance of sutures and suturing material. Introduction to common terms used in surgery. Sterilization in surgical practice. Introduction to superficial surgical ailments (Abscess, Fistula, Sinus, Wounds, Gangrene Cyst Burn and Scald), Haematoma, Tumor, Hernia. Surgical affection of muscles and their treatment. Wound: classification; symptoms-diagnosis and treatment. Sign and handling of simples fracture, dislocation and other affections of joints, dental care, hoof management, First aid management of fracture, bloat, haemorrhage and post operative management. Application and use of various antiseptics, lotions, ointments and tinctures in surgical practice.

PRACTICAL

Identification of various surgical instruments. Physical restraint of animals for surgery. Preparation of pack for autoclaving and sterilization. Familiarization with various suture materials and sutures. Operation room discipline. Dressing of wounds and bandage. Burdizzo castration, Tattooing, Dehorning, Preparing animals for surgery. Application of counter irritants, heat, cold fomentation. Different kinds of bandages and their applications.

Community Veterinary Pharmacy (DVP-215) **(2+1)**

THEORY

Definition and applications of epidemiology and preventive medicine. Ecological concepts of epidemiology. Disease process and its spread. Pattern of disease distribution in the community. Investigation of an epidemic. Etiology, epidemiology, pathogenesis, transmission, clinical findings, diagnosis, prevention, control and eradication of diseases of livestock and poultry. Zoonotic diseases and its importance. Regulations regulating handling, import and export of biomaterials. Environmental-introduction, definition, importance. Components of environment interaction with organism. Animal ecology. Global and Indian environment – past and present status. Environmental pollution and pollutants. Air, sewage and hazardous waste management. Impact of different pollutants on humans, plants, organisms and environment. Source of water supply, contamination and its prevention.

PRACTICAL

Collection, preservation and dispatch of material (blood, urine, faeces, skin scrapings/biopsy, other body fluids etc.) for laboratory examination. Culture and sensitivity of isolates, demonstration/ identification of fungi and other pathogens. Screening of livestock through tests, mass diagnostic campaigns. Vaccination and other disease prevention and control programmes in the field. Demonstration of water purification plant, sewage disposal plants, carcass and fallen animal disposal methods.

Basic Concepts of Pharmacy and Toxicology (DVP-216) **(2+1)**

THEORY

Introduction to pharmacy. Pharmacy: Fittings and apparatus, labelling, custody of poisons, weighing of drugs, compounding of preparation, meteorology: systems of weights and measures; Pharmacy calculations, pharmaceutical process, incompatibilities, sources and composition of drugs pharmaceutical preparations. Indigenous Drugs: Sources of alkaloids, glycosides, resins, gums, tannins, fixed and volatile oils; plant drugs with proven pharmacological and therapeutic efficacies in various livestock and poultry ailments; popular indigenous drugs (antiseptics, anti-fungals, anthelmintics, arthropod repellents). Definition and terminology of toxicology. Sources of poisoning, mode of action of poisons. Factors modifying the toxicity and line of treatment of the poisoned cases.

PRACTICAL

Pharmacy Preparations: Potassium permanganate solution, Lugol's iodine solution, trypan blue solution, Gentian violet solution, tincture iodine, tinctre benzoin co., boric acid ointment, zinc oxide ointment,

ointment of salicylic acid with benzoic acid, triple carb, ant-diarrheal powder, dusting powder, iodine ointment with and without methyl salicylate; red iodide of mercury ointment, mistura alba, carminative mixture, ammonia liniment, turpentine liniment etc. Demonstration of toxic weeds and plants; detection of arsenic, antimony, lead, mercury, nitrates and nitrites, fluoride etc. Detection of alkaloids, glycosides, tannins, resins etc. Demonstration of insecticidal toxicity and their treatment. Demonstration of drug toxicity.

Semester IV– Hands on Trainings

Veterinary Pharmacist Jurisprudence (DVP-221) **(1+0)**

Origin and nature of pharmaceutical legislations in India, its scope and objectives. Evolution of the "Concept of Pharmacy" as an integral part of the Health care system. Principles and significance of professional ethics. Pharmacy Act, 1948. The Drugs and Cosmetic Act, 1940. The powers of Inspectors, the sampling procedures and the procedures and formalities in obtaining licenses under the rule. Facilities to be provided for running a pharmacy effectively. General study of the schedules with special reference to schedules C,C1,F,G,J,H,P and X and salient features of labelling and storage conditions of drug. Poison Act 1919 (as amended to date). Provisions in the Indian Penal Code, 1860 (45 of 1860), relating to animals. Provincial and Central Acts relating to animals. Glanders and Farcy Act 1899 (13 of 1899), Dourine Act 1910 (5 of 1910), Prevention of Cruelty to Animals Act, 1960 (59 of 1960). Laws relating to offences affecting Public Health. Laws relating to poisons; Laws relating to adulteration of drugs. Livestock Importation Act. Evidence, Liability and Insurance.

Practical Laboratory Diagnosis (DVP-222) **(0+3)**

Collection, preservation and processing of the biological samples for diagnosis of animal diseases. Clinical examination of blood and urine of diseased animals and principles of interpretation of results. Importance of clinical pathology in confirmation of disease, and their value as legal evidence. Diseases that can be confirmed/ substantiated through haematological examination. Diseases that can be confirmed through urine and other body fluid examination. Analyzing and correlating with clinical findings and interpreting the results.

Clinical Pharmacy (DVP-223) **(0+3)**

Introduction to Clinical Pharmacy practices- definitions and scope. Drug interactions, Drugs in clinical toxicity, bioavailability of drugs. Pharmacy preparation and their application in the veterinary hospital. Common terminology used in veterinary practices. Prescription writing for country medicines.

Veterinary Hospital Pharmacy (DVP-224) **(0+3)**

Maintenance of various records of veterinary hospital. Preparation and compilation of various reports of hospitals. Data recording and analysis. Acquaintance to instruments and their management and utilization. Maintenance of various medicines, preparations and their uses. Drug distribution system. Animal housing and sanitation. Handling of sick animals; Medication; Post-operative management of surgical patients, Vaccination; Semen handling; Artificial insemination and Pregnancy diagnosis etc.

Farm Management Practices (DVP-225) **(0+3)**

Preparation and maintenance of dairy records. Routine work of dairy farms and keeping of records. Preparation and compilation of various reports and performa.

Exposure to Poly Clinics (DVP-226) **(0+3)**

Recording of temperature, pulse and respiration. Methods of drug administration. Practice of compounding and dispensing various drugs. Use of trocar and canula, stomach tube and probang. Intra-mammary infusions. Dressing of wounds. Preparation of commonly used ointments, tinctures, lotions/solutions etc. Acquaintance with various gynaecological and surgical instruments with their uses: Sterilization of instruments etc.: Demonstration of gynaecological and surgical problems; Preparation and handling of surgical pack; Introduction to X-ray procedure; Collection of clinical material for laboratory examination; Burdizzo castration of calf, sheep and goat.