

**TRAINING MODULE FOR
PARAVET CERTIFICATE COURSE**



**COLLEGE OF VETERINARY SCIENCES & ANIMAL HUSBANDRY
CENTRAL AGRICULTURAL UNIVERSITY (I)
SELESIH, AIZAWL, MIZORAM:796015**

TRAINING MODULE:

MINIMUM EDUCATIONAL CRITERIA FOR ENROLMENT IN THE ONE-YEAR PARA-VET COURSE.

The minimum educational qualification for enrollment in the one-year Para-vet course is a **successful completion of Class 12** in any division within **the science stream**. Applicants should have studied the following subjects: English, Mathematics/Biology, Physics, and Chemistry. This criterion has been established to ensure that students possess the foundational knowledge necessary to comprehensively engage with and understand the topics covered in the course syllabus. The inclusion of these subjects is crucial for students to effectively catch up with and grasp the essential concepts and skills emphasized in the curriculum.

CONTENT OF THE COURSE

1 ST SEMESTER		
No.	Course	Credit hour (Theory + Practical)
1.	Basic of veterinary anatomy	2+1
2.	Basic of veterinary physiology	1+0
3.	Introduction to basic of animal husbandry	2+1
4.	Basic of laboratory procedures	1+1
5.	Elementary knowledge of pharmacy	1+0
6.	Basic of milk & meat hygiene	1+1
		Total: 12 (Theory: 8 + Practical: 4)
2 nd SEMESTER		
No.	Course	Credit hour (Theory + Practical)
1.	Basic of animal reproduction	1+2
2.	Basic of veterinary medicine	1+2
3.	Basic of veterinary surgery	1+1
4.	Introduction of veterinary extension education	1+0
5.	Introduction to animal welfare and disaster management	Non-credit course
6.	Introduction to veterinary care of wild animals	Non-credit course
7.	Administration	Non-credit course
		Total: 09 (Theory: 4 + Practical: 5)

General subject : Animal Husbandry & Veterinary Science

Total credit hour in two semesters: 21

CONTENTS OF THE TRAINING MODULE:

FIRST SEMESTER

(Syllabus covers Basic of Veterinary Anatomy, Physiology, Introduction to Basic of Animal Husbandry, Basics of Laboratory Procedures, Elementary Knowledge of Pharmacy, Basic of Milk & Meat Hygiene, Veterinary Extension Education)

Total credit: 12

NO.	SUBJECTS
A. BASIC OF VETERINARY ANATOMY	
CreditHour: 2+1	
1.	Introductory session.
2.	Basic Terminologies used in Animal Husbandry.
3.	External body parts of dairy cattle, pig, sheep, goat, fowl, canine/ feline, horse
4.	Introduction, definition of anatomy, different systems with viscera, surface anatomy.
5.	Special reference to the digestive systems of ruminants & non-ruminants (mono and poly gastric)
6.	Location of surface veins, artery, nerves and lymph nodes
7.	Preliminary knowledge about important muscles, tendons, ligaments, cartilages, hoof, teeth, horn, body cavity, mouth and reproductive organs.
8.	Preliminary knowledge on anatomy of chicken and duck.
PRACTICAL	
1.	Introduction, definition and terminology.
2.	Basic function of different organs & systems in animals and birds. (Respiratory, circulatory, reproductive, genital, urogenital, digestive).
3.	Elementary knowledge of composition of blood and its functions.

B. BASIC OF VETERINARY PHYSIOLOGY		Credit Hour: 1+0
1.	Introduction, definition and terminology.	
2.	Basic function of different organs & systems in animals and birds. (Respiratory, circulatory, reproductive, genital, urogenital, digestive).	
3.	Elementary knowledge of composition of blood and its functions.	

C. INTRODUCTION TO BASIC OF ANIMAL HUSBANDRY		Credit Hour: 2+1
(Syllabus will be taught by faculties from the departments of Livestock Production & Management (LPM), Animal Nutrition (ANN), Animal Genetics & Breeding (AGB) and Livestock Products Technology (LPT))		
1.	Concept of species, breed, strain and variety.	
2.	Different breeds, housing and management of dairy animal, goat, sheep, pigs & horse	
3.	Different breeds/ strains housing and management of poultry (layers & broilers)	
4.	Housing and management practices followed in yak husbandry.	
5.	Housing and management practices followed in rabbit farming (esp. reference to angora)	
6.	Care and management of livestock and poultry during transportation	
7.	Principles of sanitation/biosecurity measures in livestock and poultry farms.	
8.	Factors affecting health & productivity of livestock & poultry.	
9.	Feed, fodder and feeding schedule of dairy animal, goat, sheep, pigs & horse	
10.	Feed and feeding schedule of poultry (layers & broilers).	
11.	Fodder conservation hay and silage preparation	
12.	Different types of fodder and grassland in livestock production, identification of common toxic plants.	
13.	Preliminary knowledge of production of fodder round the year in Sikkim.	
PRACTICAL		
1.	Identification of breeds, housing and management of dairy animals, sheep, goats, pigs and horses.	
2.	Identification of breeds, strains, varieties, housing and management of layers, broilers.	
3.	Care and management of livestock and poultry during transportation, precautions to be followed during egg collection and transportation.	
4.	Feed, fodder and feeding schedule of dairy animals, sheep, goats, pigs and horses.	
5.	Feed and feeding schedule of poultry (layers & broilers).	
6.	Management of Breeding Bull, familiarize with the format of herd Registration.	
7.	Deworming & vaccination schedule of livestock and poultry as practiced in the farm.	

8.	Identification of different types of fodder and grassland available in the farm for livestock production & production of fodder round the year.
9.	Fodder conservation hay and silage preparation

D. BASIC OF LABORATORY PROCEDURES		Credit Hour: 1+1
(Syllabus will be taught by faculties from the departments of Veterinary Microbiology (VMC), Veterinary Pathology (VPP), Veterinary Parasitology (VPA) and Veterinary Physiology (VPY))		
1.	Classification of microorganisms: virus, bacteria, protozoa, fungi, parasite(ecto & endo), rickettsia. Disease definition.	
2.	Basics of laboratory equipment: Microscope, centrifugation machine, incubator, HAO, Autoclave ELISA machine: Its types, parts, cleaning and care	
3.	Basic concepts of anaemia, methods of estimation of Hb, PCV, blood grouping of animals and blood transfusion	
4.	Clinical parasitology and pathology: Examination of faeces and urine, examination of thin and thick blood smear for blood parasites. Difference between sarcoptic, psoroptes & demodectic mange.	
5.	Difference between serum & whole blood. preservation of specimen for examination and transport.	
6.	Clinical biochemistry: solutions & reagents, liver function test, kidney function test, specimen collection, storage & transport.	
7.	Staining methods, culture methods, antibiogram interpretation, California mastitis test, Rose Bengal test.	
8.	Techniques of collection and dispatch of common pathological materials for laboratory examination, specimen of whole blood, serum, milk, urine, faeces skin scrapping for examination and results and discussion of the samples collected	
9.	Overview of antibiotic sensitivity test and its relevance in regards to mastitis. General precaution while working with microorganisms.	
10.	Collection and dispatch of materials of forensic laboratory in medico-legal cases and their preservation before dispatch and transportation. Legal aspects of post-mortem examination.	
PRACTICAL		
1.	Identification of laboratory equipment: Microscope, centrifugation machine, incubator, HAO, Autoclave ELISA machine: Its types, parts, cleaning and care.	
2.	Methods of estimation of Hb, PCV, blood grouping of animals and blood transfusion.	
3.	Difference between serum & whole blood. (Its collection and	

	differentiation), preservation of specimen for examination and transport.
4.	Techniques of collection and dispatch of common pathological materials for laboratory examination.
5.	Collection and dispatch of materials of forensic laboratory in vetero-legal cases and their preservation before dispatch and transportation. Legal aspects of post-mortem examination.
6.	Biosecurity measures in farms and its importance in disease prevention.

E. ELEMENTARY KNOWLEDGE OF PHARMACY		Credit Hour: 1+0
1.	Introduction, definitions of pharmacy, pharmacology, therapeutics, toxicology.	
2.	Pharmaceutical terms and definition. Common prescription abbreviations and meanings.	
3.	Knowledge about the medicinal plants & their uses / indigenous technical knowledge.	

F. BASIC OF MILK & MEAT HYGIENE		Credit Hour: 1+1
1.	Composition and properties of milk.	
2.	Bacteriology and deterioration of milk.	
3.	Pasteurization, packaging and distribution.	
4.	Sanitation in milk plant.	
5.	Pre-slaughter care, handling and transport of meat animals and birds.	
6.	Utilization of slaughter house by-products.	
PRACTICAL		
1.	Pasteurization, packaging and distribution of milk and milk products. (Demonstration)	
2.	Importance of sanitation in milk plant.	
3.	Pre-slaughter care, handling and transport of meat animals and birds	
4.	Utilization of slaughter house by-products.	

FIRST SEMESTER EVALUATION

- Theory examination for all the courses in a single paper of 100 marks. Duration of examination is 3 hours.
- Practical examination for all the courses in a single paper of 100 marks.
- Pass mark is 50% score separately in both theory and practical examinations.

SECOND SEMESTER

Total credit: 09

H. INTRODUCTION TO BASIC OF ANIMAL BREEDING		Credit Hour: 1+2
1.	Anatomy of Male & Female Reproductive Tracts. A general review of physiological background of female reproduction.	
2.	Estrus cycle, signs of heat, preliminary knowledge in parturition in domestic animals. Hygienic measure during parturition. Inter-Calving Period. Preliminary Knowledge of care and management of pregnant animals, newborn and dam.	
3.	A.I. Equipment and Techniques, advantages of cross breeding. Advantages and limitations of artificial insemination.	
4.	Preliminary knowledge of Infertility	
5.	Preliminary knowledge of Pregnancy Diagnosis, Retention of Placenta.	
6.	Metritis, Dystocia in general.	
7.	Management of Breeding Bull, Importance of Herd Registration.	
8.	Bull exchange policy in the state. In-Breeding and its consequences in the field.	
9.	Conservation programme of Siri in Sikkim/Other.	
10.	Importance of conservation of indigenous breeds of livestock & poultry. Familiarize with the indigenous breeds of economic importance.	
12.	Breeding programs for livestock and poultry currently in operation in Sikkim.	
PRACTICAL		
1.	Pregnancy diagnosis, Retention of placenta.	
2.	Identification of signs of heat in animals, estrus cycle, parturition in domestic animals. Hygienic measures to be adopted during parturition. Inter-Calving Period. Care and management of pregnant animals, newborn and dam.	
3.	Identification of A.I. Equipment and demonstration of the Technique.	
4.	Metritis, Dystocia in general.	

I. BASIC OF VETERINARY MEDICINE		Credit Hour: 1+2
1.	Introduction, definition and different terms used in veterinary medicine.	
2.	General guideline about first aid veterinary practice.	
3.	General Medicine (Palpation, Auscultation, Temperature Recording, History Taking, Tentative Diagnosis and Treatment)	
4.	Method of administration of medicines (Drenching, Bolus, Electuary, Passing of Probang in Animal, Enema, Parental Administration, Spraying, Dipping)	
5.	Signs of healthy animals & identifying sick animals. Identify the health status of animal by external examination (Skin, Lymph nodes, Mucous membranes), temperature and pulse recording.	
6.	Systematic diseases of dairy animals and its symptoms, prevention, & control. (Typanitis, Enteritis, Pneumonia, Haematuria, Dermatitis).	

7.	Metabolic Diseases of dairy animals and its symptoms, prevention, & control. (Ketosis, Milk Fever).
8.	Ecto and endo parasitic diseases of dairy animals and its symptoms, prevention, & control. (Ascariasis, Fascioliasis, Schistosomiasis, Hookworm, strongylosis, taeniasis, tick and mange infections, ring worm, scabies)
9.	Common bacterial, viral, protozoal, fungal, parasitic diseases of livestock animals and poultry.
10.	Common canine diseases, symptoms prevention & control (parvovirus infection, canine distemper, hepatitis, parainfluenza, leptospirosis, etc.).
11.	Zoonoses definition & diseases of zoonotic importance, its impact on public health and its Control Measures, esp. reference to awareness regarding rabies as a public health hazard
12.	Common medicines used in veterinary first- aid and their doses. Different routes and sites of administration of drugs in livestock, poultry & canine/feline.
13.	Fluid Therapy in small & large animals (difference between NSS, DNS & RL) and its uses Infusion of R.L., NSS, DNS, Mifex in respect to cases such as burns, dehydration, anorexia, vomition, ketosis, poisoning, hyperthermia, hypothermia, hypomagnesemia & hypocalcaemia
14.	Common Poisoning cases and their corrective measures.
15.	Vaccination: definition and its importance, common vaccine and their field uses, period of immunity, route of inoculation, method of reconstituents, ring vaccination. Pathogenicity, virulence and immunity after diseases.
16.	Deworming and vaccination, its schedule (livestock & poultry). ARV pre-bite & post bite schedule. Importance of cold chain maintenance of vaccines. Common field errors.
PRACTICAL	
1.	General Medicine (Palpation, Auscultation, Temperature Recording, History Taking)
2.	Method of Administration of Medicines (Drenching, Bolus, Electuary, Passing of Probang in Animal, Enema, Parental Administration, Spraying, Dipping)
3.	Signs of healthy animals & identifying sick animals. Identify the health status of animal by external examination (Skin, Lymph nodes, Mucous membranes), temperature and pulse recording.
4.	Common medicines used in veterinary first- aid and their doses. Different routes and sites of administration of drugs in livestock, poultry & canine/feline.
5.	Fluid Therapy in small & large animals (difference between NSS, DNS & RL) and its uses.
6.	Common Poisoning cases and their corrective measures.
7.	Vaccination: definition and its importance, common vaccine and their field uses, period of immunity, route of inoculation method of reconstitutes, ring vaccination.

8.	Deworming and vaccination, its schedule (livestock & poultry). ARV pre-bite & post-bite schedule. Cold chain maintenance of vaccines.
9.	Trainees to maintain daily diary of cases. (Treatment aspects by the veterinarian).
10.	Identification of common toxic plants and indigenous medicinal plants.

J. BASIC OF VETERINARY SURGERY		Credit Hour: 1+1
1.	Preliminary knowledge of principles of surgery	
2.	Preliminary knowledge of common surgical conditions	
3.	Identification of surgical equipment, importance of sterilizing surgical equipment. Pre-operative and post-operative precautions to be undertaken.	
4.	Pre-surgical methods: Site preparation, kit preparation, animal preparation.	
5.	Maintenance of anesthesia, animal monitoring during anesthesia.	
6.	Post-surgical monitoring: Antibiotic, analgesic, anti-inflammatory administration & maintenance	
7.	Post-operative dressing of surgical site and fluid administration.	
8.	Pressure bandaging in aural haematoma, Robert Jones bandages in ligament tear, immobilization and fracture healing in small animals	
9.	Wet bandages, dry bandages in wound management, types of fractures & P.O.P.in fracture management	
10.	Types of abscesses and veterinary first –aid.	
11.	Types of wounds and wound dressing.	
12.	Bleeding and control measures, cold applications and tourniquets.	
13.	Castrations of animal (open & close methods).	
14.	Dehorning / Debudding.	
PRACTICAL		
1.	Identification of surgical equipment, importance of sterilizing surgical equipment. Pre-operative and post-operative precautions to be undertaken.	
2.	Site preparation, kit preparation, animal preparation before surgery.	
3.	Maintenance of anesthesia, animal monitoring during anesthesia.	
4.	Antibiotic, analgesic, anti-inflammatory administration & maintenance after the completion of a surgical case.	
5.	Post-operative dressing of surgical site and fluid administration.	
6.	Pressure bandaging in aural haematoma, Robert Jones bandages in ligament tear, immobilization and fracture healing in small animals	
7.	Wet bandages, dry bandages in wound management, types of fractures & P.O.P. in fracture management	
8.	Types of abscesses and veterinary first –aid. Types of wounds and wound dressing	
9.	Bleeding and control measures, cold applications and tourniquets.	
10.	Castrations of animal (open & close methods). Dehorning / Debudding.	

G. INTRODUCTION OF VETERINARY EXTENSION EDUCATION	
Credit Hour: 1+0	
1.	Definition, philosophy and principles of extension, mass education, motivation, aims and objectives. Understand the concept of KASA (Knowledge, Attitude, Skills and Action). The concept of technology adoption and extension methods.
2.	Importance of Calf Rallies, Health Camps, Demonstrations, Field Visits, Mass Media, Visual & Audio-Visual Aids in disseminating the knowledge to farmers regarding livestock & poultry farming.
3.	An outline of different livestock development program of Sikkim.
4.	Role of animal resources as a medium of rural economic development in Sikkim.
5.	Sources of credit, concept of loan and subsidy, bank and other financial institutions.
6.	Co-operative societies and other development program associated with AH. Planning.
K. INTRODUCTION TO ANIMAL WELFARE AND DISASTER MANAGEMENT (non-credit course) (Faculty from clinical departments will teach the course)	
1.	The concept of animal welfare.
2.	Familiarize with the laws related to prevention of cruelty.
3.	Familiarize with the instances of cruelty commonly inflicted on animals.
4.	Basic aspects of disaster management

L. INTRODUCTION TO VETERINARY CARE OF WILD ANIMALS (non-credit course) (Faculty from clinical departments will teach the course)	
1.	Familiarize with the provisions aimed at behavioral and environmental enrichment of captive animals.
2.	Perform first aid of common injuries and wound care.
3.	Preparation for necropsy of dead animals
4.	Familiarize with the protocol and support team work in capturing and restraining of wild animals
5.	Familiarize with the safety guidelines in wild animal handling and handling of medication used in tranquilization.
6.	Supervise watering, feeding and cleaning of enclosures.

M. ADMINISTRATION (non-credit course)	
1.	Administrative records, monthly, quarterly and yearly reports.
2.	Prepare and submit indent, maintain stock register.

FEEDBACK	
1.	<ul style="list-style-type: none"> • Everyday feedback from the trainees and socially useful productive work and recreational activities during the training programme. • Regular updates and revisions based on feedback and emerging trends in the field to ensure the relevance and effectiveness of the training program over time.

SECOND SEMESTER EVALUATION

- Theory examination for all the courses in a single paper of 100 marks.
- Duration of examination is 3 hours.
- Examination for all the courses in a single paper of 100 marks.

FINAL EVALUATION/EXAMINATION
<ul style="list-style-type: none"> • Theory examination for all the courses in a single paper of 100 marks. Duration of examination is 3 hours.
<ul style="list-style-type: none"> • Practical examination for all the courses in a single paper of 100 marks.
<ul style="list-style-type: none"> • Pass mark is 50% score separately in both theory and practical examinations.
<ul style="list-style-type: none"> • Group discussions, presentations, submission of log book and <i>viva voce</i> of the trainees.
<ul style="list-style-type: none"> • Students will be evaluated as satisfactory or unsatisfactory.
<ul style="list-style-type: none"> • Result declaration and Certificate distribution.

After completing this programme, participants will be able to:

- Provide basic curative and preventive care to animals as per guideline of a qualified Veterinarian / Doctor /Officer in charge.
- Provide basic first aid to animals.
- Conduct minor surgical procedures in field conditions. Assist public agencies in control of animal diseases.
- Assist in extension activities in animal husbandry.
- Assist in animal identification, data collection and documentation of practices. Assist in implementation of animal breeding services as per guideline.
- Assist in implementation of guideline related to animal welfare. Assist in breed conservation.
- Assist in disaster management.
- Supervise management of livestock farms.
- Assist in implementation of development programs.
- Assist in marketing livestock farm inputs and products.
- Assist in public health related services and other regulatory activities-when working with Government.
- Assist in veterinary care of wild animals / animals in captivity.

Handouts to be given to the trainees:

- *Normal Temperature of Livestock and Poultry,*
- *Common Terminologies used in Animal Husbandry*
- *Gestation Period of Various Livestock*
- *Important Breeds of Livestock and Poultry*
- *Age of First Calving*
- *Age of Puberty*
- *Vaccination Schedule*
- *Deworming Schedule*
- *Oestrus Cycle*

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