DAY-1 SKILLS OBTAINED FROM THE VETERINARY MEDICINE PROGRAM

1. Department of Anatomy and Histology
1.1. How to handle a binocular compound microscope with different parts and functional mechanisms
1.2. How to prepare permanent and temporary histological slides with basic stains
1.3. Understand detail structures and functions of organelles and non-organelles of a cell
1.4. Knowledge of basic tissues and tissues of different organ systems
1.5. Knowledge of growth and development of an embryo, and successive development of different organ systems of the body
1.6. Understand forms and structures of domestic animals and poultry
1.7. How to identify different parts of brain and spinal cord, cranial and spinal nerve roots and tracing the courses of all cranial and spinal nerves to their target organs
1.8. Knowledge on description and comparison of organs of different animals
1.9. Knowledge of surgical anatomy of common surgical cases
1.10. Knowledge of major blood vessels and nerves in surgical fields
1.11. Understand form, structure, position, location, blood and nerve supply of organs of domestic animal and poultry
1.12. Able to trace different nerves blocking sites for surgery

2. Department of Physiology, Biochemistry and Pharmacology
2.1. How to collect blood sample with proper aseptic care
2.2. How to perform routine examination of blood
2.3. How to perform routine urinalysis
2.4. How to perform electrocardiogram (ECG) in dog
2.5. How to collect and analyze rumen contents
2.6. How to perform hormone assay to diagnose endocrine and reproductive diseases and disorders
2.7. Explain animal welfare and the relevant responsibilities of owners, handlers, veterinarians and others responsible for the case of animals
2.8. Understand welfare assessment and 5 freedoms at farm, transport, slaughter, zoo etc.
2.9. How to explain animal welfare with identification of welfare problems and participate in corrective actions
2.10. General knowledge of the fundamentals of national veterinary legislation
2.11. How to identify the causes of poor farm animal welfare
2.12. Give advice to different communities on methods of animal welfare in farms, transport and slaughter
2.13. Have an understanding of the role of veterinary profession in animal welfare and veterinary ethical issues
2.14. Understand and apply high standards medical and moral ethics in carrying out day-to-day duties
2.15. Provide leadership to society on ethical consideration involved in the use and care of animals by humans
2.16. How to identify frauds in the sale of livestock and its products
2.17. How to deal with veterolegal aspects
2.18. Know where to find up-to-date and reliable information regarding local, national and international animal welfare regulations in order to describe humane methods for animal production, transport, slaughtering for human consumption and euthanizing for disease control purposes
2.19. How to establish a mini diagnostic laboratory (Hemato-Biochemistry Lab)
2.20. How to prepare samples in different concentration (e.g. Molar solution, percent solution, normal solution etc.)
2.21. How to perform qualitative and quantitative analysis of biomolecules and others: *- CHO (Glucose Fehling's test)----------→* *- Protein (Biuret test)* *- Lipid (Triglyceride, Cholesterol and High Density Lipoproteins)* *- Minerals (Ca, P and Mg)* *- Electrolytes (Na^+, K^+, Cl^- and Ca^{++})* *- Enzymes (SGPT and SGOT)* *- Nucleic acids and others (Ketone bodies, Urea, Uric acid, Creatine, Blood Urea Nitrogen etc.)*
2.22. Know the clinical applications of drugs
2.23. How to identify various forms of drugs with their packaging and routes of administration in animal
2.24. How to prepare various disinfectants and antiseptics
2.25. How to prepare various lotions, liniments and ointments
2.26. Drug interaction (such as synergism, potentiation, additive etc.) and drug toxicity
2.27. Drugs used during production cycle (e.g., lactation, laying etc.) and pregnancy
2.28. Drug (antibiotic) withdrawal period and its significance
2.29. How to monitor course of therapy
2.30. How to prescribe drugs for different clinical cases
2.31. How to detect antimicrobial residues in food animals (such as TLC)
2.32. Consequence of antimicrobial residues in public health and how to reduce the risk
2.33. Use common veterinary products (drugs, vaccine etc.) in the appropriate manner, including appropriate record keeping
2.34. Significance of recording drugs at veterinary clinics

2.35. Understand common mechanisms leading to development of antimicrobial resistance in common pathogens
2.36. Know where to find and how to interpret up-to-date and reliable information regarding the link between use of antimicrobials in food animals and development of antimicrobial resistance in pathogens of human importance
2.37. Know the appropriate use of drugs and biological to ensure the safety of the food chain and the environment (e.g. proper disposal of biological waste)
2.38. How to extract medicinal plants for efficacy testing
2.39. How to identify different sources of toxic plants
2.40. How to collect, preserve and dispatch toxicological samples for laboratory testing
2.41. How to conduct different toxicological tests (such as Nitrite/Nitrate, Cyanide, Organophosphorus, Arsenic, Aflatoxin etc.)
2.42. How to diagnose poisoning and the treatment with the help of appropriate chemical and medicine
2.43. Causes of antimicrobial resistance
2.44. How to prevent antimicrobial resistance

3. Department of Animal Science and Nutrition
3.1. How to identify breeds and types of common farm animals
3.2. How to identify breeds and types of common pet animals
3.3. How to identify class, breeds, varieties and strains of common poultry species
3.4. How to identify common zoo, wild and lab animals and birds belonging to vertebrate
3.5. How to cast, restrain and handle common farm animals and wild animals
3.6. How to perform chemical immobilization of livestock
3.7. How to perform dentition, weighing, washing (bathing), grooming, shearing, clipping and trimming of hoof of farm animals
3.8. How to perform dipping and spraying
3.9. How to perform castration, dehorning and disbudding
3.10. How to determine age of common livestock
3.11. How to perform shoeing of horse and bullock
3.12. How to judge, select and cull the animals and poultry
3.13. How to make housing of farm animal
3.14. How to manage commercial livestock farms
3.15. How to breed, feed, care and manage wild and lab animals
3.16. How to identify common feed ingredients for poultry and livestock
3.17. How to select and grade feed ingredients for poultry and livestock
3.18. How to identify unconventional feed stuff
3.19. How to sample for laboratory feed analysis
3.20. How to perform proximate analysis of feed stuff
3.21. How to estimate energy contents of feed stuff
3.22. How to formulate ration for cattle
3.23. How to formulate ration for buffalo, sheep, goat and horse
3.24. How to formulate ration for different types of poultry in their different stages
3.25. How to formulate ration for wild and lab animals
3.26. How to cultivate and identify common fodder and seeds
3.27. How to prepare silage, hay, urea molasses multi nutrient block, urea molasses straw, urea treated straw, compost and farmyard manure
3.28. How to select animals for slaughter
3.29. How to do pre-slaughter treatment of animals
3.30. How to slaughter and dress animals and poultry
3.31. How to cut, grade and pack meat and prepare livestock product
3.32. How to assess meat quality
3.33. How to identify meat of different livestock species
3.34. How to prepare different common meat products
3.35. How to harvest and preserve animals by-products
3.36. How to prepare biogas plant

4. Dept of Microbiology and Veterinary Public Health
4.1. How to examine hygienically pure water
4.2. How to fumigate a livestock farm
4.3. How to perform different types of smears and bacterial staining (Gram's stain, Acid-Fast stain, Giemsa's stain, 1% polychrome Methylene blue stain etc.)
4.4. How to prepare different bacteriological media and interpret the results (such as blood agar, MacConkey agar, TSI slant, SS agar, Tryptose broth etc.)
4.5. How to sterilize media, equipment and glassware
4.6. How to obtain pure culture
4.7. How to collect and dispatch sample to a diagnostic laboratory for bacteriological investigation
4.8. How to isolate and identify common bacterial and fungal pathogens of veterinary and zoonotic importance (e.g. Streptococcus, Staphylococcus, *Escherichia. coli*, Salmonella, *Bacillus anthracis*, Pasteurella, Aspergillus etc.)
4.9. Identify the clinical signs, clinical course, transmission potential, and pathogen associated with common zoonotic and food borne diseases
4.10. Use or explain the use of current diagnostic and therapeutic tools for common zoonotic and food borne diseases
4.11. Understand the implication of common zoonotic and food borne diseases for human health (e.g. how does the disease spread from animals to humans) and know where to find up-to date information
4.12. Understand regulatory implications (e.g. the Official Veterinarian who should be contacted if a zoonotic pathogen is identified or suspected) of common zoonotic and food borne diseases and pathogens and know where to find up-to-date and reliable information
4.13. How to perform and interpret antimicrobial susceptibility test
4.14. How to collect and dispatch sample to a diagnostic laboratory for virological investigation
4.15. How to propagate virus in embryonated eggs by different routes
4.16. How to calculate EID_{50} (Embryo infected dose), $TCID_{50}$ (Tissue culture infective dose), EID_{50} (Embryo lethal dose) and MID_{50} (Mouse infective dose)
4.17. How to prepare and preserve blood serum
4.18. How to perform and interpret common serological tests (e.g., Hemagglutination inhibition, ELISA, agar gel diffusion, agglutination, neutralization test, complement fixation, indirect fluorescent antibody etc.)
4.19. How to collect food sample for different microbiological investigation
4.20. How to differentiate different types of meat of animal species (e.g., beef, mutton, pork, chevon and chicken)
4.21. How to differentiate between perfect and imperfect bleeding
4.22. How to evaluate meat for human consumption
4.23. How to differentiate pasteurized and non-pasteurized milk
4.24. Understand and explain on-farm food safety practices
4.25. Participate in slaughter inspection: this includes ante-mortem and humane slaughter
4.26. Perform potable water quality examination by Most Probable Number method
4.27. Uses of vaccines against different livestock and poultry diseases (Cool chain, dose, route etc.)

5. Department of Pathology and Parasitology
5.1. How to identify basic changes of tissues during ante-mortem and post-mortem examination
5.2. How to diagnose systemic alterations by gross and microscopic examination
5.3. How to identify different types of necrosis and post-mortem autolysis
5.4. How to detect different types of inflammation, necrosis, infarct, gangrene etc.
5.5. How to identify calcification, gout and different exogenous pigmentation
5.6. How to detect different types of photosensitization in animals
5.7. How to detect different types of jaundice in animals
5.8. How to perform necropsy of common livestock and poultry
5.9. How to perform necropsy of zoo and wild animals
5.10. How to collect and preserve samples for histo-pathological slide preparation
5.11. How to prepare Immuno-histochemistry based slide
5.12. How to dispose dead carcass
5.13. How to diagnose important diseases of livestock by post-mortem examination
5.14. Understand pathology of common avian diseases (such as avian influenza, Newcastle disease, Salmonella etc)
5.15. How to identify common types of ecto- and endo-parasites including their developmental stages by means of different techniques (Nationally and internationally important parasites)
5.16. How to identify snails as intermediate host of parasites (Nationally and internationally important snails)
5.17. Knowledge about basic ecological and epidemiological studies of the parasites and snails
5.18. Knowledge about impact of the parasitic infections/infestations
5.19. Application of control strategies for the parasites, vectors and intermediate hosts
5.20. How to examine different samples (fecal samples, skin scrapping etc) for parasitic investigation

6. Department of Genetics and Animal Breeding
6.1. How to karyo-type lab and farm animals
6.2. How to develop or improve breed/variety/strain of different animal species using different breeding methods and breeding strategies
6.3. How to select the best animal by calculating breeding value using-linear unbiased prediction (BLUP)
6.4. How to develop multi-trait selection indices
6.5. How to estimate inbreeding co-efficient of available individuals which is helpful to take decision whether individual will be selected or culled
6.6. How to collect semen , evaluate and inseminate
6.7. How to do estrus synchronization and super-ovulation
6.8. Knowledge about in-vitro fertilization and embryo transfer

7. Department of Dairy and Poultry Science
7.1. How to identify different cattle breeds based on purposes (milk/meat/draft)
7.2. How to identify milk of different livestock species
7.3. How to collect dairy samples aseptically for both chemical and microbial analysis
7.4. How to perform platform tests of milk
7.5. How to determine chemical composition of milk samples
7.6. How to determine microbial quality of milk and other dairy products by direct microscopic count, standard plate count, coliform count, methylene blue reduction test etc.
7.7. How to determine different adulterants and preservatives in milk samples
7.8. Preservation techniques of milk and other dairy products
7.9. How to perform Cleaning in Place (CIP)
7.10. How to prepare and judge a starter culture
7.11. How to plan a commercial dairy farm
7.12. How to make a plan of beef fattening
7.13. How to identify breeds and varieties of common poultry species
7.14. How to handle and restrain different poultry species
7.15. Know the procedure and perform beak trimming of poultry
7.16. How to assess the egg quality
7.17. How to operate incubator for hatching eggs
7.18. How to select and candle fertile egg
7.19. Able to know how sex, grade and sort day old chick
7.20. Know how to vaccinate poultry
7.21. Able to know and prosecute the biosecurity protocol in poultry farms
7.22. How to make plans for commercial broiler, layer and breeder farms
7.23. How to assess bio-security standard of a farm
7.24. How to assess hygienic standard of a farm
7.25. How to analyze and interpret animal and poultry farm records

8. Department of Agricultural Economics and Social Science
8.1. How to make verbal/written communication
8.2. How to write scientific and technical report
8.3. How to interact with farmers (motivation and socialization)
8.4. How to identify social problems, crimes and remedial solutions
8.5. How to assess farmer's behaviours
8.6. How to conduct social survey like PRA, RRA etc.
8.7. Knowledge of project formulation and its appraisal techniques
8.8. Knowledge on analytical tools and process for business
8.9. How to perform production management and economic scale of operations
8.10. Livestock product marketing systems and its management
8.11. How to assess economic evaluation of disease monitoring and surveillance programme
8.12. Knowledge about marketing channels and systems of livestock products in context of Bangladesh
8.13. How to perform tests of significance with their application in livestock field oriented data (data presentation and significant tests such as Z test, t test, χ^2 test, F test)
8.14. Basic ideas on experimental design and layout of the study by applying basic design (CRD, RRD and LSD)
8.15. How to develop leadership skills and business management on medium-sized enterprises (SME)
8.16. Developed managerial and decision making of medium-sized enterprises (SME)
8.17. Entrepreneurship development skills
8.18. Business communications and management skills
8.19. Communicate technical information in a way that the general public can understand
8.20. Communicate effectively with fellow health professionals to exchange scientific and technical information and practical experience
8.21. Knowledge on agri-business study
8.22. Knowledge on agri-business management

9. Department of Medicine and Surgery
9.1. Client approach and record history and epidemiology to acquire knowledge of diagnosis of general livestock diseases
9.2. Clinical examination of a patient (Temp, pulse, respiration, auscultation etc.)
9.3. How to collect preserve and send the sample for lab diagnosis of different diseases
9.4. Knowledge on interpretation of findings from different diagnostic and clinical tests
9.5. Precise knowledge of the etiology, pathogenesis, clinical signs, diagnosis, treatment and prevention of the common diseases and disorders that occur in different livestock species and pet animals
9.6. How to investigate diseases of bacterial, viral, rickettsial, mycoplasmal, fungal, helminthic, protozoan and arthropod origin in cattle, buffalo, camel and horses
9.7. How to administer drugs (Injections-SC, IM and IV)
9.8. How to administer fluid therapy (IV saline)
9.9. How to write prescription with advices against different clinical cases
9.10. How to write a health certificate
9.11. Application of hygiene, sanitation and biosecurity for prevention and control of infectious and zoonotic animal diseases
9.12. Know and understand the general principles of descriptive epidemiology, its application to disease control and the ability to access and use appropriate information sources
9.13. Understand and participate appropriately in an epidemiological inquiry of a reportable disease, including collection, handling and transport of appropriate specimens or samples
9.14. How to conduct disease survey, surveillance and outbreak investigation
9.15. How to conduct epidemiological studies and know their field of application for disease control
9.16. Management of disease survey and surveillance (including other surveillance such as drug uses, antimicrobial resistance etc.) and outbreak data using computer
9.17. Analyze basic disease survey, surveillance (including other surveillances such as drug uses, antimicrobial resistance etc.) and outbreak data using statistical software (such as STATA and software)
9.18. How to write disease surveillance and outbreak report
9.19. Identify clinical signs, clinical courses, transmission potential (including vectors) and pathogens associated with Transboundary Animal Diseases (TAD)
9.20. Describe the current global distribution of TADs or know where to find up-to-date distribution information
9.21. Use or explain the collection and handling of samples and the rationale for the use of appropriate diagnostic and therapeutic tools to prevent and combat TADs and pathogens
9.22. Understand regulatory implications of TADs and pathogens (e.g. the Official Veterinarian who should be contacted if an epizootic pathogen is identified or suspected) and know where to find relevant up-to-date information
9.23. Define “emerging” ’ and “reemerging” diseases and provide contemporary examples
9.24. Detect suspicious signs and report them to the relevant veterinary authority
9.25. Understand the reasons/hypotheses to explain the emergence and/reemergence of diseases
9.26. Know where to find up-to-date and reliable information regarding emerging and re-emerging diseases
9.27. Basic understanding of risk analysis of exporting or importing livestock and livestock products or introducing, spreading and consequences of exotic infectious diseases
9.28. Describe relevant programs for the prevention and control of common zoonotic/ contagious diseases/ emerging/re-ermerging diseases including animal identification and traceability and oversight by the relevant veterinary authority
9.29. Contingency plan and policy of disease control and eradication locally, regionally and globally with the cooperation of National and International organization (FAO, WHO, OIE, WTO etc.)
9.30. Understand and participate in the implementation of contingency plan to control TAD, including humanely sacrificing animals
9.31. Explain the concept of ‘early detection system’ for the timely detection and identification of an

incursion or emergence of disease/infections in a country, zone or compartment
9.32. Know which diseases of animals (including companion animals) require compulsory notification by the veterinarian to the prescribed national authority in order to mitigate disease transmission
9.33. How to report OIE listed animal diseases
9.34. Know where to find up-to-date and reliable information regarding specific disease, prevention and control measures, including response mechanism
9.35. Vaccination schedule for various livestock animals, poultry and pet
9.36. Understand and participate in regular or emergency vaccination campaigns, as well as in regular test-and-cull/treat programs
9.37. Examine and monitor an animal or a group of animals for certifying freedom from specified diseases or conditions according to established procedures
9.38. Fill out, sign and provide health certificates according to the national guidelines
9.39. Communicate effectively and respond sympathetically to clients
9.40. How to prepare different anesthetic protocols
9.41. Basic requirements for a aseptic surgery
9.42. How to manage a critical situation after anesthesia and surgery
9.43. Tools of restraining and their uses in different animals
9.44. How to monitor anesthesia and handle anesthetic hazards
9.45. How to interpret x-ray report
9.46. Surgical operation of castration, Hernia, Saying, Upward Pattelar Fixation and Aural hematoma
9.47. Common surgical affections (like abscess, cyst, tumor, fracture etc.)
9.48. Familiar with different suture materials, suture techniques and knots, and their uses
9.49. Should be able to decide whether a case is suitable for surgery or not
9.50. How to detect heat in common livestock
9.51. How to diagnose pregnancy by rectal palpation
9.52. How to perform ultrasound examination and interpretation
9.53. How to perform vaginal cytology
9.54. How to perform assisted delivery of newborn animals
9.55. How to manage uterine disorders (e.g., dystocia, vaginal prolapsed, uterine prolapse, uterine torsion, retained placenta and abortion)
9.56. How to treat uterine infection (e.g., pyometra, metritis, endometritis, subclinical endometritis, mummified fetus)
9.57. How to perform cesarean operation, fetotomy, episiotomy etc.
9.58. How to write a certificate for a proven bull and a soundness certificate
9.59. How to collect, process and handle semen
9.60. How to perform artificial insemination
9.61. How to prepare teaser animals