The Veterinary Council of India, with the previous approval of the Central Government hereby makes the following regulations in suppression of the notification vide GSR 69(E) dated the 7th February, 1994, namely:-

**PART I**

**PRELIMINARY**

Short title and commencement: (1) These regulations may be called the Veterinary Council of India - Minimum Standards of Veterinary Education- Degree Course (B.V.Sc. & AH.) Regulations, 2008.

(2) They shall come in force on date of their publication in the official Gazette.

Definitions- In these regulations, unless the context otherwise requires-

(a) "Act" means the Indian Veterinary Council Act, 1984 (2 of 1964);
(b) 'course' means a teaching unit of a subject to be covered within a semester as prescribed in the syllabus;
(c) "credit hours' means the weekly unit of work recognized for any particular course as per the course catalogue issued by the University. A lecture class of one hour per week shall be counted as one credit whereas a practical class of two hours duration or a working period of three hours in the Teaching Veterinary Clinical Complex or Institution or Farm per week shall count as one credit;
(d) "degree course" means the course of study in Veterinary Science, namely Bachelor of Veterinary Sciences and Animal Husbandry (B.V.Sc. & A.H.);
(e) 'First Schedule' and "Second Schedule" mean the First Schedule and Second Schedule respectively appended to the Act;
(f) "guidelines" mean*the guidelines/instructions issued by the Veterinary Council of India from time to time for uniform implementation of these Regulations;
(g) "Inspector" means the Veterinary Inspector appointed under sub-section (1) of section 19 of the & Act;
(h) "President" means the President of the Veterinary Council of India;
(i) "qualifying examination" means Higher Secondary (10+2) examination or equivalent conducted by a State Board of Education or Central Board of Education.
(j) "Semester" means a period consisting of minimum one hundred instructional days, excluding Annual examination days;
(k) "Secretary" means the Secretary of the Veterinary Council of India appointed under section 11 of the Act,
(l) "syllabus" and 'curriculum' mean the syllabus and curriculum for courses of study as specified by the Veterinary Council of India;
PART II

COURSE OF STUDY

3. **Description:** A degree course of B.V.Sc. & A.H. shall comprise of a course of study consisting of curriculum and syllabus provided in regulations Part V (9) of these regulations spread over five complete academic years including a compulsory internship of six months duration undertaken after successful completion of all credit hours provided in the syllabus. During the course of study there shall be training in a teaching Veterinary hospital, livestock and poultry farms and field training in Veterinary Institution as part of the course.

4. **Duration of Semester or academic year**
   (a) First semester in the respective academic year of B.V.Sc. & A.H. classes should commence preferably in July or August every year but not later than 31st October.
   (b) The annual examination should be conducted prior to annual vacation for the year.
   (c) It is essential that each academic year shall consist of at least 200 days of instruction excluding time spent for examinations.

5. Procedure to be adopted for imparting training in the veterinary hospitals or institutions or farms and internship with suitable adjustments at-

(1) **Teaching Veterinary Clinical Complex (TVCC)**
   (a) The Teaching Veterinary Clinical Complex shall be a separate unit in every veterinary college under the independent charge of a Faculty Member of the rank of a Professor with specialization in any of the clinical subjects.
   (b) Teaching Veterinary Clinical Complex shall be recognized only if it has an average minimum of 500 outdoor cases and 10 indoor cases in a month.
   (c) In case-the Teaching Veterinary Clinical Complex does not have requisite number of out patient and in-patient cases as prescribed in (b), the city veterinary hospitals of State Government/ nearest veterinary hospitals should be used and developed providing all the infrastructure prescribed for a teaching veterinary clinical
complex. The attached teaching veterinary hospitals should have properly built in-door wards, client accommodation, emergency service and the necessary facilities to conduct and demonstrate/train all medical, surgical and gynaecological cases and separate "in Health" care facilities like artificial insemination, pregnancy diagnosis, health verification tests, prophylaxis etc.

(d) Being a round the clock service there shall be residential accommodation for clinical and hospital staff and suitable accommodation for students on emergency/night duties and cafeteria/canteen for staff, students and clients

(e) All the concerned staff on duty in the teaching veterinary hospital shall

be responsible for the treatments and allied public services and would invariably attend the clinics including emergencies/night duties and on Sundays/holidays. The staff as well as students should be properly attired and equipped for the performance of clinical duties.

(f) The teaching institutions shall maximally utilize the animal/patient information observing all the time the principles of animal welfare and ethics, and arrange:

i) The teaching material in the form of clinical cases in sufficient number, variety and species.

ii) Subsidized treatment to encourage larger attendance in teaching veterinary, hospitals.

iii) Procure or provide free maintenance to, cases of academic interest or typical' cases of teaching value so that students can benefit from them.

iv) In the case of death/euthanasia detailed necropsy be demonstrated and specimens preserved.

(2) Instructional Livestock Farm Complex (I.L.F.C)

The Instructional Livestock Farm Complex shall be a separate unit in every veterinary college under the independent charge of a Faculty Member of tie rank of a Professor with specialization in any of the production subjects. The farm complex shall be for teaching in rearing of livestock species including poultry with the following facilities:

i) housing, feeding, breeding and management of large and small ruminant units, piggery, poultry and animals of regional interest

ii) record keeping

iii) storage facilities for feed and fodder

iv) production facilities for fodder crops

v) suitable housing for managerial and technical staff

Being a round the clock service there shall be residential accommodation and suitable accommodation for staff and students on duties.

All the concerned staff on duty in the Instructional Livestock Farm Complex shall be responsible for management including emergencies of the animals in the livestock Farm. They shall arrange and supervise the routine managemental practices from time to time and shall maintain record for the same. They shall also be responsible for production activity in each of the units.
PART III

ADMISSION TO THE B. V. Sc. & A.H. DEGREE COURSE

6. A candidate shall not be admitted to B.V.Sc. & A.H. degree course unless:-

(a) He/she has completed the age of 17 years on or before the 31st December of the year of his/her admission to the 1st year of B.V.Sc. & A.H. course; and

(b) He/she has passed the qualifying examination as defined under these Regulations with the subjects of Physics, Chemistry, Biology and English as core course and obtained marks as specified under Regulations Part III (7) or an examination equivalent to intermediate Science examination of an Indian University/Board recognized by the Association of Indian Universities taking Physics, Chemistry and Biology including a practical test in each of these subjects and English.

SELECTION OF STUDENTS

7. (1) The selection of students for admission to B.V.Sc. & AH. Degree Course shall only be on the basis of merit through a competitive entrance examination to achieve a uniform evaluation, as there may be variation among students at qualifying examinations conducted by different agencies.

NOTE: To be eligible for competitive entrance examination, candidate must have passed any of the qualifying examinations as enumerated under the head, "Admission to B.V.Sc. & A.H. Degree Course* at Part III (6) above

(2) A candidate under General Category for admission to the B.V.Sc. & A.H. degree course must have passed in each of subjects of English, Physics, Chemistry and Biology, and obtained 50% marks In aggregate of these subjects, at the qualifying examination. Admission of students to B.V.Sc. & A.H. degree course shall be made only on the basis of his/her merit in the competitive entrance examination. No other merit/weightage shall be for admission to B.V.Sc. & A.H. degree course.

(3) In respect of candidates belonging to the Scheduled Castes/ the Scheduled Tribes or other special category of students as specified by the Government from time to time, marks required for admission shall be 10% less than that prescribed for general category. Where the seats reserved for the Scheduled Caste and the Scheduled Tribes students in any State cannot be filled for want of requisite number of candidates fulfilling the minimum require prescribed from that State, then such vacancies shall be filled up on all India basis with students belonging to the Scheduled Castes and Scheduled Tribes getting not less than the minimum prescribed pass percentage.

(4) The students educated abroad seeking admission into veterinary colleges in India, must have passed the subjects of Physics, Chemistry, Biology and English up to the 12th Standard level with 50% marks in the individual subjects.

(5) Sponsored candidates shall have to qualify the admission procedures as laid down for the students under General category.

(6) Admission of candidates to B.V.Sc. & A.H. degree course under bilateral exchange programme shall be regulated by Veterinary Council of India.
(7) 15% of the total number of seats of each veterinary college shall be reserved to be filled on an All India basis through Common Entrance Examination (All India Pre-veterinary Test) to be conducted by the Veterinary Council of India.

(8) The candidates selected through this examination shall be admitted in various veterinary colleges as per the eligibility criteria prescribed in these regulations only and the last date for reporting of these candidates to the allotted University/Veterinary Institution shall be 31st August of that year irrespective of the closing date of admission of that University/Veterinary Institution for that year, if earlier.

(9) A candidate shall not be allowed admission to B.V.Sc. & A.H. degree course including those admitted under 15% reserved quota of Veterinary Council of India if he/she suffers disabilities in physical fitness as listed below:
   a) disability of total body Including disability of chest/spine more than 50%,
   b) disability of lower limb of more than 50%,
   c) disability of upper limb, visually handicapped candidates and those with hearing disability,
   f) candidates with progressive diseases like myopathies etc.
   g) disabilities which otherwise would interfere in the performance of the duties of a veterinarian.

(10) The disability should be certified by a duly constituted and authorised Medical Board comprising of at least three specialists out of which two should be of the specialty concerned and the candidate has to present him/her- self before the Medical Board. The last valid disability certificate of the candidate from a Medical Board should not be more than three months old from the date of submitting his/her certificate for disabled candidates.

PART IV

VETERINARY CURRICULUM - STRUCTURING AND ORGANIZATION OF COURSE CURRICULUM

8(1) VETERINARY CURRICULUM –

(a) The veterinary curriculum is comprised of six components of study:
   (i) Core Courses,
   (ii) Tracking Programmes,
   (iii) Study Circles,
   (iv) Entrepreneurial Training,
   (v) Internship, and
   (vi) Competence in skills.

(b) The curriculum is meant to provide adequate emphasis on cultivating logical and scientific habits of thought clarity of expression, independence of judgment, ability to collect information and to correlate them, and develop habits of self education.

(c) A judicious balance has been ensured in distribution of course credits in theory and practical and sequence among basic, production, pre-clinical and clinical subjects including public health and livestock products technology.
(d) The educational process may be placed in a historic background as an evolving process and not merely as an acquisition of large number of disjointed facts without a proper perspective.

(e) Medium of instruction to B.V Sc.&A.H. degree course shall be English.

(f) Clinical practice shall be organized in small groups of 5-10 students so that each teacher can give personal attention to each student with a view to improve his/her skill and competence in handling of the patients.

(g) Efforts be made to encourage students to participate in group discussions and seminars to enable them to develop personality, character expression and other faculties which are necessary for a veterinary graduate to function either in solo practice or as a team member when he/she begins his/her independent professional career. An appropriate time slot for this activity be provided in the student study time table.

(h) Practical training be imparted to produce a well balanced and all-rounder graduate. Continuing self-education among students for further development in different aspects of veterinary and animal science/technology be encouraged. Tutorials be organized for this activity.

(2) SUBJECTS TO COVERED IN THE B.V.Sc. & A.H. DEGREE COURSE

1. Veterinary Anatomy
2. Veterinary Physiology and Biochemistry
3. Veterinary Pharmacology and Toxicology
4. Veterinary Parasitology
5. Veterinary Microbiology
6. Veterinary Pathology
7. Veterinary Public Health and Epidemiology
8. Animal Nutrition
9. Animal Genetics and Breeding
10. Livestock Production Management
11. Livestock Products Technology
12. Veterinary Gynaecology and Obstetrics
13. Veterinary Surgery and Radiology
14. Veterinary Medicine
15. Veterinary and Animal Husbandry Extension Education

3. MIGRATION OR TRANSFER OF STUDENT FROM ONE RECOGNIZED VETERINARY COLLEGE OR INSTITUTION TO ANOTHER

(1) A student studying in a recognized veterinary college may be allowed to migrate/be transferred to another recognized veterinary college under another/same university.

(2) The migration/transfer may be allowed by the university concerned after passing 1st year of B.V.Sc. & A.H. degree course within one month of the start of academic session of 2nd year of the receiving college/university.
(3) Migration/transfer of a student shall not be allowed during the middle of an academic year.
(4) The number of students migrating/ transferring from one veterinary college to another veterinary college during the period of one academic year will be kept to the maximum limit of 5% of the intake capacity of each of the veterinary colleges in one year.
(5) Cases not covered under such regulations, (1) to (4) may be referred to the Veterinary Council of India for consideration on merits.
(6) An intimation about the admission of migrated/ transferred students into any veterinary college should be sent to the Veterinary Council of India by the respective college/university.

PART V

SYLLABUS

9.(1) (a) The semester-wise distribution of theory and practical courses comprising of 177 credits (core courses) for B.V.Sc. & A.H. degree course are summarized below:-

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* 1 credit (0+1) each for two courses on Livestock Farm Practice (non credit) included.
** 1 credit (1+0) for Veterinarian in Society (non credit) included.

(b) In addition to the Core Courses above, a student has to successfully complete the Tracking Programmes, Study Circles, Entrepreneurial Training, Internship and Core Competence in Veterinary skills as has been detailed under Part IV (8)(1) of these regulations for the award of B.V.Sc. & AH. degree.

(c) Remount Veterinary Corps (RVC) Squadron/ National Cadet Corps (NCC)/ Equestrian/National Service Scheme (NSS)/ Sports and games shall be non-credit
training programmes one of which for a duration of minimum of two Professional Years shall be compulsory for the award of B.V.Sc. & A.H. degree. The performance of the students in these training programmes shall be assessed and graded as 'Satisfactory' or 'Unsatisfactory'. A student has to obtain 'Satisfactory' grading for successful completion of course requirements.

NOTE: The Syllabus prescribed in sub-regulation is the minimum instructional syllabus and is illustrative of the course content for teaching different courses at the veterinary colleges in the country for B.V.Sc. & A.H. degree programme. However, there is scope for flexibility of addition of topics/courses in the programme as per need or regional/ institutional demand from time to time. Such changes should be non-violative and commensurate to the basic structure, curriculum and infrastructure prescribed in these regulations.

(2) Tracking Programmes

These programmes have been developed to allow students to exercise more control over the specific direction of their profession and motivate them for self-teaming through virtual classroom, distant learning, internet etc. A student has to compulsorily take any two programmes of two credits each (2x2=4 credits) any time (one semester duration each) during second year to fifth year of B.V.Sc. & A.H. Degree Course under the supervision of one faculty member as designated by the Dean/Principal of the College for that programme. Evaluation of the students for this programme shall be done internally on Grade basis (A-Excellent, B-Good, C-Average). In case of unsuccessful candidates, the programme can be carried over to the next semester/year.

List of the Tracking Programmes is given below:

i) Feline Medicine  
ii) Cryobiology of Gametes  
iii) Neurosciences  
iv) Clinical/ Interventional Nutrition  
v) Dermatology/integument Science  
vi) Alternate Veterinary Medicine  
vi) Ophthalmology  
viii) Anesthesiology  
ix) Small Animal Critical Care  
x) Non-Mammalian Medicine  
xi) Sports Animal Medicine  
xii) Drug designing  
Xiii-xv) To be decided by the college/university.

These will be Non-Credit courses but shall be mentioned in the Degree Transcript along with the grades obtained.
(3) Study Circles

Each student of B.V.Sc. & A.H. degree course shall have to enroll himself/herself for at least two Study Circle activities during the B.V.Sc. & A.H. degree course out of the proposed Study Circles as listed below:

i) Livestock and Livelihood Study Circle  
ii) Production Systems Study Circle  
iii) Ecosystems and Livestock Study Circle  
iv) Equine Study Circle  
v) Canine Study Circle  
vi) Diagnostic Study Circle  
vii) Alternate Animal Use Study Circle  
viii) Fun/Sport Animal Study Circle  
ix) Law and Veterinary Science Study Circle

The College shall designate an Advisor for each of the above Study Circle activities who shall supervise, guide, monitor and evaluate the activities of the Study Circles. Each enrolled student shall have to present a Seminar on the topics of his/her Study Circle any time during the Semester. The date and time of the Seminar shall be notified inviting participation of all students. The Study Circle shall also put up news, wall papers, drawings, exhibits of their subject in the college. The Dean of the college shall coordinate the activities with the Advisors for each of the above Study Circles. The evaluation of the student for each of the registered Study Circles shall be done by the Advisor who will grade them as A-Excellent, B-Good, C-Average as per their performance. The same shall be recorded in the Degree Transcript along with the grades obtained. No student shall be allowed to change the Circles during the professional year.

(4) Entrepreneurial Training

Each student of B.V.Sc. & A.H. degree course shall be required to compulsorily undertake one of the activities of Entrepreneurial Training as listed below. This training is aimed at developing entrepreneurial skill for self-employment. The university/college shall provide interest free loans out of a revolving fund (not less than Rs. 3.00 lakhs in a college) to students groups (team of up to five students), technical support and infrastructure for these activities. Inputs, day-to-day work and financial accounting shall be undertaken by the students. The profits/loss, if any, shall be kept/borne by the students. However, in case of loss, the Dean of the college through the Entrepreneurship Committee consisting of four faculty members (at least one subject matter specialist) may evaluate the reasons of such loss and provide compensation in case it is found that the loss has been inadvertent. Proposed List of 16 Entrepreneurial activities is as follows:

(i) Goat Production  
(ii) Sheep Production  
(iii) Pig Production  
(iv) Broiler and Egg Production  
(v) Pet Production  
(vi) Dairy Production  
(vii) Meat Production and Processing  
(viii) Fish Production
(ix) Feed Production-Mineral Mixture  
(x) Milk Products  
(xi) Food safety-residue Analysis  
(xii) Clinical Investigatory laboratory  
(xiii) Quality Control-Evaluation (Microbial)  
(xiv) Shoeing and Shoe Manufacture  
(xv) Production of Diagnostic  
(xvi) Pharmaceutical Formulations,

Besides, the Colleges/Institutions may also offer the facilities for Entrepreneurial Training involving the activities of regional interest

(5) Internship.-

(a) As per regulation 3 of Part II of these regulations, every student of B.V.Sc. & A.H. degree course shall be required after passing the fifth annual examination to undergo compulsory rotating internship to the satisfaction of the University for a minimum period of six calendar months so as to be eligible for the award of the degree of B.V.Sc & A.H. and full registration with the Council.

(b) Compulsory rotating internship shall include a full time training in veterinary and animal husbandry services (including emergencies and night duties, Sundays and holidays). The intern will devote whole time to the training and will not be allowed to accept a whole time or part time appointment paid or otherwise,

(c) Internship shall be undertaken only after completion of all credit requirements of veterinary curriculum including Tracking Programmes, Study Circles, Entrepreneurial Training -and R.VC. Squadron/N.C.C./ Equestrian/N.S.S/Sports and games as prescribed under these regulations.

(d) The university shall issue a provisional course completion certificate of having passed all the professional examinations and having successfully completed course work.

(e) The State or Union Territory Veterinary Council or Veterinary Council of India will grant provisional registration to the candidate on production of provisional B.V.Sc. & A.H. course completion certificate. The provisional registration will be for a minimum period of six months and maximum of eight months.

(f) After provisional registration with the State or Union Territory Veterinary Council or Veterinary Council of India, the candidate shall register for internship of six calendar months.

(g) Interns will be actively involved in rendering veterinary service under the supervision of an experienced teacher.

(h) They shall assist the teacher in all activities of the units they are posted in.

(i) During the period of internship they shall be provided accommodation/lodging and paid consolidated remuneration in the form of internship allowance as may be decided by the University/Institution from time to time.

(j) Attendance will be compulsory. The candidate will be entitled for 10 days casual leave. The leave cannot be claimed as a matter of right until and unless the sanctioning authority sanctions it. If an intern willfully absents from the training programme even if for part of a day or during off hours duty (including Sundays/holidays) he/ she may be treated absent for that day. The candidate will be required to undergo training
for the additional days in lieu of the absence period and internship allowance will not be paid for these additional days.

(k) The internship programme shall be monitored by a Committee constituted by the Dean under his/her chairmanship including among others the Head of TVCC and Head of ILFC as members. This Committee shall monitor effective implementation of the internship training programme from time to time.

(l) In case of unsatisfactory work/ performance and/or shortage of attendance, the period of compulsory rotating internship shall be extended by not more than two months by the appropriate authority. If this period is more than two months, the intern has to re-register afresh for internship programme for entire six calendar months including registration with the State or Union Territory Veterinary Council.

(m) Internship allowance will be paid only for six calendar months. No internship allowance will be paid for the period of absence/unsatisfactory performance/extended period.

(n) The compulsory rotating internship for six calendar months shall be done in teaching and approved Veterinary Polyclinics/Veterinary Hospitals, Veterinary Biological Centres, Technology Centers, Farms and Veterinary Disease Investigation Centers. The internship programme can be undertaken at approved veterinary institutions in India.

(o) The compulsory rotating internship shall be in the following areas:
   (i) Clinical training covering veterinary medicine, surgery and radiology, animal reproduction, gynaecology and obstetrics, clinical emergencies, indoor ward care, hospital management record keeping etc. for three months.
   (ii) Livestock production and management training, covering farm routines of cattle and buffalo farms, piggy/rabbitary, sheep and goat farms, and equine/ camel unit etc. for one month.
   (iii) Poultry production and management covering layer and broiler production, hatchery and chick management quail, turkey, duck units etc. as well as fishery or any other recycling unit where feasible, for one month.
   (iv) Livestock technology and service covering familiarization in biological product units, disease control campaigns (disease investigation and sample collection and dispatch, vaccination, mass testing etc.) in plant training in meat plants, milk plants, etc. training in zoo/ wild life center/ national parks, for one month.

(p) Details of day to day work, posting and duration needs to be worked out by the Veterinary Institution as per its needs and infrastructure facilities.

(q) Where an Intern is posted to a recognized Veterinary hospital for training, a representative of the college and the In-charge of the Veterinary hospital shall regulate the training of such interns.

(r) Every Intern shall render professional veterinary service, skill and knowledge under supervision and guidance of a registered veterinary practitioner working in the approved Veterinary Institution.

(s) Function, responsibilities and duties of Interns:
   (i) Participation with clinical faculty in the hospital practice.
(ii) Shares the emergency and night duties on rotation in the larger and small animal hospitals including Sundays & holidays.

(iii) Participation with staff of the place of posting in Veterinary Practice (production or technology).

(iv) The intern responsibilities include hands-on diagnostic and treatment procedures for hospitalized cases under the supervision of the attending veterinarian.

(v) Participation in the tutorial instructional program of the Veterinary College.

(vi) The intern will administer primary care to emergency cases and participate in service such as anaesthesia, radiology, ultrasonography, endoscopy, laboratory and diagnostic procedures. Medicine and Surgery rounds are held periodically allowing the interns to present cases and participate in topic discussion.

(t) The training shall be supplemented by weekly sessions of clinical conference, farm operation and data analysis, preparation of feasibility reports, project report, campaigns/discussions in, clinical training, farm training and technology and services respectively.

(u) For the purpose of internship all necessary inputs like accommodation, transport, adequate clinical facilities etc. shall be provided.

(v) The intern shall maintain a log book of day to day work which may be verified & certified by the supervisor under whom he/she works. In addition the interns will prepare a brief project report on the basis of his/her case study/case analysis, survey reports etc. This shall be based on his/her own study during the internship. Such reports can be supervised by more than one teacher, if required. The interns shall present such report in seminar organized for the purpose.

(w) The grading shall be based upon the evaluation of log book, their performance reports from all the minimum prescribed training postings, project report and comprehensive examination in core competence in veterinary skills conducted at the end of the programme by an Evaluation Committee comprising of the faculty representing the concerned departments appointed by the Dean for this purpose.

(x) Every Intern shall have to submit an Entrepreneurial Project during the Internship Programme.

(6) Comprehensive Examination on Core Competence in Veterinary skills:

The competence in veterinary skills examination shall be based on an evaluation of core competence in professional skills as detailed below;

(i) Restraint of cow, sheep, horse, dog and pig. Haltering, snaring, muzzling, tad switch, bandaging of horse for exercise and stable bandaging

(ii) Animal identification, Dentition and ageing of animals

(iii) Housing layout/requirements of livestock and poultry

(iv) Computation of ration of livestock of different breeds and age groups in health and disease

(v) Fodder management and interpretation of feed quality evaluation
(vi) Physical evaluation of livestock health parameters (auscultation, percussion, recording of temperature, pulse, heart rate, respiration rate etc.)
(vii) Recording and interpretation of cardiovascular response
(viii) Testing of milk and milk products for quality, clean milk production
(ix) Carcass quality evaluation (ante-mortem & post-mortem examination)
(x) Specific diagnostic tests for zoonotic diseases
(xi) Sample collection, handling-and dispatch of biological materials for laboratory examination
(xii) Staining techniques for routine clinico- pathological examinations
(xiii) Relating post-mortem lesions to major livestock diseases
(xiv) Haematological evaluation (total leukocyte count, differential leukocyte count, haemoglobin, packed cell volume, erythrocyte sedimentation rate etc.) and interpretation
(xv) Tests and their interpretation for haemoproteozoan diseases
(xvi) Body fluids collection, examination and interpretation as an aid to diagnosis
(xvii) Urine evaluation procedures and interpretation as indicators for diagnosis of diseases
(xviii) Fecal examination- procedures and interpretation
(xix) Examination of skin scrapings and interpretation
(xx) Interpretation of blood chemistry profile in diseases
(xxi) Deworming procedures and doses for different species of animals/birds
(xxii) Managing an outbreak of infectious/contagious disease
(xxiii) Approach to diagnosis of a given disease condition
(xxiv) Pre-anesthetic administration and induction, maintenance of general anesthesia and dealing with anesthetic emergencies
(xxv) Local anesthetic administration
(xxvi) Nerve blocks-sites, functional application
(xxvii) Suture material, suture pattern and tying knots
(xxviii) Common surgical procedures including dehorning, docking, caesarian section, ovariohysterectomy, castration, rumenotomy
(xxix) Application of plaster cast/splint for fracture immobilization and other bandaging procedure in large and small animals.
(xxx) Soundness in horses
(xxxi) Rectal examination - palpation of pelvic/abdominal organs in cattle/ horses/ buffaloes,
(xxxii) Detection of oestrus, artificial insemination, pregnancy diagnosis,
(xxxiii) Management of vaginal/uterine prolapse and dystocia
(xxxiv) Andrological examination of bull, handing, preservation and evaluation of semen
(xxxv) Vaccination procedures, vaccination schedules and vaccine types for different diseases
(xxxvi) Handling of radiograph, interpretation of a given radiograph of large and small animals
(xxxvii) Client management
(xxxviii) Managing a clinical practice, ambulatory van, transporting a sick animal requirements, etc.
Dosage regimens of important drugs
Drug administration techniques in different species of animals- oral, parenteral, rectal, intra-peritoneal and intra-uterine
Identification of major livestock/poultry breeds
Measuring climatic parameters and their interpretation
Communication technology tools

There shall be no marks for this examination. Every intern shall be graded as 'Satisfactory' or as 'Unsatisfactory' based on the evaluation of this examination and submission of Entrepreneurship Project. The Dean shall then issue the certificate of satisfactory completion of internship training as prescribed by the Veterinary Council of India. In case of unsatisfactory performance in the comprehensive examination for core competence in professional skills, the candidate has to repeat the entire internship programme.

The candidate will become eligible for registration with State/UT Veterinary Council only on the award of the B.V.Sc: & A.H. degree or production of a provisional degree certificate by the University.

EXAMINATION AND EVALUATION

1. (1) It shall be the responsibility of the teacher(s)/instructor(s) to ensure that the topics to be covered in the theory and practical in each course is recorded through a lecture/practical schedule and distributed to the students at the beginning of each course. The Head of the Department/Dean shall ensure that the schedule is adhered to and alternate arrangements are made to cover up the loss in case of any eventualities of unavoidable reasons that lead to non-adherence of the above schedule.

2. Work distribution chart of each teacher should be available with Dean's office for inspection of the Council. In each subject Professors and senior teachers must be actively involved in teaching, especially in conducting practical for degree course. The principle behind each practical, the objective of each practical level of competence expected from the students etc. should be clearly explained to them by senior teachers.

3. The examination shall be to assess whether the student has been able to achieve a level of competence. For academic assessment, evaluation of practical aspects of the curriculum should receive much greater emphasis leading to separate examinations and requiring the student to secure a minimum of 50% marks, in theory as well as in practical, in each such examination.

4. The weightage of Theory and Practical shall be in the ratio of 60:40 respectively in both internal and annual examinations.

5. The distribution of marks for objective and subjective questions in each course/paper shall be in the ratio of 60:40 respectively both in internal and annual examinations.

6. The schedule of examination during B.V.Sc. & A.H. course shall consist of internal (semester) and external (annual) examinations: internal examination (theory and practical separately) for each course at the end of each semester; and external examinations (theory and practical separately) at the end of each academic year comprising of all the courses of a particular subject taught during that year.

7. The internal assessment (Semester) shall be conducted in 50% of total marks in theory and practical separately and shall invariably be conducted on completion of the course as per lecture/practical schedule explained under sub-regulation (1) and shall be held without
any preparatory leave. It shall be the responsibility of the University/College authorities to conduct these examinations without loss of instructional days of a Semester. Internal Practical examination shall be conducted by a board of examiners consisting of Instructors of the course and a representative of the head of the department. Evaluation of answer books shall be done by the concerned instructors. Marks obtained in theory and practical in the internal examinations would be recorded separately and submitted to the Dean/ Principal at the end of the particular semester.

8) A composite Annual examination for a group of courses/ a course (if only a single course is involved in the paper) shall be conducted for the rest 50% marks in theory and practical separately as per schedule of examination. The annual theory examination(s) shall be conducted by inviting the question paper from appointed paper setters). A paper setter shall be provided the courses and syllabus prescribed by the VCI including detailed course outline. A paper setter shall be requested to prepare two sets of question papers, each for main examination and compartment examination (if any). Where necessary, more than one paper setter/ examiner can be appointed. The practical examinations shall be conducted by the Board of Examiners appointed by the university and shall consist of two or more internal (representing the subjects being examined) and one external examiner. Evaluation of answer books of annual examinations shall be done by the external examiner(s).

9) Annual examinations shall be held on such dates, time and places as the university may determine and must be completed so that the results are announced before the onset of the ensuing semester.

10) The schedule of examinations (internal/external) shall be adhered to strictly. No re-examination shall be allowed in events of students—strike, boycott, walkouts, medical grounds or what-so-ever may be the reason.

11) There shall be no supplementary (make up) examinations during the academic session. However, a candidate may be allowed to provisionally sit in the next class provided he/she has failed only in two papers. He/she cannot be promoted to next B.V.Sc. & A.H. class unless he/she has cleared the failed papers).

12) The records of examination shall be made available to the Council, as and when required and the records of assessment may be retained till six months after the conduct of the Annual examination.

EXPLANATION 1: For the first B.V.Sc. & A.H. examination, the subject of Veterinary Anatomy, has one course in the first semester (VAN-111, 1+2=3) and one course in the second semester (VAN-121, 2+2=4). Internal evaluations for VAN-111 shall be conducted at the end of the 1st semester and for VAN-121 the internal evaluation shall be conducted at the end of the 2nd semester. The marks obtained in the examinations shall be recorded separately for theory and practical and sent to the concerned Registrar/ Controller of Examinations/ Dean. After the completion of courses in the second semester, a composite annual examination (for Veterinary Anatomy Paper-I) shall be conducted for the theory and practical of VAN-111 and VAN-121 giving due weightage to each course. The marks obtained in the theory and practical of internal and annual examination shall be added and the grade point calculated and recorded against Anatomy Paper-I. Similar pattern shall be followed for all other subjects of B.V.Sc. & A.H. Degree course. (Annexure I)

EXPLANATION 2: The teachers while evaluating practical, shall take into account the followings:

1) A record or log book maintained by each student as practical records.

2) Observation and recording of the skill with which each student executes the practical.
(3) Assessment of the comprehensive skill and knowledge of each student through an oral examination (viva-voce).

(4) At least ten percent marks may be awarded to day to day records including record of case sheets etc.

**NB: Practical manuals be prepared by the respective departments of each of the courses.**

**TEACHERS, EXAMINERS, PAPER SETTERS**

11.(1) The persons with basic veterinary qualification (B.V.Sc/B.V.Sc. & A.H.) shall be recruited as teaching faculty in the Veterinary Colleges.

(2) Teachers in the disciplines of Biochemistry, Biotechnology, Biostatistics and Computer Application, Entrepreneurship, Extension and Economics may be recruited from the persons having qualifications other than the basic veterinary qualification only in case of non-availability of candidates with basic veterinary qualifications. Where candidates with basic veterinary qualification are available, they should be given priority in selector appointment over the candidates without basic veterinary qualification. Appointment of persons without the basic veterinary qualification as teachers in the aforesaid disciplines shall require prior approval of the Veterinary Council of India.

(3) The post of Head of Department in a Veterinary College shall be filled up only with a teacher with basic veterinary qualification.

(4) A person possessing qualification included in the First or Second Schedule to the Act shall be generally appointed as examiner or paper setter for the conduct of a professional examination for the B.V.Sc. & A.H. course. However, a person without the qualifications mentioned above may also be appointed examiner in his/her concerned subject provided he/she possesses the doctorate degree in that subject and a minimum three years teaching experience.

Provided that-

(a) no such person shall be appointed as an external examiner unless he/she has at least three year's teaching experience;

(b) no person below the rank of Lecturer/Assistant Professor or equivalent shall be appointed as internal examiner

(c) no person shall be appointed as an external examiner in any Para-clinical / clinical subject unless he/she possesses a recognized veterinary qualification and hold a postgraduate degree and teaching experience in the subject concerned.

(d) persons working in Government/Semi Government or similar organizations may also be considered for appointment as external examiners provided they possess qualification and experience as laid down above.

(e) paper setter(s) cannot be appointed as practical examiner(s) in the same paper.

(f) local person(s) shall normally not be appointed as paper setter(s)/ external examiner(s). However, under exceptional circumstances or unavoidable exigencies arising at the time of examination (like hot arrival of appointed examiner/ non-receipt of question paper from paper setter etc.), the University may appoint any qualified
person for the purpose to avoid postponement/ cancellation of annual board examination

(5) Oral and practical examinations shall be conducted by the respective internal, and external examiners with mutual co-operation. They shall allot marks to the candidate appearing at the examination according to their performance and the marks sheet so prepared shall be signed by both the examiners.

(6) Every veterinary college shall provide all facilities to the internal and external examiners which are necessary for the conduct of examinations and the internal examiner shall make all preparations for holding the examinations.

(7) The external examiner shall have the right to communicate to the examining body his/her views and observations about any shortcomings or deficiencies in the facilities provided by the Veterinary College with a copy to VCI, if he/she so desire.

(8) Verification of percentage of passing/failing and deviation from the normal curve of distribution will be subject to scrutiny/enquiry by the examining body.

ATTENDANCE

12. (1) The required condition of attendance shall not be deemed to have been satisfied in respect of the course, unless the student has ordinarily attended all the scheduled theory and practical classes; however, the minimum requirement of attendance shall not be less than 75% (including attendance benefit, if any) of scheduled theory & practical classes separately on the basis of cumulative attendance of all the courses grouped for a paper for annual examination.

(2) A candidate having attendance below-75% in a paper will not be eligible to appear in the annual examination of that paper.

(3) The percentage of attendance of a student in a course/paper shall be computed on the basis of the total number of theory and practical classes scheduled between the date of commencement of instructions and date of closing of instructions irrespective of the date of registration. However, for the students who are reverted-back owing to failure in the compartment examination, the attendance shall be counted from the date of declaration of result of compartment examination and the date of closing of instructions.

PROMOTIONS AND FAILURE

13. (1) Promotion or failure of a student in a professional year shall be decided only on the basis of aggregate marks of internal and annual board examinations.

(2) A student shall be promoted to next higher professional class only if he/she has passed in all the papers of his/her class by obtaining at least 50% marks in theory and practical separately (internal and external combined).

(3) A student should secure over all grade point average (OGPA) of 5.00 out of 10.00 at the end of degree programme to be eligible to get B.V.Sc. & AH. degree.

(4) A student may also be allowed provisional promotion to next higher class till the declaration of the result of the compartment examination(s). However, this promotion shall be subject to clearance in the compartment examination(s) of that/those paper(s) and shall be provisional. If the student fails in the compartment examination(s), he/she shall stand automatically reverted to the class from where he/she was allowed provisional promotion.
(5) Failed students shall register again for the entire professional class, they failed. Such students shall have to fulfill all requirements of the class afresh.

(6) A student failing in the annual examination for three consecutive years in a professional year of B.V.Sc. & AH. degree programme, shall be finally dropped automatically from the University on account of poor academic performance.

(7) In no case, a student shall be allowed to continue his/her B.V.Sc. & AH, studies beyond 8 academic years (16 semesters) in a Veterinary College.

COMPARTMENT EXAMINATION

14. (1) A student failing in a maximum of two papers only may be allowed once to appear in compartment examinations for those paper(s). Compartment examination shall comprise of the external component of both the theory and practical of the failed paper(s), which shall constitute the 100% weightage for that paper(s) and the marks of Internal examination shall not be considered for the evaluation of Compartment Examination.

(2) The compartment examinations shall be conducted within 20 calendar days after the date the results of the concerned professional year examination declared. The results of such compartment examination shall be declared within 5 days after the examination is conducted.

(3) In case of failure in any of the compartment paper(s), the student will be reverted back to the previous professional year and will be required to repeat all the requirements of that failed professional year.

SCRUTINITY OF ANSWER BOOKS AND RECTIFICATION OF ERRORS

15. (1) There shall be no provisions of re-evaluation of answer book(s).

(2) A student, however, may be allowed to get his/her answer book(s) scrutinized, for which, the student shall have to apply to Controller of Examination/Coordinator of Examination within three days after the declaration of result and after paying prescribed fee.

(3) The Controller/Coordinator (Examination) shall arrange the scrutiny of answer book(s) by the Moderation Committee.

(4) Scrutiny means re-totaling of the marks, and examination of unmarked question(s), if any.

(5) The answer book(s) of annual examination shall not be shown to the student under any circumstances.

(6) In case, the total marks are found to be incorrect on scrutiny, the same will be corrected and the result shall be revised accordingly (even if it is towards lower side). If, however, any question is found to be unchecked by the Examiner, the answer book(s) shall be sent to the Examiner for doing the needful and the results shall be revised accordingly if there occurs any change in the marks.

(7) No representation by the students) shall be entertained regarding the outcome of the result after scrutiny.

(8) In case a student on the basis of the result of scrutiny becomes eligible for the compartment examination, he/she may apply to the concerned authority to appear in the compartment examination on the announced scheduled date. The scheduled date of the compartment examination shall under no circumstances be changed on this account.
MODERATION

16 (1) Question Paper:

The examining body may appoint a single moderator or a board of moderators not exceeding three in number. The moderators shall review the question papers on the day of examination after they have been distributed. Any corrections needed will be conveyed to the examinees and any discrepancy in the question paper in respect of syllabus noticed will be conveyed to the Controller/Coordinator of Examination in a written report.

(2) The Results:

The Controller/Coordinator of Examination in consultation with the Dean of the College shall form Committee of three members consisting of Dean of the College as Chairman and two other teaching faculty members to moderate the results-obtained at the annual board examination. This Committee shall review the results for the normal distribution of marks, the percentage of pass or failure. Any moderation suggested shall be uniformly applied to all students for that papers) without altering the merit of the passed candidates. Any moderation effected should not involve of enhancing of- more than total of 5 marks in a professional year for a particular candidate, and in no case more then 3 marks in one paper. The provisions for Moderation of results shall not apply to Compartment Examinations There shall be no provision for grace marks in any case.

GRADING AND GRADE POINT AVERAGE

17. (1) Grade Point (GP) in a course will be the total marks obtained by a student out of (100 divided by 10
(2) Credit Pont (CP) in a course will be GP multiplied by the credit hours.
(3) Total Credit Points = Sum of the credit points secured.
(4) The Credit Points earned will be zero if the GP In a paper is less than 5.00
(5) Grade Point Average (GPA) = Sum of the Total credit Points earned divided by the sum of Credit Hours.
(6) The corresponding ranking of OGPA with respect to traditional scoring system of Division Ranking shall be as follows:
8.000 and above - First Division with Distinction
7.000 - 7.999 - First Division
6.000 - 6.999 - Second Division
5.000 - 5.999 - Pass

Formats of Detailed Marks Certificate (DMC) and Degree Transcript are at Annexure II and III,
### FIRST PROFESSIONAL

#### SEMESTER-I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAN-111</td>
<td>Veterinary Gross Anatomy-I (Osteology, Arthology &amp; Biomechanics)</td>
<td>1+2=3</td>
</tr>
<tr>
<td>VPB-111</td>
<td>Veterinary Physiology-I (Blood, Cardiovascular &amp; Excretory Systems, Body Fluids)</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VPB-112</td>
<td>General Veterinary Biochemistry</td>
<td>1+1=2</td>
</tr>
<tr>
<td>LPM-111</td>
<td>Livestock Production Management-I (General Principles and Ruminants)</td>
<td>3+1=4</td>
</tr>
<tr>
<td>AGB-111</td>
<td>Biostatistics and Computer Application</td>
<td>2+1=3</td>
</tr>
<tr>
<td>ANN-111</td>
<td>Principles of Animal Nutrition &amp; Feed Technology</td>
<td>2+1=3</td>
</tr>
</tbody>
</table>

**Total Credit** 11+7=18

#### SEMESTER-II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAN-121</td>
<td>Veterinary Gross Anatomy-II (Myology, Neurology, Angiology &amp; Aesthesiology)</td>
<td>2+2=4</td>
</tr>
<tr>
<td>VPB-121</td>
<td>Veterinary Physiology-II (Neuromuscular, Digestive &amp; Respiratory Systems)</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VPB-122</td>
<td>Veterinary Intermediary Metabolism</td>
<td>2+1=3</td>
</tr>
<tr>
<td>LPM-121</td>
<td>Fodder Production &amp; Grassland Management</td>
<td>1+1=2</td>
</tr>
<tr>
<td>LPM-122</td>
<td>Livestock Production Management-II (Monogastric and Laboratory Animals)</td>
<td>1+1=2</td>
</tr>
<tr>
<td>AGB-121</td>
<td>Principles of Animal Genetics and Population Genetics</td>
<td>2+1=3</td>
</tr>
<tr>
<td>ANN-121</td>
<td>Applied Animal Nutrition-II (Ruminants)</td>
<td>2+1=3</td>
</tr>
</tbody>
</table>

**Total Credits** 12+8=20

### SECOND PROFESSIONAL

#### SEMESTER-III

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAN-211</td>
<td>Veterinary Histology &amp; Embryology</td>
<td>2+2=4</td>
</tr>
<tr>
<td>VPA-211</td>
<td>General Veterinary Parasitology &amp; Helminthology</td>
<td>3+1=4</td>
</tr>
<tr>
<td>VPP-211</td>
<td>General Veterinary Pathology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VMC-211</td>
<td>General Veterinary Microbiology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>LPM-211</td>
<td>Avian Production Management</td>
<td>1+1=2</td>
</tr>
<tr>
<td>ANN-211</td>
<td>Applied Animal Nutrition-II (Non-ruminants, Poultry &amp; Laboratory Animals)</td>
<td>2+1=3</td>
</tr>
</tbody>
</table>
AGB-211  Livestock and Poultry Breeding  2+1=3  
LFP-211  Livestock Farm Practice (Non-Credit)  0+1=1  
**Total Credits**  12+9=21  

**SEMESTER- IV**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAN-221</td>
<td>Veterinary Splanchnology &amp; Applied Anatomy</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPB-221</td>
<td>Veterinary Physiology-III (Endocrinology, Reproduction Growth Environmental Physiology)</td>
<td>3+1=4</td>
</tr>
<tr>
<td>VPA-221</td>
<td>Veterinary Entomology &amp; Acarology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPA-222</td>
<td>Veterinary Protozoology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VMC-221</td>
<td>Veterinary Immunology and Serology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPP-221</td>
<td>Systemic Veterinary Pathology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>LPM-221</td>
<td>Commercial Poultry Production and Hatchery Management</td>
<td>1+1=2</td>
</tr>
<tr>
<td>LPM-222</td>
<td>Livestock Production Management-III (Regional interest)</td>
<td>1+1=2</td>
</tr>
<tr>
<td>LFP-221</td>
<td>Livestock Farm Practice (Non-Credit)</td>
<td>0+1=1</td>
</tr>
</tbody>
</table>

**Total Credits**  12+9=21  

**THIRD PROFESSIONAL**

**SEMESTER --V**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPT-311</td>
<td>General and Systemic Veterinary Pharmacology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VMC-311</td>
<td>Systematic Veterinary Bacteriology &amp; Mycology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VPP-311</td>
<td>Special Veterinary Pathology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VPE-311</td>
<td>Milk and Meat Hygiene, Food Safety and Public Health</td>
<td>2+1=3</td>
</tr>
<tr>
<td>LPT-311</td>
<td>Milk and Milk Products Technology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>LPT-312</td>
<td>Abattoir Practice and Animal Product Technology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VAE-311</td>
<td>Principles and Techniques of Veterinary and A H. Extension</td>
<td>2+1=3</td>
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</table>

**Total Credits**  12+7=19  

**SEMESTER-VI**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPT-321</td>
<td>Veterinary Neuropharmacology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VMC-321</td>
<td>Systematic Veterinary Virology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VPP-321</td>
<td>Avian Pathology</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPP-322</td>
<td>Aquatic Animal Diseases, Hearth Care and Management</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPE-321</td>
<td>Veterinary Epidemiology and Zoonosis</td>
<td>2+1=3</td>
</tr>
<tr>
<td>LPT-321</td>
<td>Meat Science</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPB-321</td>
<td>Animal Biotechnology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VAE-321</td>
<td>Livestock Economics, Marketing and Business Management</td>
<td>2+1=3</td>
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**Total Credits**  13+8=21  

21
FOURTH PROFESSIONAL

SEMPER- VII

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPT-411</td>
<td>Veterinary Chemotherapy</td>
<td>2+0=2</td>
</tr>
<tr>
<td>VSP.-411</td>
<td>General Veterinary Surgery, Anaesthesiology And Diagnostic Imaging</td>
<td>2+2=4</td>
</tr>
<tr>
<td>VGO-411</td>
<td>Veterinary Gynecology</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VMD-411</td>
<td>Veterinary Clinical Medicine-I (General &amp; Systemic)</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VMD-412</td>
<td>Veterinary Preventive Medicine-I (Bacterial, Fungal &amp; Rickettsial Diseases)</td>
<td>2+0=2</td>
</tr>
<tr>
<td>VLD-411</td>
<td>Veterinary Clinical Biochemistry and Laboratory Diagnosis-I</td>
<td>0+1=1</td>
</tr>
<tr>
<td>VCP-411</td>
<td>Veterinary Clinical Practice</td>
<td>0+5=5</td>
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Total Credits 10+10=20

SEMPER-VIII

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPT-421</td>
<td>Veterinary Toxicology</td>
<td>2+0=2</td>
</tr>
<tr>
<td>VSR-421</td>
<td>Regional Veterinary Surgery</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VGO-421</td>
<td>Veterinary Obstetrics</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VMD-421</td>
<td>Veterinary Clinical Medicine-II (Metabolic &amp; Deficiency Diseases)</td>
<td>2+0=2</td>
</tr>
<tr>
<td>VMD-422</td>
<td>Veterinary Preventive Medicine –II (Viral &amp; Parasitic Diseases)</td>
<td>2+0=2</td>
</tr>
<tr>
<td>VLD-421</td>
<td>Veterinary Clinical Biochemistry and Laboratory Diagnosis-II</td>
<td>0+1=1</td>
</tr>
<tr>
<td>VCP-421</td>
<td>Veterinary Clinical Practice</td>
<td>0+5=5</td>
</tr>
<tr>
<td>TVC-421</td>
<td>Veterinarian in Society (Non Credit)</td>
<td>1+0=1</td>
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Total: Credits 10+8=18

FIFTH PROFESSIONAL

SEMPER- IX

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>VSR-511</td>
<td>Veterinary Orthopedics and Lameness</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VMD-511</td>
<td>Animal Welfare, Ethics &amp; Jurisprudence</td>
<td>2+0=2</td>
</tr>
<tr>
<td>VMD-512</td>
<td>Zoo/Wild Animal Breeding, Management, Nutrition and HealthCare</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VMD-513</td>
<td>Pet Animal Breeding Management, Nutrition and HealthCare</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VGO-511</td>
<td>Veterinary Andrology and Reproductive Techniques</td>
<td>1+1=2</td>
</tr>
<tr>
<td>VPE-511</td>
<td>Environment and Environmental Hygiene</td>
<td>2+1=3</td>
</tr>
<tr>
<td>VAE-511</td>
<td>Livestock Entrepreneurship</td>
<td>1+0=1</td>
</tr>
<tr>
<td>VCP-511</td>
<td>Veterinary Clinical Practice</td>
<td>0+5=5</td>
</tr>
</tbody>
</table>

Total Credits 9+10=19

22
### SEMESTER-WISE DISTRIBUTION OF THEORY AND PRACTICAL

<table>
<thead>
<tr>
<th>Professional Year</th>
<th>Semester</th>
<th>Theory</th>
<th>Practical</th>
<th>Total</th>
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<tr>
<td>First</td>
<td>I</td>
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<tr>
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<td>III</td>
<td>12</td>
<td>9</td>
<td>21*</td>
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<tr>
<td></td>
<td>IV</td>
<td>12</td>
<td>9</td>
<td>21*</td>
</tr>
<tr>
<td>Third</td>
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<td>12</td>
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<td>19</td>
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<td>VI</td>
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</tr>
</tbody>
</table>

* 1 credit (0+1) each for two courses on Livestock Farm Practice (non credit) included. ** 1 credit (1+0) for Veterinarian in Society (non credit) included.

**Other Non-Credit Course (4 Credits)**

- Tracking Programmes - Two programmes of 2 Credits each = 4 Credits

### SUBJECT-WISE COURSES AND CREDIT HOURS

#### COURSE NO. COURSE TITLE CREDIT HOURS SEMESTER

1. Veterinary Anatomy

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDIT HOURS</th>
<th>SEMESTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAN-111</td>
<td>Veterinary Gross; Anatomy-I (Osteology, Arthrology &amp; Biomechanics)</td>
<td>1+2</td>
<td>I</td>
</tr>
<tr>
<td>VAN-121</td>
<td>Veterinary Gross Anatomy-II (Myology, Neurology, Angiology &amp; Aesthesiology)</td>
<td>2+2</td>
<td>II</td>
</tr>
<tr>
<td>VAN-211</td>
<td>Veterinary Histology &amp; Embryology</td>
<td>2+2</td>
<td>III</td>
</tr>
<tr>
<td>VAN-221</td>
<td>Veterinary Splanchnology &amp; Applied Anatomy</td>
<td>1+1</td>
<td>IV</td>
</tr>
</tbody>
</table>

**Total Credits**

|                | 6+7 =13 |

2. Veterinary Physiology and Biochemistry

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDIT HOURS</th>
<th>SEMESTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPB-111</td>
<td>Veterinary Physiology-I (Blood, Cardiovascular &amp; Excretory Systems and Body Fluids)</td>
<td>2+1</td>
<td>I</td>
</tr>
<tr>
<td>VPB-112</td>
<td>General Veterinary Biochemistry</td>
<td>1+1</td>
<td>I</td>
</tr>
<tr>
<td>VPB –121</td>
<td>Veterinary Physiology-II (Neuromuscular Digestive &amp; Respiratory Systems)</td>
<td>2+1</td>
<td>II</td>
</tr>
<tr>
<td>VPB-122</td>
<td>Veterinary Intermediary Metabolism</td>
<td>2+1</td>
<td>II</td>
</tr>
<tr>
<td>VPB-221</td>
<td>Veterinary Physiology-III (Endocrinology, Reproduction Growth &amp; Environmental Physiology)</td>
<td>3+1</td>
<td>IV</td>
</tr>
<tr>
<td>VPB- 321</td>
<td>Animal Biotechnology</td>
<td>2+1</td>
<td>VI</td>
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</tbody>
</table>

(To be taught Jointly with VMC & VGO)

**Total Credits**

|                | 12+6 =18 |

23
3. Veterinary Pharmacology & Toxicology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPT-311</td>
<td>General and Systemic Veterinary Pharmacology</td>
<td>2+1</td>
<td>V</td>
</tr>
<tr>
<td>VPT-321</td>
<td>Veterinary Neuropharmacology</td>
<td>2+1</td>
<td>VI</td>
</tr>
<tr>
<td>VPT-411</td>
<td>Veterinary Chemotherapy</td>
<td>2+0</td>
<td>VII</td>
</tr>
<tr>
<td>VPT-421</td>
<td>Veterinary Toxicology</td>
<td>2+0</td>
<td>VIII</td>
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</tbody>
</table>

**Total Credits** 8+2= 10

4. Veterinary Parasitology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPA-211</td>
<td>General Veterinary Parasitology &amp; Helminthology</td>
<td>3+1</td>
<td>III</td>
</tr>
<tr>
<td>VPA-221</td>
<td>Veterinary Entomology and Acarology</td>
<td>1+1</td>
<td>IV</td>
</tr>
<tr>
<td>VPA-222</td>
<td>Veterinary Protozoology</td>
<td>2+1</td>
<td>IV</td>
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</tbody>
</table>

**Total Credits** 6+3=9

5. Veterinary Microbiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMC-211</td>
<td>General Veterinary Microbiology</td>
<td>1+1</td>
<td>III</td>
</tr>
<tr>
<td>VMC-221</td>
<td>Veterinary Immunology and Serology</td>
<td>1+1</td>
<td>IV</td>
</tr>
<tr>
<td>VMC-311</td>
<td>Systematic Veterinary Bacteriology and Mycology</td>
<td>2+1</td>
<td>V</td>
</tr>
<tr>
<td>VMC-321</td>
<td>Systematic Veterinary Virology</td>
<td>2+1</td>
<td>VI</td>
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</tbody>
</table>

**Total Credits** 6+4=10

6. Veterinary Pathology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPP-211</td>
<td>General Veterinary Pathology</td>
<td>1+1</td>
<td>III</td>
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<tr>
<td>VPP-221</td>
<td>Systemic Veterinary Pathology</td>
<td>2+1</td>
<td>IV</td>
</tr>
<tr>
<td>VPP-311</td>
<td>Special Veterinary Pathology</td>
<td>2+1</td>
<td>V</td>
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<tr>
<td>VPP-321</td>
<td>Avian Pathology</td>
<td>1+1</td>
<td>VI</td>
</tr>
<tr>
<td>VPP-322</td>
<td>Aquatic Animal Diseases, Health Care and Management</td>
<td>1+1</td>
<td>VI</td>
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</table>

(To be taught jointly with VMD and LPM)

Associated with the teaching of VLD-411, VLD-421, VMD-512 & VMD-513

**Total Credits** 7+5=12

7. Veterinary Public Health & Epidemiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPE-311</td>
<td>Milk &amp; Meat Hygiene, food safety and Public health</td>
<td>2+1</td>
<td>V</td>
</tr>
<tr>
<td>VPE-321</td>
<td>Veterinary Epidemiology and Zoonosis</td>
<td>2+1</td>
<td>VI</td>
</tr>
<tr>
<td>VPE-511</td>
<td>Environment and Environmental Hygiene</td>
<td>2+1</td>
<td>IX</td>
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</table>

**Total Credits** 6+3=9
8. **Animal Nutrition**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
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</thead>
<tbody>
<tr>
<td>ANN-111</td>
<td>Principles of Animal Nutrition &amp; Feed Technology</td>
<td>2+1</td>
<td>I</td>
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<tr>
<td>ANN-121</td>
<td>Applied Animal Nutrition-I (Ruminants)</td>
<td>2+1</td>
<td>II</td>
</tr>
<tr>
<td>ANN-211</td>
<td>Applied Animal Nutrition-II (Non-ruminants, Poultry &amp; Laboratory Animals)</td>
<td>2+1</td>
<td>III</td>
</tr>
</tbody>
</table>

Associated with the teaching of VMD-512 & VMD-513

**Total Credits**  
\[6+3 = 9\]

9. **Animal Genetics & Breeding**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
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<tbody>
<tr>
<td>AGB-111</td>
<td>Biostatistics and Computer Application</td>
<td>2+1</td>
<td>I</td>
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<tr>
<td>AGB-121</td>
<td>Principles of Animal Genetics and Population Genetics</td>
<td>2+1</td>
<td>II</td>
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<tr>
<td>AGB-211</td>
<td>Livestock and Poultry Breeding</td>
<td>2+1</td>
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</table>

Associated with the teaching of VMD-512 & VMD-513

**Total Credits**  
\[6+3 = 9\]

10. **Livestock Production Management**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
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</thead>
<tbody>
<tr>
<td>LPM-111</td>
<td>Livestock Production Management-I (General Principles and Ruminants)</td>
<td>3+1</td>
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<tr>
<td>LPM-121</td>
<td>Fodder Production &amp; Grassland Management</td>
<td>1+1</td>
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<tr>
<td>LPM-122</td>
<td>Livestock Production Management-II (Monogastric and Laboratory Animals)</td>
<td>1+1</td>
<td>II</td>
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<tr>
<td>LPM-211</td>
<td>Avian Production Management</td>
<td>1+1</td>
<td>III</td>
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<tr>
<td>LPM-221</td>
<td>Commercial Poultry Production and Hatchery Management</td>
<td>1+1</td>
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<tr>
<td>LPM-222</td>
<td>Livestock Production Management (Regional interest)</td>
<td>1+1</td>
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(Optional to be developed on the basis of regional interest)

Associated with teaching of VPP-322, VMD-512 & VMD-513

**Total Credits**  
\[8+6 = 14\]

11. **Livestock Products Technology**

<table>
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<tr>
<td>'LPT-311</td>
<td>Milk and Milk Products Technology</td>
<td>1+1</td>
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<tr>
<td>LPT-312</td>
<td>Abattoir Practice and Animal Product Technology</td>
<td>1+1</td>
<td>V</td>
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<tr>
<td>LPT-321</td>
<td>Meat Science</td>
<td>1+1</td>
<td>VI</td>
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**Total Credits**  
\[3+3 = 6\]

12. **Veterinary Gynaecology & Obstetrics**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>VGO-411</td>
<td>Veterinary Gynaecology</td>
<td>2+1</td>
<td>VII</td>
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<tr>
<td>VGO-421</td>
<td>Veterinary Obstetrics</td>
<td>1+1</td>
<td>VIII</td>
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<tr>
<td>VGO-511</td>
<td>Veterinary Andrology &amp; Reproductive Techniques</td>
<td>1+1</td>
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</tbody>
</table>

**Total Credits**  
\[4+3 = 7\]
13. Veterinary Surgery & Radiology

VSR-411  General Veterinary Surgery, Anaesthesiology and Diagnostic Imaging  2+2  VII
VSR-421  Regional Veterinary Surgery  2+1  VIII
VSR-511  Veterinary Orthopedics and Lameness  1+1  IX
Associated with the teaching of VMD-512 & VMD-513)

Total Credits  5+4=  9

14. Veterinary Medicine

VMD-411  Veterinary Clinical Medicine-I (General & Systemic)  2+1  VII
VMD-412  Veterinary Preventive Medicine -I (Bacterial, Fungal & Rickettsial Diseases)  2+0  VII
VMD-421  Veterinary Clinical Medicine -II (Metabolic & Deficiency Diseases)  2+0  VIII
VMD-422  Veterinary Preventive Medicine –II (Viral & Parasitic Diseases)  2+0  VIII
VMD-511  Animal Welfare, Ethics & Jurisprudence  2+0  IX
VMD-512  Zoo/Wild Animal Breeding, Management, Nutrition and Healthcare  1+1  IX
(To be taught jointly with AGB, LPM, ANN, VPP arid VSR)
VMD-513  Pet Animal Breeding, Management Nutrition-and Heart Care  1+1  IX
(To be taught jointly with AGB, LPM. ANN, VPP and VSR)
Associated with the teaching of VPP-312

Total Credits  12+3=  15

15. Veterinary & Animal Husbandry Extension Education

VAE-311  Principles & Techniques of Veterinary and A. H. Extension  2+1  V
VAE -321  Livestock Economics, Marketing and Business Management  2+1  VI
VAE-511  Livestock Entrepreneurship  1+0  IX

Total Credits  5+2=7

16. Teaching Veterinary Clinical Complex

VCP-411  Veterinary Clinical Practice  0+5  VII
VCP-421  Veterinary Clinical Practice  0+5  VIII
VCP-511  Veterinary Clinical Practice  0+5  IX
VLD-411  Veterinary Clinical Biochemistry and Laboratory Diagnosis-I  0+1  VII
(To be taught jointly by VPB & VPP)
VLD-421  Veterinary Clinical Biochemistry and Laboratory Diagnosis-II 0+1  VIII
(To be taught by VPB, VPP, VMC & VPT)

TVC-421  Veterinarian in Society (Non Credit) 1+0  VIII

Total Credits  1+17= 18

17.  Instructional Livestock Farm Complex

LFP-211  Livestock Farm Practice (Non-Credit) 0+1=1  III
LFP-221  Livestock Farm Practice (Non-Credit) 0+1=1  IV

Total Credits  0+2=2

GRAND TOTAL Courses:  65

Credits:  Core Courses: 177 (101+76)
Including Non Credit Courses: 1+0(Veterinarian in Society) and 2 credits (0+1) x 2
(Livestock Farm Practice) Non-Core Course: 4 credits (tracking programmes)

Group of subject-wise credit distribution:

1.  Basic Veterinary Subjects  23+15=38
2.  Production Subjects  23+15=38
3.  Pre-clinical Subjects  27+14=41
4.  Clinical Subjects  27+13=40
5.  Teaching Veterinary Clinical Complex  0+17 =17

Total:  100+74=174
DEPARTMENT OF VETERINARY ANATOMY

SEMESTER - I

VETERINARY GROSS ANATOMY - I
(Osteology, Arthrology and Biomechanics)

VAN - 111
Credit hours 1+2=3

THEORY
Osteology: Definition of the terms used in Veterinary Anatomy in general and osteology in particular. Classification, physical properties and structure of bones, Gross study of bones of appendicular and axial skeleton of Ox / Buffalo as type species and comparison with Sheep / Goat, Pig, Horse, Dog and Fowl with particular emphasis on their topography, contour, landmarks and functional anatomy from clinical and production point of view. Detail study of bones of head, neck, thorax, abdomen, pelvis, tail, fore limb and hind limb.

Arthrology: Classification and structure of joints. Articulation and ligaments of head, neck, thorax abdomen, pelvis, tail, fore limb and hind limb of Ox / Buffalo as type species, their structure, functional anatomy and comparison with other domestic animals from clinical and production point of view.

Biomechanics: Biomechanics and its application with reference to quadruped locomotion, kinetics of locomotion, stress and strains falling on locomotor apparatus, landmarks, angulation and weight bearing bones of ox, buffalo and comparison with other animals particularly horse and dog.

PRACTICAL
Comparative study of the bones of appendicular and axial skeleton, their structure, landmarks, angulation, weight bearing and function in Ox/Buffalo and comparison with that of Sheep/Goat, Pig, Horse, Dog and Fowl and relate them in live animals. Dissection of joints of all the body regions of Ox/Buffalo to study the structure and function and comparison with other domestic animals. Biomechanics and kinetics of locomotion.

SEMESTER - II

VETERINARY GROSS ANATOMY - II
(Myology, Neurology, Angiology and Aesthesiology)

VAN – 121
Credit Hours: 2+2=4

THEORY
Myology: Structural and functional classification of muscles. Gross study of skeletal muscles of head, neck, thorax, abdomen, pelvis, tail, fore limb and hind limb with their origin, insertion and action and their structural and functional importance from clinical and production point of view in Ox / Buffalo as a type species. Comparative study of muscles in other domestic animals.
Neurology: Study of central, peripheral and autonomic nervous system. Gross study of meninges, brain, spinal cord, cranial and spiral nerves and their functional importance from clinical and production point of view. Gross morphology and disposition of the nerves of head, neck, thorax, abdomen, pelvis, tail, forelimb and hind limb in Ox / Buffalo as a type and comparative study in other domestic animals. Angiology: Gross morphology of heart and disposition of arteries, veins and lymphatic of head, neck, thorax, abdomen, pelvis, tail, forelimb and hind limb in Ox / Buffalo as type and comparison with that of Sheep / Goat, Pig, Horse, Dog and Fowl. Their importance from clinical and production point of view. Anesthesiology: Gross morphological study of the eye, ear, nose, hoof, horn and skin in Ox / Buffalo. Their functional importance and comparative study in other domestic animals. Computer simulation for dissection and study of body parts.

(Note: The general outline of muscular, circulatory and nervous system be taken up in the beginning of this course to be followed by gross disposition of group of muscles, arteries, veins and lymphatics simultaneously region-wise.)

PRACTICAL
Demonstration of embalming of the carcass and preservation. Dissection/computer simulation models for dissection and demonstration of body parts. Dissection of muscles of all body regions of Ox/Buffalo, their location, functional role in the body and comparison with other species. Study of brain and spinal cord in different domestic animals. Study of heart and major blood vessels in different species of animals. Area of auscultation of heart. Dissection of Wood vessels, lymphatics and nerves of head, neck, thorax, abdomen, pelvis, tail, forelimb and hind limb in Ox / Buffalo and comparative study in other domestic animals. Demonstration of palpable Lymph nodes of the body. Study of the sites of cornual, auriculo palpebral, peterson's, infraorbital, radial, ulnar, median, paravertebral, epidural, pudendal, perineal and tibial nerve blocks and their clinical importance. Dissection for study of eye, ear, nose, hoof and horn.

SEMESTER- III

VETERINARY HISTOLOGY AND EMBRYOLOGY

VAN -211 Credit Hours 2+2=4

THEORY
PRACTICAL
Microscopy and micrometry. Comparison of light and electron microscopy. Histological techniques, Processing of tissues for paraffin sectioning and Haematoxylin and Eosin staining. Microscopic examination and identification of basic tissue and their components. Examination of histological sections of various organs/systems of domestic animals and birds. Study of structure of mammalian ova and spermatozoa and egg of fowl. Study of the whole mount and serial sections of avian and mammalian embryo / foetus at different stages of development Microscopic anatomy of fetal membranes and placenta of various domestic animals.

SEMESTER- IV
VETERINARY SPLANCHNOLOGY AND APPLIED ANATOMY
VAN-221 Credit Hours 1+1=2

THEORY
Gross morphological and topographical study of various organs of digestive, respiratory, urinary, male and female reproductive, lymphatic and endocrine systems, Pleura and Peritoneum in Ox Buffalo as type and their comparison with that of Sheep/Goat, Pig, Horse, Dog and Fowl. Different Terminology used in applied Anatomy. Palpable Anatomical body structures and their use in health and disease.

PRACTICAL
Demonstration and description of palpable anatomical structures on the body surface of live animal (head, neck, thorax, pectoral bones, pelvic bones, limbs). Outline of body cavities and study of organs of digestive, respiratory, urinary, reproductive, lymphatic and endocrine systems of Ox /Buffalo and their comparative anatomy in other species. Pleural and peritoneal reflections. Comparative topographic anatomy in live animals. Nerve blocks and their sites. Applied anatomy of sites for thoraco-centesis, auscultation, abdominocentesis. rumenotomy, laparotomy, splenectomy, enterotomy, palpation of anatomical structures in the abdominal and perineal regions. Radiographic visualisation of gross anatomical features of various regions of the body. (Note: Computer simulation model studies shall be used for better understanding of the subject.)

REFERENCE BOOKS
2. The Anatomy of the Domestic Animals-Septimus Sisson
9. Medical Embryology-Jan Langman
27. Comparative anatomy of the Vetebrates-George C. Kent.
28. Miller’s Anatomy of the Dog
29. A colour atlas of Anatomy of small laboratory animals-P. popesko, V. rajtova, J. Horak.
30. Comparative Veterinary Histology-Elizabeth Aughey, Fredric L. Frye.
34. Reproduction in Farm Animals-E. S. E. Hafez, B. Hafez.
35. Veterinary Obstetrics and Genital diseases-Stephen J. Roberts.
36. Veterinary Surgical Techniques-Amresh kumar
37. Congenital Malformations in Laboratory and Farm Animals-Kalman T. Szabo.
38. Vertebrate Embryology- Robert S. McEWEN.
THEORY
Introduction to Blood; Properties of blood as a body fluid, metabolism and fate of R.B.C; Hemoglobin-chemical structure, synthesis, physiological functions, derivatives of hemoglobin; Anemia; Plasma proteins, lipids -origin and function; Coagulation mechanisms and regulation of haemostasis; fibrinolysis; anticoagulation mechanism. Blood pH, Wood volume and their determination. Osmotic fragility, erythrocyte sedimentation rate, haemtocrit and haemolysis; Leucocyte- phagocytic and immunogenic functions.

Heart- morphological characteristic, systemic excitability conduction & transmission processes. Cardiac Cycle:-Regulation of cardiac output; coronary circulation; properties of pulse; metabolism & energetic of working myocardial cell, extrinsic and intrinsic regulation; ECG and its significance in Veterinary Sciences - Echocardiography.


Kidney:- Functional morphology of nephron, factors determining filtration pressure, determination of glomerular filtration rate (GFR) and renal plasma flow -Reabsorption mechanisms for glucose, protein, amino acids, electrolytes; ammonium mechanism, glomerulotubular balance, methods of studying renal functions; urine concentration; micturition, uraemia.

Fluid, water balance, fluid therapy, dehydration, water concentration mechanisms. Acid base balance and H+ regulation, correction and evolution of imbalances, total osmotic pressure, potassium balance, electrolyte and water imbalances, thirst Formation and excretion of urine in Birds.

Cerebrospinal fluid, synovial fluids -composition, formation and flow; Joints. Regulations of bone metabolism and homeostasis.

PRACTICAL
VETERINARY PHYSIOLOGY -II
(Neuromuscular, Digestive and Respiratory systems)

VPB-121
Credit Hours: 2+1 =3

THEORY

Muscle Physiology- basic muscle unit characteristic-electrical phenomenon in muscle cell - Membrane potential ionic basis of resting membrane potential, muscle action potential, excitation and propagation of impulse characteristics- latent period refractive ness, threshold level-all & none characteristics - contractile mechanism- excitation -contraction coupling- neuro-muscular transmission, types of muscle contraction, phenomenon of fatigue, rigor mortis.


Functions of nervous system-reflexes-control of posture and movements, autonomic nervous system and visceral control. Neurotransmitter wakefulness, sleep cycle. Higher function of neurons system -learning memory. Familiarization with common equipments used in neurophysiology (oscilloscope, electroencephalography, machine stimulators etc).


Morphological characteristic of monogastric and poly gastric digestive system. Prehension, rumination; daefecation, vomition; regulation of secretory function of saliva, stomach, intestine, pancreas; bile secretion; hunger, appetite control, developmental aspects of digestion; luminous, membranous and microbial digestion in rumen and intestine; permeability characteristics of intestine, forces governing absorption, control intestinal transport of electrolyte and water, enzymatic digestion in monogastric and fermentative digestion in rumen, modification of toxic substances in rumen. Digestion in birds.


PRACTICAL


REFERENCE BOOKS

1. Dukes Physiology of Domestic animals – Edited by Melvin J Swenson.

SEMESTER- IV

VETERINARY PHYSIOLOGY - III
(Endocrinology, Reproduction, Growth and Environmental Physiology)

VPB-221 Credit Hours: 3+1=4

THEORY
Hormone cell interaction, sub-cellular mechanisms-metabolism of hormones-methods of study of endocrine system; Receptors- mechanism of regulation; Chemistry of hypothalamo -hypophyseal hormones, target organ, pineal, thyroid, thymus, pancreas, adrenal, prostaglandins, hormones of calcium metabolism, disorders, rennin-angiotensin system, atrial natriuretic factors, erythropoietin, GI hormones, pheromones.

Genetic & endocrine control of gonadal development modification of gonadotrophin release, ovarian functions, follicular development dynamics, endocrine and receptor profiles, sexual receptivity, ovarian cycle, post partum ovarian activity, ovum transport, capacitation, fertilization, reproductive cycles in farm animals- hormones present in the biological fluids during pregnancy and their uses for the diagnosis of pregnancy -maternal foetal placental participation in pregnancy & parturition, immunology of gestation, preparturient endocrine events.


Functional and metabolic organization of mammary glands -structure and development; effect of estrogens and progesterone; hormonal control of mammary growth; lactogenesis and galctogenesis; biosynthesis of milk constituents- secretion of milk, mastitis and metabolism, prolactin and mammary tumours.-lactation cycle.

Biochemical and genetic determinants of growth, regulation of growth, metabolic and hormone interactions, factors affecting efficiency of growth and production in ruminants and single stomach animals. Growth in meat producing animals & birds, growth curves. Recombinant gene transfer technologies for growth manipulation- advantages and limitations. Protein deposition in animals and poultry.
Heat balance, heat tolerance, hypothermia, hyperthermia, thermo-regulation in farm animals, role of skin, responses of animals to heat and cold, fever, body temperature and hibernation. Temperature regulation in birds.

Climatology - various parameters and their importance. Effect of different environmental variables like temperature, humidity, light, radiation, altitude on animal performance. Acclimation, acclimatization - general adaptive syndrome. Clinical effect on endocrine - reproductive function, circadian rhythm.

Neurophysiology of behaviour, types of behaviour, communication, Learning and memory, behavioural plasticity.

PRACTICAL

REFERENCE BOOKS
4. Reproduction in Farm Animals – by E.S.E. Hafez.
5. Adaptation in Domestic animals - E.S.E. Hafez and B. Hafez.

SEMESTER- I

GENERAL VETERINARY BIOCHEMISTRY

VPB-112 Credit Hours 1+1=2

THEORY
Biochemistry of carbohydrates: Biological significance of important Monosaccharides (ribose, glucose, fructose, galactose, mannose and amino sugars), Disaccharides (maltose, isomaltose, lactose, sucrose & cellobiose), Polysaccharides, (starch, dextrins, dextrans, glycogen, cellulose, insulin, chitin), and Mucopolysaccharides including bacterial cell wall polysaccharides.
Biochemistry of nucleic acids: Chemistry of purines, pyrimidines, nucleosides and nucleotides. Biological significance of nucleosides & nucleotides. Structures and functions of deoxyribonucleic acid (DNA) and a typical ribonucleic acid (RNA).

PRACTICAL

SEMESTER –II

VETERINARY INTERMEDIARY METABOLISM

VPB-122 Credit Hours 2+1=3

THEORY
Enzyme units: International Units, katal, turnover number & specific activity.
Carbohydrate metabolism: Glycolysis, Kreb's cycle, glyoxylate cycle, HMP shunt, gluconeogenesis, Cori cycle, glycolgenesis, glycogenosis, hormonal control of carbohydrate metabolism & regulation of blood sugar Bioenergetics of carbohydrate metabolism
Lipid metabolism: Bete oxidation of fatty acids, ketone body formation, biosyntheses of fatty acids, triacylglycerol, phospholipids & Apoprotein metabolism. Bioenergetics of lipid metabolism.
Protein metabolism: Biosynthesis and degradation. D eamination, transamination and decarboxylation of amino acids. Ammonia transport and urea cycle
Nucleic acids: Metabolism of purines and pyrimidines. DNA & RNA biosynthesis.
Integration of metabolism. Metabolic functions of macro and micro nutrients, Metabolic functions of lipid and water soluble vitamins. Uses of isotopes in metabolic studies.

PRACTICAL
THEORY:
Definitions, basic concepts and scope of animal biotechnology. Recombinant DNA technology. Gene cloning, vectors and expression vectors. Transformation and transfection. Polymerised chain reaction (PCR), construction of genomic library and cDNA library. DNA sequencing. Principles of transfer of nucleic acids and proteins (Southern, Northern and Western blotting), Nucleic acid hybridization, DNA probes and DNA fingerprinting.
Biotechnological application in animal improvements:
Embryo biotechniques, in-vivo and in-vitro embryo production and preservation, sexing, micromanipulation and cloning, transgenic animal and biopharming.
Mapping of genome and genome sequencing. Marker assisted selection. Gene banking.
Nutritional biotechnology including bioconversion of lignocellulose, genetic manipulation of microbes for improved feed utilization and health. Animal tissue culture, transformation and cell lines, tumor markers and acute phase proteins
Molecular diagnosis including PCR and DNA probes. Hybridoma and monoclonal antibodies. New generation vaccines: Subunit recombinant and recombinant vectored vaccines
Fermentation process and technologies for milk, meat and leather. Ethics arid regulatory issues in Biotechnology. IPR. Bioinformatics.

PRACTICAL
DNA and plasmid isolation. Gel electrophoresis. PCR. Screening of gametes and embryo. Use of Multimedia and audio-visual aids for molecular biology aspects.

(The course is to be taught jointly with the Departments of Veterinary Microbiology and Veterinary Gynaecology and Obstetrics)

REFERENCE BOOKS


* Latest editions may be followed.

DEPARTMENT OF VETERINARY PHARMACOLOGY AND TOXICOLOGY

SEMESTER -V

GENERAL AND SYSTEMIC VETERINARY PHARMACOLOGY

VPT-311 Credit Hours 2+1= 3

THEORY


Drugs acting on Cardiovascular system: cardiac glycosides, antiarrhythmic drugs, vasodilators and antihypertensive agents, haematjincs, coagulants and anticoagulants.

Drugs acting on respiratory system: Expectorants and antitussives, respiratory stimulants, bronchodilators and mucolytics.

PRACTICAL


SEMESTER- VI

VETERINARY NEUROPHARMACOLOGY

VPT-321 Credit Hours 2+1=3

THEORY


PRACTICAL

Demonstration of the effect of CNS depressants, analgesics, CNS stimulants, muscle relaxants, anticonvulsants, local anaesthetics in laboratory animals. Demonstration of the action of adrenergic and cholinergic agonists and antagonists on isolated and intact preparations of the animals. Alternate use of animals as model for demonstration.
SEMESTER- VII

VETERINARY CHEMOTHERAPY

VPT-411

CREDIT HOURS 2+0=2

THEORY

Antibacterial agents: Classification, general principles in antibacterial chemotherapy, antibacterial resistance. Sulphonamides and their combination with diaminopyrimidines, sulfones, nitrofurans, nalidixic acid and fluoroquinolones.


Antifungal agents: Topical and systemic agents including anti-fungal antibiotics.

Anthelmintics: Drugs used against cestodes, trematodes, nematodes, drug resistance, broad-spectrum anthelmintics.

Antiprotozoal agents: Drugs used in trypanosomosis, theileriosis, babesiosis, coccidiosis, amoebiosis, giardiosis and trichomonosis.


New drugs and drug formulations.

SEMESTER- VIII

VETERINARY TOXICOLOGY

VPT-421

CREDIT HOURS 2+0=2

THEORY


Toxicity caused by plants and weeds: Cyanogenetic plants, abrus, lantana, ipomoea, nerium, datura, nux vomica, castor, selenium containing plants oxalate producing plants, plants causing thiamine deficiency. Drug toxicity and toxicity caused by agrochemicals: organophosphates, carbamates, chlorinated hydrocarbons, pyrethroids. herbicides, fungicides, rodenticides and urea.

Residue toxicology: Hazards of residues, concepts of withdrawal time and MRLs, minimizing drug and toxic residues in animal products.

Venomous bites and stings: Snake bite, scorpion, spider, wasp stings and toad poisoning. Radiation hazards and industrial toxicants. Toxicity caused by food additives and preservatives.
REFERENCE BOOKS


DEPARTMENT OF VETERINARY PARASITOLOGY

SEMESTER -III

GENERAL VETERINARY PARASITOLOGY AND HELMINTHOLOGY

VPA- 211

CREDIT HOURS 3+1=4

THEORY


Classification of helminths. Characteristics of phylum (Platyhelminthes, Nemathelminthes and Acanthocephala). Salient morphological features of diagnostic importance. Life cycle of the helminths in relation to transmission, pathogenesis, epidemiology, diagnosis, general control measures of following helminthes of animals and birds.

Trematodes:
Liver flukes (Fasciola, Dicrocoelium and Opisthorchis), intestinal flukes (Fasciolopsis), blood flukes (nasal schistosomosis), cercarial dermatitis (Schistosoma and Ornithobilharzia), visceral schistosomosis (S. spindale, S. indica, S. incognitum), Amphistomes/immature amphistomosis (Paramphistomum, Cotylophoron, Gastrothylax, Gastrodiscus, Gigantocotyle, Gastrodiscoides, Pseudodiscus), Lung flukes (Paragonimus) and oviduct flukes (Prosthoogonimus), their importance in the diagnosis.

Cestodes:
Metacestodes (bladder worm), Ruminant tape worms (Moniezia, Avitellina, Stilesia), Dog tape worms (Dipylidium, Taenia, Multiceps and Echinococcus), Equine tape worms
(Anoplocephala, Paranoplocephala), Poultry tape worms (Davainea, Cotugnia, Raillietina, Amoebotaenia) and Broad fish tape worm (Diphyllobothrium), Dwarf tape worm (Hymenolepis).

Nematodes:
*Ascaris, Parascaris, Toxocara, Toxascaris, Ascaridia, Heterakis and Oxyuris.*


International regulations for control of different helminthic diseases.

**PRACTICAL**
Methods of collection, fixation, preservation and mounting of helminth parasites. Study of morphological characters of adults and their larval stages and damages caused by them. Identification of important trematodes, cestodes and nematodes. Examination of faecal samples for eggs of trematodes, cestodes and nematodes. Demonstration of the life cycle and development of the type species of Trematode, Cestode and Nematode.

**REFERENCE BOOKS**
2. Veterinary Parasitology - G.M. Urquhart *et al.*
3. Introduction to Animal Parasitology - J.D. Smyth.
5. Veterinary Helminthology – T. Kassai
6. General Veterinary Parasitology - P.C. Jain
9. Introduction to Animal Parasitology – J.D. Smyth

**SEMESTER- IV**

**VETERINARY ENTOMOLOGY AND ACAROLOGY**

**VPA-221**

**Credit Hours 1+1=2**

**THEORY**
General description of insecta and arachnida affecting domestic animals and birds. Arthropoda as direct/indirect parasites. Classification, Life Cycle and vector potentiality in relation to disease transmission, pathogenesis and control of following arthropods affecting animals and birds.

The biting midges (Culicoides), buffalo gnats /Black fly, (Simulium), sandflies (Phlebotomus). The mosquitoes (Culex, Anopheles and Aedes). Horse fly (Tabanus), Musca,
Stomoxys, Sarcophaga, Warbles (Hypoderma) and bots (Gasterophilus), Nasal bot (Oestrus ovis), Myiasis, Wingless flies (Hippobosca, Melophagus), bugs, lice (Haematopinus, Linognathus, Trichodectus, Damalinia, Menopon, Lipeurus, Menacanthus (Poultry lice). Fleas (Pulex, Ctenocephalides, Echidnophaga, Xenopsylla). Arachnids (Ticks and mites of Veterinary importance. Soft tick (Argasidae), (Argas, Onithodorus and Otobius).

Hard ticks (Boophilus, Hyalomma, Rhipicephalus, Haemaphysalis, Amblyomma, Ixodes), Mites (Demodex, Sarcoptes, Psoroptes, Notoedreus, Chorioptes). Anti-tick immunophrophylaxis Damages to hide and skins due to ectoparasitic infestation.

PRACTICAL
Demonstration of the type representatives of various groups of insects, ticks and mites through charts, specimen and mounted slides - Demonstration of different characters of Insecta and Arachnida (Ticks and mites). Procedure for diagnosis of arthropod infestation to hides and skin. Demonstration of enteric myiasis, Procedures for the collection, fixation, preservation and mounting of arthropod parasites.

REFERENCE BOOKS

2. Veterinary Parasitology - G.M. Urquhart et. al.
5. Veterinary Ectoparasites: Biology, Pathology & Control-Richard Wall & David Shearer

SEMESTER- IV
VETERINARY PROTOZOOLOGY

VPA-222 Credit Hours 2+1= 3

THEORY
Introduction and general description to protozoa and their development. Differentiation from protophyta, bacteria and rickettsia, Classification. Life cycle in relation to transmission, pathogenesis, diagnosis and control of protozoa of veterinary importance.

Kala azar (visceral) and cutaneous leishmaniasis, Animal trypanosomosis (Surra), trypanosomosis (due to African Trypanosoma) in cattle and man.

Bovine and avian trichomonosis, black head in turkeys (Histomonas), Bovine amoebae (Entamoeba) and Batantidium, Giardia sp, Coccidia and coccidiosis of poultry and animals. Cryptosporidiosis, Cyst forming coccidian (Toxoplasma, Sarcocystis), Neospora (Neospora caninum). Malaria parasite of animals and poultry (Plasmodium and Haemoproteus), Piroplasmosis (Babesia), Theilerosis (Theileria), Recent developments in protozoan vaccines for field use. International regulations for control of different protozoan diseases.
PRACTICAL

REFERENCE BOOKS

2. Veterinary Parasitology - G.M. Urquhart et. al.
4. Text Book of Veterinary Protozoology - B.B. Bhatia

DEPARTMENT OF VETERINARY MICROBIOLOGY
SEMESTER-III
GENERAL VETERINARY MICROBIOLOGY

VMC-211 Credit Hours 1+1=2
THEORY
Introduction, morphology, growth, nutrition, reproduction in fungi, Classification of fungi. Introduction to viruses: General properties, Replication, Cultivation and Purification of viruses. Cell-Virus interactions. Viral genetics. Interferon,

PRACTICAL
Equipment, Sterilization, disinfection and asepsis, Staining (simple & Grams, acid fast, lactophenol cotton blue), Special staining (metachromatic granules, capsular, spore). Bacterial motility, Preparation of culture media. Aerobic and anaerobic cultivation, Isolation of bacteria in pure culture, Morphological and cultural characteristics, biochemical characters, Antibiogram, Phenol coefficient test, Slide culture technique for fungus.

REFERENCE BOOKS

2. Practical Medical Microbiology – Collee, Dugid, Frazer and Marnion
3. Veterinary Virology – Murphy, Gibbs, Horzineck and Studert
SEMESTER -IV

VETERINARY IMMUNOLOGY AND SEROLOGY

VMC- 221                          Credit Hours 1+1=2

THEORY

PRACTICAL
Preparation of antigen, Raising of antisera, Concentration of Immunoglobulins, Agglutination (plate, tube). Precipitation {Agar gel precipitation test (AGPT), Crossed immunoelectrophoresis (CIE), Rocket Immunoelectrophoresis (RIE), Indirect agglutination (Latex co-agglutination, Passive haemagglutination (PHA), Reversed passive haemagglutrnarion (RPHA)}, Haemagglutination, Complement fixation test, immunoperoxkJase test (IPT), Fluorescent antibody technique (FAT), Enzyme linked immunosorbent assay (ELISA), Cell mediated immune (CMI) response. Veterinary biologicals (visits and appraisal).

REFERENCE BOOKS

1. Veterinary Immunology – 7th ed. Tizard
2. Immunology – Janus Kuby
3. Immunology – Ivan Roitt

SEMESTER- V

SYSTEMATIC VETERINARY BACTERIOLOGY AND MYCOLOGY

VMC- 311                          Credit Hours 2+1=3

THEORY
Study of following important pathogenic bacteria and fungi in relation to their morphology, isolation, growth, colonial, biochemical and antigenic characters. Pathogenicity and diagnosis of bacterial and fungal diseases caused by the following genera:

**PRACTICAL**
Laboratory identification of agents of Mastitis, Haemorrhagic septicaemia. Enteric infections. Brucellosis. Tuberculosis and Johnne's disease, Clostridial infections, Wooden tongue and Lumpy jaw, Anthrax, Glanders, AspergiWosis. Dermatophytosis, Demonstration of other agents of importance (Phycomycetes, yeasts etc.).

**REFERENCE TEXTBOOKS**

1. Veterinary Microbiology – Dwight C. Hirsh
2. Veterinary Microbiology & microbial diseases – Qiunn, Markey & Carter
3. Clinical Veterinary Microbiology - Qiunn & Carter
4. Essentials of Veterinary Microbiology – Carter & Wise

**SEMESTER- VI**

**SYSTEMATIC VETERINARY VIROLOGY**

VMC- 321 Credit Hours 2+1=3

**THEORY**
PRACTICAL
Glassware and media preparation, Demonstration of Cell culture, virus propagation by egg inoculation, animal inoculation and cell culture, study of cytopathogenesis, viral inclusions, diagnostic procedures, serological techniques, preservation and transportation of clinical samples for virological investigations. Diagnostic procedures for Peste des petits ruminants (PPR), FMD, Ranikhet disease (RD), Blue tongue, Infectious bronchitis (IB), Infectious bursal disease (IBD) and other viral agents.

REFERENCE BOOKS
1. Veterinary Virology – Murphy, Gibbs, Horzineck and Studert
2. Essentials of Veterinary Microbiology – Carter & Wise
3. Veterinary Microbiology & microbial diseases – Qiunn, Markey & Carter
4. Veterinary Microbiology – Dwight C. Hirsh

DEPARTMENT OF VETERINARY PATHOLOGY

SEMESTER -III

GENERAL VETERINARY PATHOLOGY

VPP-211 Credit Hours 1+1=2

THEORY

PRACTICAL
Study of gross pathological specimens and recognition of pathological lesions. Post-mortem (P.M.) techniques. Collection of morbid materials for pathological diagnosis. Techniques for preservation and despatch of materials. Section cutting, staining and identification of
microscopic lesions. Examination of slides depicting changes in cells and tissues. Study of histopathological slides showing haemorrhage, congestion, oedema, infarction, hyperplasia, metaplasia, hypertrophy, necrosis, cloudy swelling, amyloid degeneration, fatty changes, calcification, infiltration etc. Examination and interpretation of oncological tissue slides.

**SEMESTER - IV**

**SYSTEMIC VETERINARY PATHOLOGY**

**VPP-221**

**THEORY**
Pathological changes including neoplasms in non-infectious disease conditions affecting Digestive System (mouth, pharynx, salivary glands, oesophagus, stomach, intestines, liver, gall bladder, pancreas), Respiratory System (nasal cavity, larynx, bronchi, trachea, lungs and pleura), Musculoskeletal System (muscle, bone, joints, ligaments, tendons), Cardio-vascular System (pericardium, myocardium, epicardium, endocardium, arteries, veins), Haematopoietic System (bone marrow), Lymphoid System (lymph nodes, vessels and spleen), Urinary System (kidneys, ureter, bladder and urethra), Reproductive System (male and female genital organs), Nervous System (brain, spinal cord and peripheral nervous system), Endocrine System (adrenal, thyroid, thymus, pituitary, parathyroid and pancreas). Skin and Appendages (hoof and horn), Ear and Eye.

**PRACTICAL**
Post-mortem examination of large and small animals, recording of gross lesions and compiling the postmortem report (including vetero-legal cases), despatch of morbid material in vetero-legal cases, study of gross specimens and histopathological slides pertaining to systemic pathology. Collection and examination of clinico-pathological specimens (blood, urine, body fluids, etc.) for diagnosis of systemic affections.

**SEMESTER- V**

**SPECIAL VETERINARY PATHOLOGY**

**VPP- 311**

**THEORY**
General pathology of viral infections. Pathogenesis, gross and microscopic pathology of Foot and mouth disease, Rinderpest, malignant catarrhal fever, blue tongue, infectious bovine rhinotracheitis, bovine viral diarrhoea, caprine encephalitis-arthritis complex, PPR, equine infectious anaemia, equine influenza, equine viral arteritis, equine rhinopneumonitis, African horse sickness, classical swine fever, Aujeszky's disease, swine influenza, rabies, canine distemper, infectious canine hepatitis, canine parvovirus, feline panleukopenia, maedi, jaagziekte, scrapie, bovine and feline spongiform encephalopathies, pox virus diseases in different animals. Vesicular stomatitis, vesicular exanthema, equine encephalomyelitis, diseases caused by rota and corona viruses,
General pathology of bacterial infections. Pathogenesis, gross and microscopic pathology of Tuberculosis, Johne's disease, actinomycosis, actinobacillosis, anthrax, clostridial group of diseases, streptococcosis including streptococcal infections in horses, staphylococcosis, glanders, pasteurellosis, leptospirosis, listeriosis, swine enteritis, brucellosis, corynebacterium infections, nocardiosis, campylobacteriosis, Hemophilus, salmonellosis and colibacillosis in swine.

General pathology of mycotic infections. Pathogenesis, gross and microscopic pathology of superficial and deep mycoses - ringworm, favus, aspergillosis, zygomycosis, histoplasmosis, cryptococcosis and candidiasis.

General pathology of helminthic and protozoal infections. Pathogenesis, gross and microscopic pathology of fascioliasis, amphi stomiasis, ascariasis, strongylosis, hemorchiasis, spirocercosis, filariosis, hookworm, tapeworm infections, coccidiosis, toxoplasmosis, babesiosis, theileriasis and trypanosomiasis. Pathological changes in nutritional and metabolic diseases: (deficiency/excess of carbohydrates, proteins, fats, minerals and vitamins and in conditions like milk fever, pregnancy toxemia, post-parturient haemoglobinuria, ketosis, hypomagnesemic tetany, azoturia, piglet anaemia and sway back/enzootic ataxia and Rheumatism like syndrome).

General pathology of toxicosis. Pathogenesis, gross and microscopic pathology of heavy metal toxicities like arsenic, copper, lead, mercury, cadmium, strychnine, nitrate/nitrite, hydrocyanic acid (HCN), fluoride, oxalate toxicities, insecticide/pesticide poisoning. Pathogenesis, gross and microscopic pathology of aflatoxicosis, ochratoxicosis, trichothecosis and ergototoxicosis. Pathology of exotic and emerging diseases.

**PRACTICAL**
Post-mortem examination of large and small animals for diagnosis of special diseases. Study of gross lesions particularly those of pathognomonic significance. Study of histopathological slides pertaining to special pathology including special staining of causative agents. Study of rapid diagnostic techniques like biopsy, exfoliative cytology, frozen sectioning.

**SEMESTER - VI**

**AVIAN PATHOLOGY**

VPP-321 Credit Hours 1+1=2

**THEORY**

Bacterial Diseases: Pathogenesis, gross and microscopic pathology of Colibacillosis (colisepticamia, yolk sac infection, egg peritonitis, coligranuloma), infectious coryza, clostridial diseases (botulism, necrotic enteritis, gangrenous dermatitis, ulcerative enteritis),
salmonellosis (Pullorum disease, fowl typhoid, paratyphoid infection), fowl cholera, tuberculosis and spirochaetosis  
Mycoplasmal and Chlamydial Diseases: Pathogenesis, gross and microscopic pathology of Mycoplasma gallisepticum infection (chronic respiratory disease), Mycoplasma synoviae infection, Avian chlamydiosis (psittacosis).  
Fungal Diseases: Pathogenesis, gross and microscopic pathology of aspergillosis, thrush and favus.  
Mycotoxicosis: Pathogenesis, gross and microscopic pathology of Aflatoxicosis, ochratoxicosis and trichothecenes.  
Parasitic Diseases: Pathogenesis, gross and microscopic pathology of Helminthic diseases (flukes, cestodes, nematodes), protozoal diseases (coccidiosis, histomoniasis), ectoparasites, Avian malaria  
Nutritional and metabolic diseases: Pathogenesis, gross and microscopic pathology of major diseases due to deficiency/excess of carbohydrates, proteins, minerals and vitamins in poultry.  
Vices and Miscellaneous Diseases: Pathology of important vices and miscellaneous conditions. Pathology of exotic and emerging poultry diseases.  

PRACTICAL  

SEMESTER- VI  
AQUATIC ANIMAL DISEASES, HEALTH CARE AND MANAGEMENT  
VPP-322  
Credit Hours 1+1=2

THEORY  

PRACTICAL  

(To be taught jointly with Departments of Livestock Production Management and Veterinary Medicine)

REFERENCE BOOKS

1. Veterinary Pathology (199) Jones, Hunt, King William & Wilkins
6. Textbook of Special Veterinary Pathology-Infectious Diseases of Livestock and Poultry. J.L. Vegad. IBDC publishers

DEPARTMENT OF VETERINARY PUBLIC HEALTH AND EPIDEMIOLOGY

SEMESTER- V

MILK AND MEAT HYGIENE, FOOD SAFETY AND PUBLIC HEALTH

VPE-311 Credit Hours 2+1=3

THEORY

PRACTICAL
Visit to abattoirs, meat processing plants, marketing centers and food service establishments. Ante-mortem and post mortem inspection of food animals. Methods of slaughter (demonstration at the slaughter houses). Demonstration of speciation of meat. Physical and bacteriological quality of meat and aquatic foods (fish). Demonstration of toxic chemical and microbiological residues in milk and meat

SEMESTER -VI

VETERINARY EPIDEMIOLOGY AND ZOONOSES

VPE- 321 Credit Hours 2+1 =3

THEORY
Definition, history and socio-economic impact of zoonotic diseases. Classification of zoonoses and approaches to their management. New, emerging, re-emerging and occupational zoonoses. Role of domestic, wild, pet and laboratory animals and birds in transmission of zoonoses. Zoonotic pathogens as agents of bio-terrorism. Reservoirs, clinical manifestations
in animals and humans, and the management of the following zoonoses: rabies, Japanese encephalitis, Kyasanur forest disease, influenza, anthrax, brucellosis, tuberculosis, leptospirosis, listeriosis, plague, rickettsiosis, chlamydiosis and dermatophytosis. Food borne zoonoses: salmonellosis, staphylococciosis, clostridial food poisoning, campylobacteriosis, helmintrrosis, toxoplasmosis and sarcocystosis. Veterinary Public Health Administration.

**PRACTICAL**

Field survey of zoonotic diseases. Concurrent isolation and identification of important pathogens of zoonotic importance from animal and human sources including foods of animal origin and their interpretation. Study of rural environment and health status of rural community. Visit to primary health centre/human hospital and study of the common diseases affecting rural/urban population, and probable relationships of these human disease conditions with animal diseases present in the area.

**SEMESTER- IX**

**ENVIRONMENT AND ENVIRONMENTAL HYGIENE**

**VPE-511**

**Credit Hours 2+1=3**

**THEORY**

**PRACTICAL**
carcasses, Pathogenic microbes in air. Demonstration of various ventilation systems in animal houses. Demonstration of toxic residues in water and air. Visit to local polluted sites and documentation of local environmental problems.

REFERENCE BOOKS

1. Text book of Preventive and Social Medicine*K. Park
2. Dairy Microbiology* Anandakrishnan C.P., Singh R.B and Padmanabhan P.N
3. Fundamentals of Dairy Microbiology* Prajapathy, J B
4. The technology of food preservation- Norman W. D., and James N.D
5. Environmental Pollution: Impact of technology on Quality of life- Ray, M.
6. Environmental Hazards and Human Health- Richard B.Philp
7. Wilsons’ Practical Meat Inspection- Wilson W.G
8. Food Microbiology* Frazier V. and Westhoff D.C.,
10. Food safety-Contaminants and Toxins- D’Mello J.P.F
11. Methods of Analysis and Analysis- James P.L. and Je.
12. Review of Parasitic Zoonosis- Parija S.C
13. Industrial Hygiene Evaluation Methods- Bisese S and James P.K.
15. Infectious Waste Management-A practical guide.-Garvin M. L.
17. Veterinary Preventive Medicine- White E.C. and Jardan FTW
18. A textbook of Preventive Medicine- Chakrabarti.A
19. Meat Hygiene* Gracy, Collins and Huey
20. Meat Hygiene* Joshi.B.P
23. Poultry Meat Hygiene and Inspection - Bremner A and Jhonston M
24. Diseases of Animals Transmissible to Man- Thapliyal D.C.
25. Zoonoses*- Mahendra Pal
28. Zoonoses: Infectious diseases Transmitted from Animals to Human Being krauss H
29. Dogs Zoonoses and Public Health- Calum N.L., Macpharson, Fracois X., Moslin and Wanderler A.
30. CRC handbook series in Zoonoses- Steele J.L.
31. Zoonoses* Palmer, Soulsby and Simpson
32. Applied Dairy Microbiology- Marth E.H. and Steele J.L.
33. Modern Food Microbiology- Jay M.J
34. Handbook of milk Microbiology- Srivatava M.L.
35. Basic Food Microbiology- Banwart G.J.
36. Industrial Microbiology- Prescott and Ponn
37. Urban Health Research in Developing Countries- Atkigson S., Sangsore J and Werns E.
38. Safety Evaluation of Environmental Chemicals- Dikshith T.S.
39. Influence and Removal of Organics in Drinking Water- Mallevilla, Suffet and Chan
40. Manual of Aquatic Sediment Sampling.- Murdoch, A Asane J.M.
41. Textbook of Medical Parasitology- Parija S.C.
42. Worms and Human Disease- Muller
43. Food Borne Pathogens*- Varnem and Evans
44. Gradwohls’ Clinical Lab Methods and Diagnosis- Sonnenwirth and Jarett
45. Fish Disease and Disorders – Viral Bacterial and Fungal Infections.
   Wro and Bruno
46. Epidemiology, Diagnosis and Management of Zoonoses*- Narayan K.G.
47. Outline of Dairy Technology- Sukumar De
50. Veterinary Epidemiology- Thrushfield. M.
51. Fundamentals of Animal Hygiene and Epidemiology*- Thapliyal D.C.
52. Communicable disease Epidemiology and Control- Webber, R.
53. Veterinary Epidemiology- Principles and Methods*- Willeberg, M.
54. Medical Parasitology- Parija, S.C.
56. Practical Medical Microbiology*- Mackie and M. Cartney
57. Helminthes, Arthropods and Protozoa of Domesticated Animals- Soulsby J.L.
 (* indicates books which can be used for undergraduate reference)

DEPARTMENT OF ANIMAL NUTRITION

SEMESTER -I

PRINCIPLES OF ANIMAL NUTRITION AND FEED TECHNOLOGY

ANN-111 Credit Hours 2+1=3

THEORY
PRACTICAL

SEMESTER II
APPLIED NUTRITION-I (RUMINANTS)

ANN –121 Credit Hours 2+1=3

THEORY

PRACTICAL
Demonstration of conducting digestion trial in ruminants. Calculation of nutritive value of different feed stuffs in terms of digestible crude protein (DCP), total digestible nutrient (TDN), Nitrogen retention (NR) and starch equivalent (SE). Calculation of requirements of nutrients in terms of DCP, TDN and metabolisable energy (ME) for maintenance, growth, and other types of production like meat, milk, wool, reproduction and work. Formulation of rations for different categories of livestock under different conditions. Demonstration of the methods for improving the nutritive quality of straws and other crop residues. Formulation of rations for feeding of livestock during scarcity periods. Visit to feed factories.
THEORY

Factors affecting digestibility of a feed. Nutrient requirements in poultry, swine and equine - Energy and protein requirement for maintenance and production. Methods adopted for arriving at energy and protein requirements for maintenance and production in terms of growth, reproduction and production (egg, meat and work). Formulation of rations as per Bureau of Indian Standards (BIS), National Research Council (NRC) and Agricultural Research Council (ARC) specifications. Feeding standards, their uses and significance, merit and demerits of various feeding standards with reference to monogastric animals and poultry. Feeding of swine (Piglets, Growers, Lactating and pregnant sows, Breeding boar, Fattening animals), equine (foal, yearling, broodmare, stallion and race horses) and poultry (Starter, Growers, Broilers, Layers) with conventional and unconventional feed ingredients. Feeding of ducks. Laboratory Animal Nutrition: Nutrient requirements of mice, rat, rabbit and guinea pig. Significance of carbohydrates, lipids, proteins and amino acids, minerals and vitamins in lab animal nutrition. Diet formulation and preparation and feeding practices. Feed supplements.

PRACTICAL

Calculation of requirements of nutrients in terms of DCP, TDN and ME for maintenance, growth, reproduction and other types of production like egg and meat. Formulation of rations for poultry and swine with conventional and unconventional feed ingredients. Principles of compounding and mixing of feeds. Visit to poultry farms.

REFERENCE BOOKS


DEPARTMENT OF ANIMAL GENETICS AND BREEDING

SEMESTER- I

BIO-STATISTICS AND COMPUTER APPLICATION

AGB-111 Credit Hours 2+1=3

THEORY

A. Basic Statistics:

B. Experimental designs:
Completely Randomized Design (CRD.) and Randomized Block Design (R,B.D). Analysis of variance.

C. Computer application:

PRACTICAL
DEMONSTRATION
Use of word processor and spreadsheet Graphics and their uses. Data retrieving and analysis through computer (Data base). Use of local area network (LAN) and other network systems. Retrieving library information through network. G.I.S. and its use.

REFERENCE BOOKS
1. Statistical methods – Snedecor & Cochran
4. Statistical Methods for Biological workers – Pillai & Sinha
5. Biostatistical Analysis – Zar
6. Fundamentals of Biostatistical Analysis – Rosner

SEMESTER- II

PRINCIPLES OF ANIMAL GENETICS AND POPULATION GENETICS

AGB-121 Credit Hours: 2+1=3

THEORY
History of Genetics. Chromosome numbers and types in livestock and poultry. Mitosis, Meiosis and gametogenesis. Overview of Mendelian principles; Modified Mendelian inheritance: gene interaction; multiple alleles; lethals; sex-linked, sex limited and sex influenced traits; linkage and crossing over, Mutation, Chromosomal aberrations; Cytogenetics, Extra-chromosomal inheritance. Gene concept -classical and molecular. Population genetics: Genetic structure of population: Gene and genotypic frequency: Hardy - Weinberg law and its application; Forces {eg Mutation, migration, selection and drift) changing gene and genotypic frequencies. Quantitative genetics: Nature and properties; Values and means. Components of phenotypic and genotypic variance; Concept of genotype and environment interaction, Resemblance between relatives; Heritability, repeatability, genetic and phenotypic correlations.

PRACTICAL
Demonstration of karyotype of Farm animal species; Solving problems on inheritance of Mendelian traits. Linkage and Crossing over. Calculation of gene and genotypic frequencies, Testing a population for Hardy-Weinberg equilibrium; Calculation of effects of various forces that change gene frequencies, Computation of population mean; Estimation of heritability, repeatability, Most probable producing ability (MPPA), genetic and phenotypic correlations.

REFERENCE BOOKS
1. Genetics by Monroe W. Strickberger
2. Principles of Geneetics by Gardner/Simmons/Snustad
3. Introduction to Quantitative Genetics by D.S. Falconer
4. Concepts f Genetics by Klug and Cummings
5. Textbook of Population Genetics (Volume I and Volume II) by Sukhvir Singh Tomar
6. Textbook of Animal Breeding by S.S.Tomar

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THEORY
History of Animal Breeding; Classification of breeds; Economic characters of livestock and poultry and their importance; Breeding/Selection techniques for optimal production. Selection: Response to selection and factors affecting it; Bases of selection individual, pedigree, family, sib, progeny and combined; Indirect selection; Multitrait selection. Classification of mating systems; Inbreeding and out breeding-genetic and phenotypic consequences viz., inbreeding depression and heterosis: Systems of utilization of heterosis; Selection for combining ability; Breeding methods for the improvement of dairy cattle and buffaloes {crossbreeding, sire evaluation, field progeny testing, open nucleus breeding system (ONBS)}, sheep, goat, swine and poultry; Breed development; Conservation of germplasm, Current livestock and poultry breeding programmes in the state and country.

PRACTICAL
Description and measurement of economic traits of Livestock & poultry. Standardization of performance records, Computation of selection differential, generation interval and expected genetic gain; Construction of selection index; Sire indices. Measurement of inbreeding and relationship coefficients; Estimation of heterosis.

REFERENCE BOOKS
1. “Introduction to Quantitative Genetics” by D.S. Falconer
3. Handbook of Animal Husbandry Sciences by Amalendu Chakraborti
4. Genetics and Breeding of Farm Animals by D. P. Mukherjee and G.C. Banergee
5. Understanding Animal Breeding by Richard M. Bourdon
6. Animal Breeding by Gerald Weiner
7. Veterinary Genetics by F.W. Nicholas
8. Handbook of Animal Husbandry 0 ICAR publication
9. Principles and Practice of Poultry Husbandry by Tom Newman
10. Textbook of Animal Breeding by S.S. Tomar
11. Dalton’s Introduction to Practical Animal Breeding by Malcolm B. Willis
12. Genetics of Livestock Improvement by John F. Lasley
13. Breeding and improvement of farm animal by Warwick, E.J. and Legates, J.E.
THEORY
Livestock in India- association of livestock to Indian society during vedic, medieval and modern era. Demographic distribution of livestock and role in economy. Animal holding and land holding patterns in different agro-ecologies.
General principles affecting the design and construction of building for housing for various livestock species. Selection of site. Arrangements of the building with special reference to Indian conditions.
Utilisation of local materials. Building materials used for construction of wall, roof and floor of animal houses, their characteristics, merits and demerits.
PRACTICAL

REFERENCE BOOKS

SEMESTER-II
FODDER PRODUCTION AND GRASSLAND MANAGEMENT
LPM -121 Credit Hours 1+1=2

THEORY
Importance of grasslands and fodders in livestock production. Agronomical practices for production of leguminous and non-leguminous fodders in different seasons. Soil and water conservation and irrigation drainage for fodder production. Farm, power and agro-energy. Farm machinery and equipment Harvesting and post harvest techniques "for fodder preservation. Storage of feeds and fodders. Scarcity fodders. Feed and fodder management for individual animals. Fodder production for small units through inter cropping or back yard cultivation. Recycling of animals washings and wastes in fodder production.
PRACTICAL
Visit to the fodder farm. Familiarisation with the various types of fodder crops utilised in the state and the samples of fodder in India. Fodder cropping routines - familiarisation. Collection, preservation and storage of feed and fodder; possible damages/loss and methods to prevent them. Cost calculations of fodder production. Familiarisations with the back yard fodder cropping and intercropping of fodder. Livestock waste utilisation and recycling. Calculation on the economic aspects of fodder cropping and procurement of feed.

REFERENCE BOOKS
1. Pathak, N.N. and Jakhmola, R.C. Forages and Livestock Production
2. Chatterjee, B.N. and Das, P.K. Forage Crop Production
4. I.C.A.R. Handbook of Agriculture
5. Merkel, J. Managing Livestock Wastes
6. Wiseman, Finch and Samuel. Crop Husbandry including Grassland
8. Humphreys, L.R. Tropical Forages
9. I.C.A.R Grasses and Legumes

SEMESTER- II

LIVESTOCK PRODUCTION MANAGEMENT II
(MONOгаSTRIC AND LABORATORY ANIMALS)

LPM-122 Credit Hour: 1+1=2

THEORY

PRACTICAL
Feeding of swines. Preparation of swines for show and judging.
Identification of body parts and handling of laboratory animals. Housing system and space requirements for laboratory animals. Weighing, sexing and weaning of laboratory animals. Marking for identification of laboratory animals for purpose of their individual recording. Computation and compounding of balanced diet for laboratory animals mainly Mice, Rats, Guinea-pigs and Rabbits.
Feeding schedule of laboratory animals for high breeding efficiency. Maintenance of breeding records of laboratory animals. Prophylactic measures against common disease of laboratory animals. Hygienic care and control of parasites (routines).
Horse riding: walking, trotting, cantering and galloping. Preparation of equines for show and judging. Layout plans for stables.

REFERENCE BOOKS
6. Fielding, D. Tropical Agriculturist – Rabbits
SEMESTER- III

AVIAN PRODUCTION MANAGEMENT

LPM- 211                                                                 Credit hours 1+1=2

THEORY
Indian Poultry industry-brief outline of the different segments-poultry statistics.
Classification of poultry, common breeds of poultry including duck, quail, turkey & guinea fowl and their descriptions. Description of indigenous fowls.
Reproduction in fowl, male and female reproduction systems, formation of eggs, structure of eggs. Important economic traits of poultry, egg production, egg weight egg quality, growth, feed consumption and feed efficiency, fertility and hatchability, plumage characteristics and comb types. Scavenging system of management raising of chicks, scavenger feed base of village. Low input technology; backyard and semi intensive unit of various sizes; their description, management and economic achievements.
New colored feathered birds developed in public and private sectors for meat and egg production for rural poultry; their acceptability and assimilation in rural eco-system.
Mixed farming and poultry raising. Concept of self-local market unit
Brooding and rearing practices used for chicken, duck, quail, turkey and guinea fowl.
Economic production of chicken and other classes of poultry.

PRACTICAL
Morphological description of common exotic poultry breeds like White Leghorn (WLH), Rhode Island Red (RIR), Plymouth Rock, Cornish and New Hampshire. Diagrammatic illustration of body parts of chicken, duck, quail, guinea fowl and turkey. Descriptive specialties of indigenous birds, listing of its advantageous value in rural areas. Diagrammatic representation of scavenging, backyard and semi intensive units; with habitats, feed base and shelter. Conservation of indigenous germ plasm; listing of conservation techniques.
Demonstration of newly developed breeds in rural environment Housing, equipments, nesting and brooding requirements. Vaccination, medication and incubation requirements. Preparation of projects for rural people on poultry and other species (duck, quail, guinea fowl and turkey).

SEMESTER- IV

COMMERCIAL POULTRY PRODUCTION AND HATCHERY MANAGEMENT

LPM –221                                                                 Credit hours 1+1=2

THEORY
HOUSING - Location of poultry. Types of poultry houses. Different types of rearing-advantages and disadvantages. Space requirement for different age groups under different rearing systems. Environmentally controlled housing. BROODING MANAGEMENT-
Brooding: Types of brooders; preparation of shed to receive chicks; importance of
environment (temperature, humidity and ventilation). Feeding and vaccination in early stage of chicks.

REARING AND MANAGEMENT- Care and management of growing, laying/broiler birds of both breeders and commercial categories of poultry. Battery cage management different types and sizes. Poultry judging.

LITTER MANAGEMENT- Litter materials, litter-borne diseases and control; potential for poultry litter used as fertilizers; recycling for livestock feeding and power generation; Special management care in adverse weather conditions/ stress; summer management modification of housing light reflectors; insulators, sprinklers, loggers and other methods; dietary modification to minimize heat stress; special management during rainy and winter season; other stress management- vices in poultry and its remedial measures.

WATER MANAGEMENT- Standard for drinking water in terms of total solids. pH, minerals levels, sanitizers and water sanitations, diseases spread through water contamination-prevention.

BIOSECURITY- Proactive measures to minimize entry of infections in farm premises-farm fencing, disinfectant pits, personnel management restriction of movement etc. Poultry welfare and behaviour.


HEALTH CARE- Common poultry diseases: bacterial, viral, fungal, parasitic and nutritional deficiencies. Vaccination schedule for commercial layers and broilers: factors that govern vaccination schedule; vaccination principles type, methods, pre and post vaccination care. Medication: Types of administration-general principles and precautions with emphasis on administering medication through water and feed; commonly used drugs in poultry diseases. Disinfection: Types of disinfectants; mode of action; recommended procedure; precaution and handling.

ECONOMICS- Economics of layer and broiler production; Projects reports layer in different systems of rearing. Projects reports for broilers.-Feasibility studies on poultry rearing- in context of small units and their profitability. Designer meat and egg production. Export/import of poultry and poultry products.

BREEDER FLOCK MANAGEMENT- Layer and broiler breeder flock management housing & space requirements. Different stage of management during life cycle; Light management during growing and laying period, Artificial insemination.


HATCHERY PRACTICES - Management principles of incubation. Factors affecting fertility and hatchability; selection, care and incubation of hatching eggs. Fumigation; sanitation and hatchery hygiene. Disposal of hatchery waste; Sexing, grading, packing and dispatch of day old chicks. Economics of hatchery business; Trouble shooting hatch failure: importance of
hatchery records, break even analysis of unhatched eggs. Biosecurity in the hatchery. Computer applications for hatchery management

**PRACTICAL**


Exposure to commercial broiler and layer farms-different system of housing.

Demonstration of litter and cage rearing systems. Feed equipments and maintenance; hammer mill, mixture, pellet mill-types, principle of working, comparison of different types, premix preparations, quality control of raw materials. Feed mill operation. Demonstration of different types of feeder, waterer, fogger, sprinklers etc. Maintenance of farm records. Medication-demonstration of routinely employed methods of administration.

Vaccination practice in general and demonstration of different roots of administration in particular.

**REFERENCE BOOKS (LPM 211 and LPM 221)**


**SEMESTER-IV**

**LIVESTOCK PRODUCTION MANAGEMENT (REGIONAL INTEREST)**

LPM- 222 Credit Hours: 1+1=2

Course Contents to be developed by the University/Veterinary College on the basis of regional interest.
DEPARTMENT OF LIVESTOCK PRODUCTS TECHNOLOGY

SEMESTER- V

MILK AND MILK PRODUCTS TECHNOLOGY

LPT- 311                                                                 Credit Hours 1+1=2

THEORY

PRACTICAL

REFERENCE BOOKS

SEMESTER-V

ABATTOIR PRACTICES AND ANIMAL PRODUCTS TECHNOLOGY

LPT-312                                                                 Credit Hours 1+1=2

THEORY
Layout and management of rural, urban and modern abattoirs. BIS standards on organization and layout of abattoirs, Pre-slaughter care, handling and transport of meat animals including poultry. Ante-mortem and post-mortem examination. Slaughtering and dressing of carcasses. Evaluation, grading and fabrication of dressed carcasses including poultry.

PRACTICAL
Methods of ritual and humane slaughter, flaying and dressing of food animals including poultry. Carcass evaluation. Determination of meat yield, dressing percentage, meat bone ratio and cut up parts. Preparation of different abattoir byproducts. Visit to leather processing unit and slaughterhouses/meat plants.
Woof sampling techniques, determination of fleece density, fiber diameter, staple length, crimp and modulation percentage, scouring/clean fleece yield. Visit to wool production/processing centre.

SEMESTER -VI
MEAT SCIENCE

LPT-321 Credit Hours 1+1 = 2

THEORY

PRACTICAL
REFERENCE BOOKS


DEPARTMENT OF VETERINARY GYNAECOLOGY AND OBSTETRICS

SEMESTER -VII

VETERINARY GYNAECOLOGY

VGO-411 Credit Hours 2+1=3

THEORY
Induction of estrus, Synchronization of estrus, Follicular Dynamics, Ovulation, Superovulation, and Embryo Transfer Technology. Immune-modulation for enhancement of fecundity

PRACTICAL
REFERENCE BOOKS

1. Reproduction in Farm Animals by Hafez & Hafez
2. Arthur’s Veterinary Reproduction & Obstetrics by Noakes et al
3. Diagnostic & Therapeutic Techniques in Animal Reproduction by Zemjanis
   Veterinary Obstetrics & Genital Diseases by S.J.Roberts

SEMESTER- VIII

VETERINARY OBSTETRICS

VGO 421 Credit Hours 1+1=2

THEORY

Dystocia- Types of dystocia - maternal & fetal- approach, diagnosis and treatment
Postpartum diseases and complications: uterine prolapse, retention of fetal membranes, metritis, postpartum paraplegia.
Animal birth control- ovariohysterectomy and non surgical interventions

PRACTICAL


REFERENCE BOOKS

1. Veterinary Obstetrics & Genital Diseases by S.J.Roberts
2. Arthur’s Veterinary Reproduction & Obstetrics by Noakes et al
3. Diagnostic & Therapeutic Techniques in Animal Reproduction by Zemjanis
   Veterinary Obstetrics by Benesch
4. Fleming’s Veterinary Obstetrics by Graig
THEORY


PRACTICAL


REFERENCE BOOKS

1. Physiology of Reproduction and A I of Cattle by Salisbury
2. Text Book of Veterinary Andrology by Sahni & Varma
3. Semen of Animals and it’s use for A I by Anderson & James
4. Breeding problems & Artificial Insemination by Renseberg
5. Veterinary Obstetrics & Genital Diseases by S.J.Roberts
6. Arthur’s Veterinary Reproduction & Obstetrics by Noakes et all
General Surgery

**THEORY**

**PRACTICAL**
Surgical instruments and equipment Operation theatre routines. Surgical pack' Preparation, sterilization and handling. Familiarisation with suture materials, surgical knots, suture patterns and their use. Familiarisation to live surgery haemostasis.

Anaesthesiology

**THEORY (Region specific)**
Preanaesthetic considerations and preanaesthetics. Anaesthesia, local analgesia /anaesthesia, General anaesthesia, anaesthetic agents (like barbiturates, dissociative agents). Inhalation anaesthesia and agents, maintenance and monitoring of general anaesthesia. Anaesthetic emergencies and their management Only awareness of neuroleptanalgesia, electroanaesthesia, acupuncture, hypothermia, muscle relaxants. Post operative pain management General principles of chemical restraint of wild / zoo animals and anaesthesia of lab animals.

**PRACTICAL**
Familiarisation with anaesthetic apparatus, endotracheal tubes. Laryngoscope, gadgets for monitoring. Pre anaesthetic preparation, induction of general anaesthesia in small and large animals and endotracheal intubation in dogs.
Demonstration of inhalant anaesthesia, monitoring of general anaesthesia and the management of anaesthetic emergencies: Use of artificial / assisted respiration. Various methods of local infiltration anaesthesia and regional block, for surgical procedures of different regions of body in Large and Small animals. Chemical restraint of lab and wild animals (Visit of a wild animal facility and audiovisual aids).

Diagnostic Imaging

**THEORY**
Biological effects of radiation, radiation hazards and their prevention by adoption of safety measures. Principles of ultrasonography and its applications in veterinary practice. Awareness on principles of radiation therapy, Isotopes and their uses in diagnosis and therapy; Principles and application of CT scan, MRI, echocardiography, scintigraphy, gamma camera, xeroradiography and Doppler.

**PRACTICAL**

**SEMESTER- VIII**

**REGIONAL VETERINARY SURGERY**

**VSR- 421**  
Credit Hours 2+1=3

**THEORY**

**Head and Neck**

**Thorax and Abdomen**
Fracture of rib. Perforated wounds, sternal fistula, pneumocele, traumatic pneumothorax Hernia: classification, etiology, diagnosis and treatment (umbilical, ventral, inguinal, perineal, diaphragmatic). Surgical affections of the stomach in dogs {cardia, pyloric stenosis, torsion).' Surgical affections, diagnosis and treatment of stomach in ruminants (ruminal impaction, traumatic reticulitis, diaphragmatic hernia abomasal displacement, omasal impaction). Surgical affections of intestines: intestinal obstruction, intussusception, strangulation (volvulus) in

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PRACTICAL

Head and Neck
Demonstration of following: Examination of oral cavity. Location of trephining of sinus in equines. Bovine: Amputation of horn, De budding. Ligature of Stenson's duct Tooth rasping / floating, otoscopy in dogs, ear haematoma, tracheotomy, tracheostomy, oesophagotomy. Ophthalmoscopy, tests for blindness, operation for ectropion, and entropion, enucleation / extirpation of the eye

Thorax and Abdomen

SEMESTER-IX

VETERINARY ORTHOPAEDICS AND LAMENESS

VSR-511 Credit Hours 1+1=2

THEORY

PRACTICAL
Examination of the horse for confirmation of body (head, trunk, fore limbs and hind limbs) and diagnosis of lameness. Demonstration of equine shoeing. First aid in orthopaedic patients (splint application, Robert Jones's bandage) Plaster of paris cast- application in dogs and carves. Hanging pin and transfixation pinning (demonstration) Intra medullary pinning in dogs (demonstration). Diagnostic nerve block in equine(demonstration) Demonstration of: daw trimming of bovine foot neurological examination for evaluation of spinal trauma, tenectomies of lateral digital extensor tendon, medial patellar desmotomy Techniques and application of diathermy, electrical stimulators, ultrasonic, therapy, infra red and ultra- violet rays.

(Courses on Zoo/Wild Animal Breeding, Nutrition, Management and Health Care under VMD - 512 (2+1) and Pet/Companion Animal Breeding, Feeding, Management and Health Care under VMD- 513 (1+1) shall be taught jointly by Departments of Veterinary Medicine, Livestock Production Management Animal Genetics and Breeding, Animal Nutrition, Veterinary Pathology, and Veterinary Surgery and Radiology).

REFERENCE BOOKS

1. Veterinary Surgical techniques by Amresh Kumar
2. Dollar’s Veterinary Surgery by O’connor
3. Veterinary Radiology by A.P. Singh & Jit Singh
4. Veterinary anesthesia by Hall and Clarke
5. Adam’s lameness in horses by Stashak, Ted.S
6. Ruminants surgery by R.P.S. Tyagi & Jit Singh
10. Lameness in cattle by P.R. Greenough.

DEPARTMENT OF VETERINARY MEDICINE

SEMESTER- VII

VETERINARY CLINICAL MEDICINE-I
(GENERAL & SYSTEMIC)

VMD-411 Credit Hours 2+1=3

THEORY
History and scope of Veterinary Medicine, Concept of animal diseases. Concepts of diagnosis, differential diagnosis and prognosis. General systemic, states, hyperthermia, hypothermia, fever, septicemia, toxemia, shock and dehydration. Aetiology, clinical

PRACTICAL
Clinical examination and diagnosis: Methods of clinical examination of individual ailing animals including history taking. Examination of animal inducing behaviour and general appearance: demeanour, voice, eating, drinking, defecation, urination, posture, gait condition of skin and body coats. Inspection of body: examination of head and neck, thorax, respiratory rates, rhythm, respiratory depth, type of respiration, cardiac sounds, chest symmetry, abdomen, external genitalia, mammary glands and limbs. Physical examination: temperature taking, palpation, percussion, auscultation. Examination of ears, eyes, conjunctiva, eye balls, mouth, submaxillary and other superficial lymph nodes, jugular furrow, oesophagus, trachea. Passing of stomach tube for locating obstruction if any. Examination of specific condition of thorax pneumothorax, haemothorax and hydrothorax. Percussion/ auscultation of lung and cardiac areas. Examination of abdomen: ruminal motility, consistency, microbial population and their motility in ruminal fluid, use of trochar and canula. Examination of liver and kidneys. Liver and kidney function tests.

SEMESTER-VII

VETERINARY PREVENTIVE MEDICINE-I
(BACTERIAL, FUNGAL & RICKETTSIAL DISEASES)

VMD-412 Credit Hours 2+0=2

THEORY
Clinical manifestation, diagnosis, prevention and control of infectious diseases, namely mastitis, haemorrhagic septicaemia, brucellosis, tuberculosis, John's disease, black quarter, tetanus, listeriosis, leptospirosis, campylobacteriosis, actinomycosis, actinobacillosis, enterotoxaemia, glands, strangles, ulcerative lymphangitis, colibacillosis, fowl typhoid, putiorum disease, fowl cholera, avian mycoplasmosis, spirochaetosis, salmonellosis, swine erysipelas. Other important bacterial diseases of regional importance (e.g. contagious caprine pleuropneumonia, contagious bovine pleuropneumonia etc.). Bacterial diseases of bio terrorism Instance - anthrax, botulism etc. Chlamydoisis, Q fever, anaplasmosis, Dermatophilosis, aspergillosis (brooders pneumonia), candidiasis, histoplasmosis, sporotrichosis, coccidiodomycosis, mycotoxicosis, etc.
SEMESTER VIII

VETERINARY CLINICAL MEDICINE -II
(METABOLIC & DEFICIENCY DISEASES)

VMD-421 Credit Hour 2+0=2

THEORY

SEMESTER- VIII

VETERINARY PREVENTIVE MEDICINE-II
(VIRAL & PARASITIC DISEASES)

VMD-422 Credit Hours 2+0=2

THEORY
SEMESTER- IX

ANIMAL WELFARE, ETHICS AND JURISPRUDENCE

VMD-511

THEORY


SEMESTER- IX

ZOO/WILD ANIMAL BREEDING, NUTRITION, MANAGEMENT AND HEALTH CARE

VMD-512

THEORY

Taxonomy of various genera of wild/zoo animals of India along with their descriptions. Ethology of wild life species. Basic principles of habitat and housing of various classes of wild and zoo animals. Population dynamics of wild animals, effective population size of wild animals in captivity/zoo/natural habitats. Planned breeding of wild animals. Controlled breeding and assisted reproduction. Breeding for conservation of wild animals. Feeding habits, feeds and feeding schedules of zoo animals. Nutrient requirements of wild animals. Diet formulation and feeding of various age groups, sick and geriatric animals. Restraining, capture, handling, physical examination and transport of wild and zoo animals. Principles of anaesthesia, anaesthetics, chemicals of restraining, common surgical interventions. Capture myopathy. Principles of zoo hygiene, public health problems arising from zoos. Prevention, control and treatment of infectious, parasitic, nutritional and metabolic diseases in zoo and wild animals. Acts and Rules related to Zoo and wild animals. National
and international organisations and institutions interlinked to wild and zoo animals - rote and functioning.

PRACTICAL
Visit of nearby wild life sanctuary/zoo/wild animal centres to study the care and management, restraint, examinations, administration of medicines etc. in zoo animals. To study the housing, feeds and feeding schedule of zoo animals. To study the implementation of various Acts and Rules related to Zoo animals care and management Post mortem examination of wild and zoo animals. Handling, processing and interpretation of pathological materials from zoo and wild animals. Attending to common surgical interventions on zoo and wild animals. Planning for balanced feeding. Diet charts, preparation of balanced diet for new bone, growing and sick animals as oral and intravenous feeds. Preparation of modified diet under selected conditions. Hygienic preparation, preservation and storage of foods. (This course shall be taught jointly with the Departments of Livestock Production Management, Animal Nutrition, Animal Genetics and Breeding, Veterinary Pathology, and Veterinary Surgery and Radiology)

SEMESTER- IX
PET/ ANIMAL BREEDING, MANAGEMENT, NUTRITION AND HEALTH CARE

VMD- 513 Credit Hours 1+1= 2

THEORY

PRACTICAL

(This course shall be offered jointly by the Departments of Veterinary Medicine, Livestock Production Management, Animal Nutrition, Animal Genetics and Breeding, Veterinary Pathology, and Veterinary Surgery and Radiology).

REFERENCE BOOKS


DEPARTMENT OF VETERINARY & ANIMAL HUSBANDRY EXTENSION EDUCATION

SEMESTER- V

PRINCIPLES AND TECHNIQUES OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION

VAE- 311 Credit Hours 2+1=3

THEORY


Role of animals in economy, health and socio-psychology of rural, semi urban and urban society. Client and stakeholder dealings: techniques and procedures including tools for data.
collection, analysis, history taking, follow-up and appraisal on prognosis. Adoption and diffusion of livestock innovations. Leadership and role of leaders in animal husbandry extension.


PRACTICAL


Group discussions, techniques and procedures for awareness campaigns on different veterinary and animal husbandry practices - signs of diseases, preservation of eggs, clean milk production, controlling of ectoparasites, pail feeding of calves, sexing and culling of birds, first aid for minor wounds, disinfection of byres, branding, use of horn cauterization, timely A. I., choice of good progeny, care in pregnancy, infertility, environments! hygiene, preparation of feeds and feeding schedules, deworming, preventive hygiene, vaccination etc. Organization of animal welfare camps, exhibition, livestock shows etc. Hands on training in the use of computers for teaching and information dissemination. Rapid Rural Appraisal/Participatory Rural Appraisal in identifying livestock production/health care practices.

REFERENCE BOOKS


18. **Directorate of Extn. Govt. of India** (1961). Extension Education in Community development

**SEMESTER- VI**

**LIVESTOCK ECONOMICS, MARKETING AND BUSINESS MANAGEMENT**

**VAE-321**

**Credit Hours 2+1=3**

**THEORY**

Economics:

Marketing:

Accounting:
Definition, objectives, common terms. Different systems of book keeping- single and double entry system. Various types of account books including books of original entry. Classification
of accounts and rules of debit and credit. Recording of business transactions. Analysis of financial accounts- income and expenditure accounts, trading account, profit and loss accounts.

PRACTICAL
Book keeping: general entry, writing of journal and ledger, cash book (two and three column), purchase-safe and purchase-sale return registers, trading account, profit and loss accounts, income and expenditure accounts, balance sheet bills of exchange (bill of receivable and bill of payable), bank reconciliation statement.
Economics of a dairy unit poultry, piggery, sheep and goat units. Visit to farms, markets and cattle fairs, backyard units and preparation of report.

REFERENCE BOOKS

SEMESTER- IX
LIVESTOCK ENTREPRENEURSHIP
VAE-511 Credit Hours 1+0=1
THEORY
Livestock Entrepreneurship. Avenues of entrepreneurship/employment in private and public sectors. Key concepts and theories of self-employment and entrepreneurship. Essential criteria for development of entrepreneurship in livestock sector - basic requirements for entrepreneurship initiatives in livestock and allied sectors (i.e. techno economic feasibility of the enterprises under different conditions, training and management skills, business acumen,

REFERENCE BOOKS


4. Entrepreneur Starter Kit six cds : Coach series

5. Miner John, B. The 4 steps to Entrepreneurial success: Berett – ICO


TEACHING VETERINARY CLINICAL COMPLEX (TVCC)

A. VETERINARY CLINICAL PRACTICE

VCP-411(Semester-VII) Credit Hour- 0+5=5
VCP-421(Semester-VIII) Credit Hour- 0+5=5
VCP-511 (Semester-IX) Credit Hour- 0+5=5
Total: 15

The students shall be Imparted the trainings on rotation basis in the following sections of Teaching Veterinary Clinical Complex (TVCC):

1. Ambulatory Section:

Handling, examination, diagnosis and treatment of sick animals under field conditions under the supervision of faculty designated for Ambulatory Clinical activity. Ambulatory Clinics shall be operated by small groups of students and faculty through an equipped mobile unit in which the departments of Veterinary Medicine, Veterinary Gynaecology and Obstetrics and Veterinary Surgery and Radiology shall be involved.
2. **Diagnostic Laboratory Section:**

The Clinical Diagnosis Laboratory will form an important component of Teaching Veterinary Clinical Complex. The Diagnostic Laboratory will impart training to groups of students for laboratory evaluation and interpretation of clinical samples leading to diagnosis/comparative diagnosis of diseases. This activity will involve training in examining clinical samples (biochemical, toxicological, pathological, parasitological and bacteriological) at the clinical complex, analyzing and correlating with clinical findings and interpreting the results.

Note: The Laboratory should be run in collaboration with the Department of Pathology.

3. **Medicine Section:**

Orientation to Veterinary Clinics including hospital set up, administration and functioning. Methods of record keeping. Retrieval, processing, analysis and interpretation of data. Hospital management involving out patient department (OPD), Indoor patient, Critical care/intensive care unit, sanitation, up keeping, practice management etc. Doctor client interaction: Orientation to local language/dialect/local terminology of the diseases. Registration, filling up registration cards, history taking. Relating generic and trade names of drugs along with their doses, indications and contraindications to prescribed treatment regimens. Familiarization and practice of first aid procedures and emergency medicine. Practice of collection, labeling, packaging and evaluation of laboratory samples.

Clinical practice comprising of clinical examination of the patient, with emphasis on history taking, examination techniques- palpation, percussion and auscultation, systematic examination of various systems, recording of clinical observations viz. temperature, respiration, pulse, cardiac sounds, cardiac function, pulmonary function, functional motility of digestive system, routes and techniques of administration of medicaments. Diagnosis and treatment of common clinical cases like pharyngitis, laryngitis, stomatitis, indigestion, ruminal impaction, tympany, enteritis, traumatic reticulo-peritonitis, traumatic pericarditis, pneumonia, haemoglobinurea, haematuria. milk fever, ketosis, rickets, osteomalacia, common poisoning, and others.

Collection of materials like urine, faeces, skin scraping, blood, milk and other body fluids for laboratory tests. Preparation of case records; follow-up records etc. Treatment of causalities and other emergencies. Screening of livestock/poultry through tests, mass diagnostic campaigns. Vaccination and other disease prevention and control programmes in the field. Practice of feeding of sick animals. Acts and regulations pertaining to generation and disposal of biomedical wastes in veterinary institutions. Biomedical waste generation, handling, storage, sorting, coding, transportation and disposal. Hazards of biomedical waste, and impact of biomedical waste on the environment.

4. **Gynecology & Obstetrics Section:**

with common drugs & hormones used in reproductive disorders, epidural and local anaesthesia for gynaecological cases. Filling of clinical case records and their maintenance.

5. Surgery & Radiology Section:


Note: The skills required for the Comprehensive Examination of Core Competence to be held for the purpose of assessment/evaluation of Internship shall be imparted under these courses.

SEMESTER- VII

VETERINARY CLINICAL BIOCHEMSITRY AND LABORATORY DIAGNOSIS –I

B. 1. VLD-411 Credit Hours 0+1 = 1

Training in examining clinical samples (biochemical, pathological, parasitological and bacteriological). Analysing and correlating with clinical findings and interpreting the results. Collection, labeling, transportation, and preservation of body fluid samples. Writing results and report Interpretation of date in relation to specific diseases. Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples. Clinical significance and interpretation of examination of urine samples. Clinical evaluation of blood ( Haemoglobin, packed cell volume, total erythrocytic count erythrocytic sedimentation rate, total leucocytic count and differential leococytic count) from clinical samples. Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts). Examination of skin scrapings, examination of blood smear/blood for diagnosis of blood protozoan diseases.
SEMESTER VIII

VETERINARY CLINICAL BIOCHEMISTRY
AND LABORATORY DIAGNOSIS-II

B. 2. VLD-421 Credit Hours 0+1=1

Preparation of microscopic slides from tissue collected for diagnosis and its' histopathological interpretation. Examination of biopsy and morbid material for laboratory diagnosis, Orientation to a clinical Microbiology laboratory, Collection, transport and processing of specimens from clinical cases for diagnosis of important bacterial, fungal and viral diseases. Isolation of bacteria from clinical samples, Identification of bacteria by Grams staining and cultural/biochemical characteristics. Drug sensitivity and rationale for therapy. Diagnosis of diseases by employing tests like Agar Gel precipitation Test Enzyme linked immunosorbent assay. Dot immunoassay, tube agglutination test, slide agglutination tests etc.
Practice for separation of toxic materials from samples. Detection of arsenic, lead, antimony, mercury, copper, zinc, fluorides. Nitrates/nitrites cyanides and tannins in body fluids/tissues of animals. Evaluation of samples of toxic residues. Appreciation and differentiation of symptoms caused by various types of toxic materials including agrochemicals plants and drugs.

SEMESTER- VIII

VETERINARIAN IN SOCIETY

C. TVC-421 Non-Credit Course: 1 +0=1

SEMESTER- III and IV

D. INSTRUCTIONAL LIVESTOCK FARM COMPLEX

Non-Credit Course: (0+1)X2=2 Credits
LFP- 211 and LFP-221

Hands on training of the students on the overall farm practices of livestock management including cleaning, feeding, watering, grooming, milking, routine health care, record keeping, sanitation, housing, fodder production.

These courses shall be non-credit courses and the performance of students shall be assessed and recorded as grades: A- Excellent, B- Good, C- Average and recorded on the Degree Transcript

PART VII
MINIMUM STANDARDS OF VETERINARY EDUCATION - MINIMUM
STANDARD REQUIREMENTS
FOR A VETERINARY COLLEGE FOR 60 ADMISSIONS ANNUALLY

I. Departments
II. Accommodation in the Veterinary College and its associated teaching hospital/farms:
III. Staff, teaching, technical
IV. Equipment in the College departments and the hospitals

I. DEPARTMENTS: Each Veterinary College shall have the following Departments, Teaching Veterinary Clinical Complex and Instructional Livestock Farm Complex under the administrative control of the Dean/Principal/Associate Dean.

(1) Veterinary Anatomy
(2) Veterinary Physiology and Biochemistry
(3) Veterinary Pharmacology and Toxicology
(4) Veterinary Parasitology
(5) Veterinary Microbiology
(6) Veterinary Pathology
(7) Veterinary Public Health and Epidemiology
(8) Animal Nutrition
(9) Animal Genetics and Breeding
(10) Livestock Production Management
(11) Livestock Products Technology
(12) Veterinary Gynaecology and Obstetrics
(13) Veterinary Surgery and Radiology
(14) Veterinary Medicine
(15) Veterinary and Animal Husbandry Extension Education
(16) Teaching Veterinary Clinical Complex
(17) Instructional Livestock Farm Complex

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II. ACCOMMODATION:

2. Common facilities

1. Every Veterinary College shall have its own building and land for running various departments with an attached Teaching Veterinary Clinical Complex (TVCC), Instructional Livestock Farm Complex (ILFC), College Library, Central Instrumentation Facility (CIF), a disease investigation unit and post mortem facility at an accessible distance.

2. The TVCC shall also have well equipped outdoor and indoor patient sections and client accommodation facilities. The complex shall have medical, surgical, Gynecological, diagnostic and ambulatory clinical sections. The ILFC shall have Livestock Units and infrastructure for maintenance of livestock, animals of different species, storage facilities for feed and fodder and fodder production area.

3. In addition to the accommodation mentioned above the College building complex shall provide the following:

   (i) Dean/Principal's office room with attached toilet room and retiring room 300sq.ft.
   (ii) Visitor's room. 300 sq.ft.
   (iii) Committee room. 600 sq.ft.
   (iv) Office room accommodating office staff of General, Academic (Admission & Examination), Accounts and Establishment Sections. 1000sq.ft.
   (v) Central store room.
   (vi) Personal Staff room with attached toilet facilities 300 sq.ft.
   (vii) Toilet facilities for visitors and office staff.
   (viii) Record room.
   (ix) Typing, Duplicating and Photocopying facilities.
   (x) Canteen.
   (xi) Library with reading room and arrangement for staff and students with adequate seating accommodation. The Library at the College level should be provided with adequate books/journals/periodicals; reprographic and duplication facilities; internet connectivity and manpower (at least one Assistant Librarian with supporting staff) in case the College is located away from the university/centralized library.
   (xii) A Conference hall with facility for visual demonstrations and projections.
   (xiii) Seminar Room of 40-60 capacity.
   (xiv) Five lecture halls each with a seating capacity for 60 to 100 students with the facilities of audio-visual aids.
   (xv) Examination Hall(s).
   (xvi) Toilets (Gents & Ladies).
   (xvii) Drinking water facility.
   (xviii) College auditorium.
   (xix) Play grounds with games and sports facilities including indoor games facilities.
   (xx) Hostels for boys and girls (including Interns) with common room, mess etc.
   (xxi) Animal houses for small, large, laboratory animals and poultry as per need.
   (xxii) Instructional livestock and poultry farms.
   (xxiii) Central Computer lab.
(xxiv) Central College Diagnostic lab.
(xxv) Microphotography and processing unit
(xxvi) Transport faculties including bus, minibus, staff car, ambulatory van & mobile diagnostic unit.
(xxvii) Artificial Insemination Centre
(xxviii) Health Unit for student & staff
(xxix) Cold room facility

NOTE:- These are minimum general requirements for Veterinary Institution imparting education leading to B.V.Sc. & A.H. degree. However, Institution/colleges having additional departments; special infrastructural and academic facilities would be encouraged to enlist them as desirable facilities keeping in view the demands and advances in the discipline/sub-discipline concerned.

4. General accommodation facilities to be provided in each departments/units
   (i) Chamber of HOD 200 sq.ft.
   (ii) Office for the each teaching staff 100 sq.ft.
   (iii) Office of the department 200 sq.ft.
   (iv) Store 150 sq.ft.

(I) VETERINARY ANATOMY

   (i) Osteology and Arthrology lab. 900 sq.ft.
       Attached store for bone sets (There should be separate provision for macerating and cleaning bones).
   (ii) Dissection hall 1200 sq.ft.
       (There should be provision for Cold room, Embalming Room, Cadaver room, Tanks, washing tubs for cadaver. Fly proofing and cooling facility should be ensured (when temp, is beyond 20° C)

   (iii) (a) Histology and Embryology lab. 900 sq.ft.
        (b) Tissue preparation room 200 sq.ft.
   (iv) Museum 200 sq.ft.

(2) VETERINARY PHYSIOLOGY & BIOCHEMISTRY

   (i) Facilities at TVCC shall be utilized
   (ii) Physiology lab 900 sq.ft
   (iii) Biochemistry lab 900 sq.ft
   (iv) Biotechnology lab 900 sq.ft
   (v) Analytic equipment and maintenance laboratory 600 sq.ft

(3) VETERINARY PHARMACOLOGY AND TOXICOLOGY

   (i) Experimental Pharmacology Lab 900 sq.ft.
   (ii) Pharmacology and Toxicology Lab 900 sq.ft.
(4) VETERINARY PARASITOLOGY

(i) Helminthology Lab cum Museum 900 sq.ft
(ii) Entomology & Protozoology lab 900 sq.ft

(5) VETERINARY MICROBIOLOGY

(i) Bacteriology and Mycology lab. 900 sq.ft
(ii) Virology lab. (with tissue culture lab., egg inoculation booth, air conditioned) 200 sq.ft.
(iii) Veterinary Immunology lab. 600 sq.ft.
(iv) Sterilisation room 200 sq. ft
(v) Cleaning and washing room 100 sq. ft
(vi) Media and preparation room 100 sq. ft.

(6) VETERINARY PATHOLOGY

(i) Histopathology lab 900 sq.ft.
(ii) Clinical Pathology lab 900 sq.ft.
(iii) Tissue processing facility 600 sq.ft.
(iv) Museum 1200 sq.ft
(v) Post-mortem room for large animals and poultry 1200 sq.ft
With carcass and other waste disposal facilities with floor area at an accessible distance.

(7) VETERINARY PUBLIC HEALTH & EPIDEMIOLOGY

(i) Zoonoses- cum- Epidemiology lab 600 sq.ft
(ii) Milk Hygiene Lab 600 sq.ft.
(iii) Meat Hygiene Lab 600 sq.ft.

(8) ANIMAL NUTRITION

(i) Feed processing and mixing plant (desirable)
(ii) Feed/fodder analysts and Energy Metabolism laboratory 1200 sq.ft.
(iii) Metabolic stall / Boxes (desirable)

Note: Feed Mixing, Hay and silage preparation etc. for the farm will be undertaken through this Department

(9) ANIMAL GENETICS AND BREEDING

1) U.G. Lab with Computer and statistical analysis facilities 1200 sq.ft
2) U.G. Laboratory 900 sq.ft
(10) **LIVESTOCK PRODUCTION MANAGEMENT**

(i) Handling room (amphitheatre type) 1200 sq. ft.
(ii) Museum for breed charts, animal house and housing material models-cum-U.G. Lab. 1200 sq. ft.

(11) **LIVESTOCK PRODUCTS TECHNOLOGY**

(i) *Slaughtering-Unit with carcass utilization and waste management unit.
   (a) Mini slaughter house for 5 to 10 animals of sheep/goat and pig (if relevant) sections with ante-mortem room, pre-slaughter wash, fly proofing, slanted platform, blood collections, skin treatment, offal collection and disposal etc. (preferably with a waste/dung gas unit).
   (b) Poultry slaughter unit for 50 to 100 birds.
(ii) Meat processing and examination lab 1200 sq.ft.
(iii) Dairy technology lab 1200 sq. ft
(iv) Cold storage, product store; (sale section**) 300 sq. ft.
   * Would serve Veterinary Public Health Dept. also. ** Desirable

(12) **VETERINARY GYNAECOLOGY AND OBSTETRICS**

(i) Semen/Androtogy tab 900 sq. ft
(ii) Museum- cum-Phantom hall and palpation room
(iii) Artificial Insemination Centre with semen storage and trevis facility.

(13) **VETERINARY SURGERY AND RADIOLOGY**

(i) Practice hall for training in anaesthesia and operation theatre routines, X Ray and Imaging Facilities. 900 sq.ft
(ii) Small animal operation theatre (practical) with preparation room. 600 sq.ft
(iii) Large animal operation theatre cum preparation room 1200 sq.ft
(iv) Sterilisation, instrument and surdry room. 400 sq ft

(14) **VETERINARY MEDICINE**

(i) Clinical Medicine Lab 600 sq.ft
(ii) Preventive Medicine/ Disease Investigation Lab 600 sq.ft
(iii) Mobile Diagnostic lab (Part of TVCC) 200 sq.ft
(iv) Museum cum projection room 600 sq.ft

(15) **VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION**

(Being a department engaged in public relation, livestock Centre at the entrance/in front of the college)

(i) Audio-visual technology laboratory 600 sq.ft
(ii) Photography-cum-graphic unit, projection unit etc.  600 sq.ft
(iii) Group discussion chambers/mini seminar room  600 sq.ft
(iv) Museum-cum-live-stock advisory unit  600 sq.ft

(16) TEACHING VETERINARY CLINICAL COMPLEX (TVCC)

NOTE: This is the unit from where the following departments will be operating their training and services. The departments of Veterinary Medicine, Veterinary Surgery and Radiology, Veterinary Gynaecology and Obstetrics, the departments of Veterinary Pathology, Veterinary Microbiology, Veterinary Parasitology and Veterinary Physiology and Biochemistry will also help in providing their services to the TVCC for the respective courses/services.

(i) Reception
   a. Waiting hall for large animals.
   b. Waiting hall for small animals.
   c. Registration counter/record room
   d. Dispensary, drug store etc.

(ii) Animal examination section - fitted with chutes
   a. Large animals
      I.  Medical unit
      II. Surgical unit
      III. Gynaecology unit
   b. Small animal (same as above with animal examination table)

(iii) Operation theatre:
   (a) Equine surgery
   (b) Bovine surgery (standard surgery) with surgical chute (Utrecht pattern preferable)
       Bovine surgery (standing surgery) with surgical chute (Utrecht pattern preferable)

(iv) Infectious and contagious disease wards.
   (a) Rabies ward
   (b) Equine isolation ward
   (c) Bovine isolation ward
   (d) Skin ward.

(v) Recovery room for large animals, slings, hoist head protectors, hobbles, twitch, blinkers etc

(vi) Intensive- care unit for small animal.

(vii) Veterinary Diagnostic laboratory with the facilities for activities of 4 departments viz. Veterinary Pathology, Veterinary Microbiology, Veterinary Parasitology, and Veterinary Physiology and Biochemistry

(viii) Indoor ward along with client/farmers room (separate for large and small animal owners).

(ix) Ambulatory unit (complete with diagnostic and therapeutic equipments).

(x) Animal transport facility (desirable)
(xi) Night duty section with facilities for, technicians, residents and students rooms and vehicle to transport doctors during emergencies
(xii) Residential accommodation for staff of clinical departments and specialized services
(xiii) Dark room, film room, interpretation room
(xiv) Physiotherapy room
(xv) Loading and unloading platform

(17) INSTRUCTIONAL LIVESTOCK FARM COMPLEX (ILFC)

Note: This Unit of Veterinary College shall provide the services of teaching in rearing of livestock species including poultry with the facilities of housing, feeding, breeding and management of large and small ruminant units, piggery, poultry and animals of regional interest, record keeping; storage facilities for feed and fodder; production facilities for fodder crops; suitable housing for managerial and technical staff.

All the concerned staff on duty in this Unit shall be responsible for management including emergencies of the animals in the Livestock Farm. They shall arrange and supervise the routine managerial practices from time to time and shall maintain records for the same. They shall also be responsible for production activity in each of the units and these animals shall be utilized as instructional farms for student teaching.

ILFC shall have the following farm units/land for fodder production:

A. Animal Production Management

(i) Handling Room (Amphitheatre type) 1200 sq. ft.
(ii) Cattle and buffalo farm of 50 animals with followers
(iii) Sheep and Goat farm having 50-100 animals each
(iv) Piggery farm with 50-100 stock (where relevant)
(v) Horse (if there is no remount Veterinary Core Unit at least two horses be made available for teaching/training. Camel/Yak (optional).
(vi) Rabbitary (optional)
(vii) Fodder production and grassland management facility.

B. Avian Production Management

(i) Poultry farm (as per need)
(ii) Models of various systems, Pens, Cages, Runs, Equipment etc.
(iii) Sample stock of various breeds of poultry and other avians,
(iv) Hatchery and chick pens.
(v) Brooders.

C. Fish Production Management

(i) Fish ponds
(ii) Hatchery
D.  Fodder Production Management

i)  25-50 acres of land sufficient to meet the requirement for fodder for the ILFC

ii) The housing should be as per Animal welfare requirements. All animals reared exclusively for the conduct of practical be stationed and managed in a separate section.

iii) Farm data room taking care of pedigree charts, stud books and other farm biodata, farm account on income and other farm expenditure, balance sheets etc. shall be available as teaching material, preferably in computer terminals/floppy.

III.  STAFF:

1.  General Remarks:
   a) Emphasis of veterinary education being on practical, instruction and demonstration must be carried out in small groups of 5-10 students: the number of teachers must be adequate for such instructions to be carried out effectively.

   b) The teaching staff of the departments in a veterinary college shall be whole-time teachers.

   c) The number of teachers shown below is the minimum/critical number in each Department for imparting undergraduate teaching leading to B.V.Sc & A.H.degree. The departments having extension & other services attached, shall have additional faculty members.

   d) To ensure exposure of under-graduate students to experienced teachers, it is essential to provide adequate number of senior posts (Professor, Associate Professor/Reader) in every department. No department shall function without at least one Professor.

   e) In view of acute shortage of faculty members in different veterinary colleges as well as the situation anticipated to prevail for some more time, it is suggested/recommended that in order to overcome the situation, meritorious persons possessing BV.Sc & A.H. degree may be recruited as Teaching Associate/Assistant/Demonstrator as stop-gap arrangement However, such arrangements should be restricted to a maximum of one person in each department for a maximum period of five years within which the faculty positions prescribed in these Regulations should be filled up.

2.  Positions

   (A)  Dean's Office***

   (i)  The Dean

   (ii) Administrative Assistant/A.A.O.

   (iii) P.A./P.S

   (rv) Academic section staff (admission, examination, Record)

   (v)  Account section staff
(vi) Purchase & Store section staff
(vii) Typing, duplicating/photocopier staff

*** The institutions may provide the requisite office staff as per norms of the state/territory, needed for efficient working. The positions like driver, gardener, mechanic, instrumentation technicians etc. must be included as per need and as per norms for the purpose.

(B) Departments

Minimum secretarial/supportive/account staff should be made available to each Department/Unit in a Veterinary College as per workload and for smooth independent functioning.

(1) VETERINARY ANATOMY
i. Professor 1
ii. Associate Professor 1
Hi. Assistant Professor 2
iv. Curator cum museum/specimen technicians 1
v. Laboratory technicians 1
vi. Laboratory assistant/Attendants 2
vii. Animal attendant-cum-macerator/embalmer 2
viii. Sweeper-cum-Attendant 1

(2) VETERINARY PHYSIOLOGY & BIOCHEMISTRY
i. Professor 1
ii. Associate Professor (1- Physiology, 1-Biochemistry) 2
iii. Assistant Professor (2-Physiology, 2-Biochemistry) 4
iv. Laboratory technicians 2
v. Laboratory Assistant/Attendants 3
vi. Animal attendant 1
VII. Sweeper-cum-attendant 1

Staff for clinical and service jobs has to be added as per work load and nature of work.

(3) VETERINARY PHARMACOLOGY AND TOXICOLOGY
i) Professor 1
ii) Associate Professor 1
iii) Assistant Professor 2
rv) Laboratory technicians 2
v) Laboratory assistant/Attendants 2
vi) Animal attendant 1
vii) Sweeper-cum-attendant 1

Staff for toxicological work/service has to be added as per work load and nature of work.

(4) VETERINARY PARASITOLOGY
i. Professor 1
ii. Associate Professor 1
iii. Assistant Professor 2
iv. Laboratory technicians 2
v. Laboratory assistant/Attendants 2
vi. Animal attendant 1
vii. Sweeper-cum-attendant 1
viii. Staff for conical jobs has to be added as per work load and nature of work.

(5) VETERINARY MICROBIOLOGY
i. Professor 1
ii. Associate Professor 1
iii. Assistant Professor 2
iv. Laboratory technicians 2
v. Laboratory assistant/Attendants 2
vi. Animal attendant 2
vii. Sweeper-cum-attendant 1

(6) VETERINARY PATHOLOGY
i) Professor 1
ii) Associate Professor 2
iii) Assistant Professor 3
iv) Laboratory technicians/Specimen Curator 2
v) Laboratory assistant/Attendants 2
vi) Post Mortem/Animal attendant 2
vii) Sweeper-cum-attendant 1
viii) Staff for clinical and Post Mortem jobs has to be added as work load and nature of work.

(7) VETERINARY PUBLIC HEALTH AND EPIDEMIOLOGY
i. Professor 1
ii. Associate Professor 1
iii. Assistant Professor 2
iv. Laboratory technicians 2
v. Laboratory assistant/Attendants 2
vi. Animal attendant 1
vii. Sweeper-cum-attendant 1

(8) ANIMAL NUTRITION
i. Professor 1
ii. Associate Professor 1
iii. Assistant Professor 2
iv. Laboratory technicians 2
v. Laboratory assistant/Attendants 1
vi. Animal attendant 3
vii. Sweeper-cum-attendant 1
viii. Machine operators/feed plant technicians (as per need)
ix. Staff for Consultancy/feed analysis jobs has to be added as per work load and nature of work
(9) ANIMAL GENETICS AND BREEDING
i. Professor 1
ii. Associate Professor 1
iii. Assistant Professor 2
iv. Computer Programmer 1
v. Laboratory technicians 1
vi. Laboratory assistant/Attendants 1
vii. Data and Console Operator 1
viii. Sweeper-cum-attendant 1
Staff needed for data analysis or similar service has to be added as per need

(10) LIVESTOCK PRODUCTION MANAGEMENT
i. Professor 1
ii. Associate Professor 2
iii. Manager Farm Operations 3
iv. Rest of the posts of LPM Department have been shown against Instructional Livestock Farm Complex.
v. Farm Assistant

(11) LIVESTOCK PRODUCTS TECHNOLOGY
i. Professor 1
ii. Associate Professor 1
iii. Assistant Professor 2
iv. Laboratory technicians 1
v. Laboratory assistant/Attendants 1
vi. Butchers/skilled assistants for processing/waste management etc. as per work load.
vii. Sweeper-cum-attendant 1
Staff for commercial production, quality control, meat testing, Consultancy etc. has to be added as per work load and nature of work.

(12) VETERINARY GYNAECOLOGY AND OBSTETRICS
i. Professor 1
ii. Associate Professor 2
iii. Assistant Professor 3
iv. Laboratory technicians/Compounders /Stock-men 2
v. Laboratory assistant/Attendants 2
vi. Animal Attendant 1-3
vii. Sweeper-cum-attendant 1
Staff for Clinical and Service Jobs as to be added as per Work load and nature or work (One post of Assistant Professor has been shown against TVCC)
(13) VETERINARY SURGERY AND RADIOLOGY

i. Professor 1
ii. Associate Professor 2
iii. Assistant Professor 3
iv. Operation Theatre Masters/Technicians 2
v. Operation Theatre assistant 2
vi. Imaging Technicians 1
vii. Animal Attendant 2
viii. Sweeper-cum-attendant 1

Staff for clinical and service jobs has to be added as per work load and nature of work.
(One post of Assistant Professor has been accommodated/shown against TVCC)

14. VETERINARY MEDICINE

i. Professor
ii. Associate Professor
iii. Assistant Professor 3
iv. Lab. Technicians/Compounders 2
v. Laboratory assistant/Attendants 2
vi. Animal Attendant 2
vii. Sweeper-cum-attendant 1

Staff for clinical and service jobs has to be added as per work load and nature of work.
(Two posts of Assistant Professor has been accommodated/shown against TVCC)

(15) VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION

i) Professor 1
ii) Associate Professor 1
iii) Assistant Professor 2
iv) Audio-visual Technician 1
v) Artist-cum-Photographer 2
vi) Driver-cum-Operator 1
vii) Art room attendants 2
viii) Sweeper-cum-Attendant 1

(16) TEACHING VETERINARY CLINICAL COMPLEX (TVCC)

i. Head of Department-Clinics (Professor rank with specialization in any of the clinical subjects) 1
ii. Hospital Superintendent (Associate Professor rank with specialization in any of the clinical subjects) 1
iii. Assistant Professors for Medicine(2*), Surgery (1), Gynecology (1), Clinical Pathology/Biochemistry/Parasitology/Microbiology (1) 5

All the faculty of the TVCC shall also participate in the teaching programmes of their respective ©departments * One for Ambulatory Clinical Service
Record Keeper cum Data Operator 1
Registration Assistant 1
In-charge medical store 1
Compounder/Pharmacist 2
Laboratory Technician 1
Laboratory Assistant/Attendant 1
Sweeper-cum-attendant (as per work load)

(17) INSTRUCTIONAL LIVESTOCK FARM COMPLEX (ILFC)

i. Head of Department. Instructional Livestock Farm Complex  
   (Professor rank with specialization in any of the production subjects) 1

ii. Farm Manager (Associate Professor rank with specialization in any of the production subjects) 1

iii. Assistant Professors for Breeding (1), Nutrition (1), LPM (2*), Agronomy (1)  
* One for Poultry Production Management 5

   All the faculty of the Instructional Livestock Farm Complex shall also 
   participate in the teaching of their respective departments

iv) Manager Farm Operations 2
v) Farm Assistant 2
vi) Animal Attendants 4

vii) Farm labourers/casual labourers (as per work load and as per economic viability-
      except in units exclusively reserved for experimentation)

viii) Sweeper-cum-Attendant (as per unit size and work requirements).

ix) Machine Operator/Tractor Driver Mechanics etc. (as per need.)  
    Staff for Consultancy, planning, analysis etc. has to be added as per work load and 
    nature of work.

   The posts at Sl. No. (iv) to (ix) above have been shown as transferred from the 
   Department of Livestock Production Management.

IV. EQUIPMENT

1. Common Facilities

   A. Five lecture halls fitted with audio-visual projection system
   B. Conference Hall with multimedia projection system
   C. Distillation/Deionizer plants
   D. Photography Unit with all facilities
   E. Central Instrumentation Facility (CIF)

2. Department

   (1) DEPARTMENT OF VETERINARY ANATOMY

      I. Work-tops tables fitted with 5 amp. plug points for 20 pairs of students. 1
      II. Lab-stools
      III. Black board (sliding)
| IV. | Almirah for bone-sets | 6 |
| V. | Almirah for microscopes | 2 |
| VI. | Steel Racks for bones store | 20 |
| VII. | Whatnots | 10 |
| VIII. | Glass almirah | 4 |
| IX. | Show-cases (Glass paneled) | 15 |
| X. | Marble-top/Stainless Steel Top Tables (with drainage) | 10 |
| XI. | Tissue disposal Buckets | 10 |
| XII. | Steel racks for wet specimens | 40 |
| XIII. | Whatnots do | 40 |
| XIV. | Large tubs with over flows for washing specimens/limbs | 10 |
| XV. | Steel frames with hooks etc. | 4 |
| XVI. | Articulated skeleton one for Ox, Horse, Sheep, Goat, Buffalo, Pig, Dog, Cat Camel Fowl, Rabbit Duck | As per need |
| XVII. | Embalmed specimen for surface anatomy one each | |
| XVIII. | Embalmed hollow organs | One set each |
| XIX. | Embalmed specimen with viscera in situ' | |
| XX. | Slide cabinets-50000 slides | 2 |
| XXI. | Binocular microscopes | 10 |
| XXII. | Dissection microscopes | 10 |
| XXIII. | Automatic slide projector | 1 |
| XXIV. | Microslide projector | 1 |
| XXV. | Projection screen | 1 |
| XXVI. | Overhead projector | 1 |
| XXVII. | Specimen slides of histology & embryology 5 sets each | |
| XXVIII. | Specimen of some major Zoo Animals (skeleton etc.) | |
| XXIX. | Post-mortem sets | 2 |
| XXX. | Scissors-straight | 6 |
| XXXI. | Scissors curved | 6 |
| XXXII. | Hand-saw | 2 |
| XXXIII. | Rib cutter | 4 |
| XXXIV. | Rib-shear | 4 |
| XXXV. | Forceps Large | 6 |
| XXXVI. | Forceps Small | 6 |
| XXXVII. | Artery Forceps | 6 |
| XXXVIII. | Tennaculum | 6 |
| XXXIX. | B.P. Handle | 6 |
| XL. | Vacuum Pump for embalming | 1 |
| XLI. | Bucket fitted with taps etc. for embalming | 2 |
| XLII. | Meat Saw | 2 |
| XLIII. | Plastic drums with cover | 20 |
| XLIV. | Plastic Buckets with cover | 30 |
| XLV. | Enameled Iron buckets | 20 |
| XLVI. | Enameled trays | 10 |
| XLVII. | Enameled Basins | 20 |
| XLVIII. | Enameled Mugs | 5 |
| XLIX. | Autoclave | 1 |
| L. | pH meter | 1 |
LI. Oven for paraffin embedding 2
LII. Slide warmers 2
LIII. Rotary Microtome 2
LIV. Tissue floatation bath 4
LV. Hot Air Oven 2
LVI. Refrigerator (double door) 1
LVII. Automatic Tissue Processor 1
LVIII. Automatic Knife Sharpener 1
LIX. Microtome Knives 6
LX. Hone With Surfaces 4
LXI. Stropping Leather 1
LXII. Slide Box 100 slides 20
LXIII. Slide Cabinet 5000 Slides 4
LXIV. Analytical Balance 2
LXV. Monopan Balance 1
LXVI. Ice-Box 2
LXVII. Staining Jars 20
LXVIII. Coupling Jars 20
LXIX. SS Staining Trays 20
LXX. Animal Cages  As per need
LXXI. Glass wares  As per need
LXXII. Electric Pointers

(2) DEPARTMENT OF VETERINARY PHYSIOLOGY & BIOCHEMISTRY

1). Work table / lab table with sink, water source, chemical racks etc. for analytical experiments, for 20 pair students
2). Work tables / lab tables with electric points and other controls for animal experiments, for 20 pair students
3). Compound microscopes (with eye pieces and objectives etc. complete) 20
4). Haemocytometer sets 30

5) Haemoglobinometer sets 30
6) MicRohematocrit 2
7) Microhematocrit tubes  As per need
8) Centrifuge 1000 RPM 2
9) Wintrobes sets 20
10) Calorimeter 2
11) Flowmeter 2
12) Haemagglutination plate 10
13) Kymograph with accessories 10
14) Spirometer 2
15) Stimulators 5
16) Tissue chamber 20
17) Isolated organ bath 2
18) Dissecting sets 10
19) Manometers (mercury) 5
20) Sphigmo manometers (dial type) 2
21) Catheters (silastic) 10
22) Catheters (portable) 1
23) Flame photometers 1
24) Spectra photometer 1
25) Common Balance 5
26) Mono pan digital balance 1
27) Glass ware As per need
28) Refrigerator 1
29) Microkjeldahl set 1
30) Digestion set 1
31) Refractometer 1
32) Student's Microscope 10
33) Column chromatography set 1
34) T.L.C. 1
35) Hot air oven 1
36) Photoelectric Colorimeter 1
37) *Electrophoresis apparatus 1
38) Micro Haematocrit centrifuge 1
39) *Blood Analyser (Automatic) 1
40) *pH meter 1

*Prefer latest time saving models (automatic etc.) with uninterrupted power supply (UPS). Burettes, Pipettes of different volume, volumetric flasks, measuring cylinders, test tubes, slides, etc. Biotechnology equipment like PCR is required as there is a course in Biotechnology. (These equipment have been included under this Department from the Department of Veterinary Biochemistry)

(3) DEPARTMENT OF VETERINARY PHARMACOLOGY AND TOXICOLOGY

1. Demonstration table with electrical points, drainage, steriotaxic control etc. 1
2. Kymograph with complete accessories, electric recording drum etc 5
3. Respiration pump, endotracheal tube, mouth gag, spirometer etc. 1
4. Isolated tissue bath with accessories 15
5. Observation cages for rats and mice 25
6. Tuberculin syringe 15
7. Common balance 5
8. Monopan electronic balance 1
9. Aerator 10
10. Binocular microscopes 2
11. Spectrophotometer 1
12. Centrifuge (1000RPM) 1
13. Dispensing scales with metric and apothecaries WL 25
14. Marble slab 25
15. Spatula (iron, plastic and ebonite)  25
16. Mortar and pestle (porcelain and glass)  25
17. Measuring glasses, cylinders of various sizes  25
18. pH meter (digital)  1
19. Manometers, catheters etc.  2
20. ECG apparatus (portable)  1
21. Electronic stimulator  1
22. Surgical instruments for a pack  2

(4) DEPARTMENT OF VETERINARY PARASITOLOGY

1. Autoclave  1
2. Hot air oven  1
3. Incubator  1
4. Refrigerator  1
5. Microscope with high power (HP) Oil immersion  12
6. Microscope Phase contrast  1
7. Centrifuge  2
8. Micrometers (stage and eyepiece)  2
9. Warning Blender  1
10. Steriliser Unit  1
11. Distillation set  1
12. Eyepiece double demonstration  2
13. Eyepiece comparison  2
14. Hair Hygrometer  1
15. Vernier calipers  3
16. Slide cabinet  2-3
17. Slide Boxes  10-20
18. Desiccators  3
19. Water bath  2
20. Overhead Projector  1
21. Slide Projector  1
22. Total counter  2
23. Table Counter  2
24. Dissection Set  5
25. Dissection Microscope  4

(5) DEPARTMENT OF VETERINARY MICROBIOLOGY

1. Worktable / lab table with power points & water source tec. For 20 pair of students  40
2. Lab stools (revolving)  40
3. Autoclave horizontal  1
4. Autoclave  1
5. Hot-air Oven  2
6. Instrument sterilzers  2
7. Seitz filter assembly including Seitz filter, vacuum pressure pump etc  1
8. Other filters (bake field, Chamber land and membrane filters)  20
9. Students Microscopes  20
<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Ultra-violet microscope with U.V. assembly</td>
<td>1</td>
</tr>
<tr>
<td>11. Dark-field microscope with light source</td>
<td>1</td>
</tr>
<tr>
<td>12. Phase-contrast microscope built-in light</td>
<td>1</td>
</tr>
<tr>
<td>13. Stage and ocular micrometer (for measurement of bacteria)</td>
<td>8</td>
</tr>
<tr>
<td>14. Hanging drop preparation slides with cover-slips</td>
<td>30</td>
</tr>
<tr>
<td>15. Petri-dishes 3&quot; and 4&quot;</td>
<td>As per need</td>
</tr>
<tr>
<td>16. Platinum loops</td>
<td>As per need</td>
</tr>
<tr>
<td>17. Bunsen burners</td>
<td>60</td>
</tr>
<tr>
<td>18. Mc'intosh and field's anaerobic jar</td>
<td>2</td>
</tr>
<tr>
<td>19. Hydrogen gas cylinder</td>
<td>1</td>
</tr>
<tr>
<td>20. C02 gas cylinders</td>
<td>1</td>
</tr>
<tr>
<td>21. Incubator</td>
<td>2</td>
</tr>
<tr>
<td>22. C02 Incubator</td>
<td>1</td>
</tr>
<tr>
<td>23. Biological Oxygen Demand (B.O.D.) Incubator</td>
<td>1</td>
</tr>
<tr>
<td>24. Water bath</td>
<td>2</td>
</tr>
<tr>
<td>25. Deep-freeze 20° C</td>
<td>1</td>
</tr>
<tr>
<td>26. Deep-freeze 70° C</td>
<td>1</td>
</tr>
<tr>
<td>27. Petroff-Hauser counter</td>
<td>10</td>
</tr>
<tr>
<td>28. Micro-kjeldhal</td>
<td>2</td>
</tr>
<tr>
<td>29. Photo Colorimeter</td>
<td>2</td>
</tr>
<tr>
<td>30. Ultra-violet Lamp</td>
<td>2</td>
</tr>
<tr>
<td>31. Laminar flow cabinet</td>
<td>2</td>
</tr>
<tr>
<td>32. Tripple - distillatory</td>
<td>2</td>
</tr>
<tr>
<td>33. Metal distillatory</td>
<td>2</td>
</tr>
<tr>
<td>34. Colony Counter</td>
<td>2</td>
</tr>
<tr>
<td>35. Perspex plates for HA. tests</td>
<td>6</td>
</tr>
<tr>
<td>36. ELISA test reader</td>
<td>2</td>
</tr>
<tr>
<td>37. Boards/inoculation boxes (for restraining mice, guinea pig. etc.)</td>
<td>As per need</td>
</tr>
<tr>
<td>38. Cages syringes etc.</td>
<td>As per need</td>
</tr>
<tr>
<td>39. Surgical instrument</td>
<td>As per need</td>
</tr>
<tr>
<td>40. McFariands Nephlometer (for vaccine prep.)</td>
<td>4</td>
</tr>
<tr>
<td>41. Gel chromatography aptus</td>
<td>4</td>
</tr>
<tr>
<td>42. Immuno electrophoresis apparatus</td>
<td>2</td>
</tr>
<tr>
<td>43. Centrifuge bucket type</td>
<td>2</td>
</tr>
<tr>
<td>44. High-speed centrifuge (16,000 to 20,000 rpm)</td>
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</tr>
<tr>
<td>45. Refrigerated centrifuge</td>
<td>1</td>
</tr>
<tr>
<td>46. Ultra centrifuge (60,000 RPM)</td>
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</tr>
<tr>
<td>47. Replica Plates</td>
<td>1</td>
</tr>
<tr>
<td>48. Freeze Dryer</td>
<td>1</td>
</tr>
<tr>
<td>49. Inoculation cabin (room)</td>
<td></td>
</tr>
<tr>
<td>50. Cubicles for virological work</td>
<td></td>
</tr>
<tr>
<td>51. Dental drill (for egg inoculation)</td>
<td></td>
</tr>
<tr>
<td>52. Post-mortem tables (trolleys) for small animals</td>
<td></td>
</tr>
<tr>
<td>53. Automatic pipette washer</td>
<td>2</td>
</tr>
<tr>
<td>54. Air-conditioners</td>
<td>As per need</td>
</tr>
<tr>
<td>55. Glass-ware, cottons wool, syringe, media, sugars, etc.</td>
<td>As per need</td>
</tr>
<tr>
<td>Item Number</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.</td>
<td>Lb. table/work table complete with racks, sinks, taps etc. for 20 pair of students</td>
</tr>
<tr>
<td>2.</td>
<td>Laboratory stools (revolving)</td>
</tr>
<tr>
<td>3.</td>
<td>Students microscopes (complete with eye pieces and objectives)</td>
</tr>
<tr>
<td>4.</td>
<td>Binocular microscopes</td>
</tr>
<tr>
<td>5.</td>
<td>Dark field illumination with projecting units</td>
</tr>
<tr>
<td>6.</td>
<td>Phase contrast microscopes</td>
</tr>
<tr>
<td>7.</td>
<td>Immuno-fluorescent</td>
</tr>
<tr>
<td>8.</td>
<td>Black board cum display boards etc.</td>
</tr>
<tr>
<td>9.</td>
<td>Automatic slide projector</td>
</tr>
<tr>
<td>10.</td>
<td>Overhead Projector</td>
</tr>
<tr>
<td>11.</td>
<td>Display boards, chart boards etc.</td>
</tr>
<tr>
<td>12.</td>
<td>Specimen slides of various histopathological lesions.</td>
</tr>
<tr>
<td>13.</td>
<td>Set of transparencies of various H.P. &amp; gross lesions</td>
</tr>
<tr>
<td>14.</td>
<td>Rotary microtomes, AO 30 Spencer type with thin sectioning facility</td>
</tr>
<tr>
<td>15.</td>
<td>Paraffin floatation bath (temp, control 55-65° C)</td>
</tr>
<tr>
<td>16.</td>
<td>Paraffin bath oven</td>
</tr>
<tr>
<td>17.</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>18.</td>
<td>Automatic tissue processor</td>
</tr>
<tr>
<td>19.</td>
<td>Slide cabinet 1000 capacity</td>
</tr>
<tr>
<td>20.</td>
<td>Slide boxes -100 capacity</td>
</tr>
<tr>
<td>21.</td>
<td>Staining jars, coupling jars etc.</td>
</tr>
<tr>
<td>22.</td>
<td>Tissue cutting boards</td>
</tr>
<tr>
<td>23.</td>
<td>Racks for specimen jars, bottles etc.</td>
</tr>
<tr>
<td>24.</td>
<td>Scalpels (assorted)</td>
</tr>
<tr>
<td>25.</td>
<td>Containers, specimen jars, wide-mouthed bottle</td>
</tr>
<tr>
<td>26.</td>
<td>Cryostat (microtome)</td>
</tr>
<tr>
<td>27.</td>
<td>Hot Air Oven (Temp. 2 50° C)</td>
</tr>
<tr>
<td>28.</td>
<td>L’moulds &amp; bocks (for embedding)</td>
</tr>
<tr>
<td>29.</td>
<td>Auto staining unit</td>
</tr>
<tr>
<td>30.</td>
<td>Microtome knife sharpener - To and fro with side-shifting arrangement</td>
</tr>
<tr>
<td>31.</td>
<td>Autopsy table for birds (S.S top with drain)</td>
</tr>
<tr>
<td>32.</td>
<td>Autopsy table for small animals</td>
</tr>
<tr>
<td>33.</td>
<td>Specimen cutting table</td>
</tr>
<tr>
<td>34.</td>
<td>Autopsy knives</td>
</tr>
<tr>
<td>35.</td>
<td>Post-Mortem sets (with chisels, saw rib cutter, shears, bone cutter, saw, sharpener, etc.)</td>
</tr>
<tr>
<td>36.</td>
<td>Bone-cutting saw electric</td>
</tr>
<tr>
<td>37.</td>
<td>Heavy-duty rotary saw for large animal P.M.</td>
</tr>
<tr>
<td>38.</td>
<td>Protective wear (gloves, rubber apron, goggles, gum-boots, marks &amp; cap</td>
</tr>
<tr>
<td>39.</td>
<td>Carcass trolley/carcass van (fully covered)</td>
</tr>
<tr>
<td>40.</td>
<td>Hoist with over head railings</td>
</tr>
<tr>
<td>41.</td>
<td>Captive bolt pistols for euthanasia</td>
</tr>
<tr>
<td>42.</td>
<td>Platform balance (large and small)</td>
</tr>
<tr>
<td>43.</td>
<td>Skinning equipments</td>
</tr>
<tr>
<td>44.</td>
<td>Monopan digital balance</td>
</tr>
<tr>
<td>45.</td>
<td>Washing and disinfecting facility, aerosols etc.</td>
</tr>
<tr>
<td>46.</td>
<td>Specimen washing sinks (with hot &amp; cold water)</td>
</tr>
</tbody>
</table>
47). Knife sharpener (mechanical or power) 2
48). Plastic tubs & buckets with lid for specimen collection and transport 20
49). Specimen bottles, jars etc.
50). Large E.I Trays & dissection boards for bird P.M.
51). Incinerator unit Double combustion, smokeless oil burned / electric (pollution free)
52). Cold room unit
53). Freezer unit for small animals and specimens
54). Rabies P.M. unit
55). Sterilisation unit
56). High-pressure hydrant
57). Centrifuge 3000 RPM
58) Spectrophotometer 1
59). Wintrobe pipettes 1
60). Haemocytometer 10
61) Haemoglobinometer 20

(7) DEPARTMENT OF VETERINARY PUBLIC HEALTH & EPIDEMIOLOGY

1) A running table (worktable) with cup-boards, racks, wash basins, water source & shelves for
   20 pairs of students
2) Stools (revolving) 40
3) Black board-ciim-display-board 1
4) Steel almirahs 4
5) Almirahs/cupboards 2
6) Monocular students microscopes 25
7) Fluorescent microscope 1
8) Binocular microscope 5
9) Serologic water baths 4
10) pH-meter (digital) 2
11) Spectrophotometer 1
12) High-speed Centrifuge 1
13) Cooling high-speed Centrifuge 1
14) Gerbers' Centrifuge 1
15) Colony counter 2
16) Burners 25
17) Test-tube racks 30
18) Balance chainomatck 1
19) Electronic moropan balance 2
20) Micrometer 1
21) Staining racks, coupling jars, staining trays etc. 30 sets
22) Autoclave 1
23) Hot-air Oven 2
24) B.O.D. Incubators 2
25) Incubators 3
26) Cages for Lab. Animals 10
27) Micro-diluters 25
28) Microplates 60
29) Micro-pipettes (and tips as required) 12
30) Slide-projector 1
31) Slide cabinet 1
32) Slide Boxes 30
33) Deep-freeze 1
34) Laminar-flow Vertical 1

Data Processing and Programming unit for retrospective and prospective epidemiology.

Facilities for preparation of charts/maps etc for preparation of important animal diseases at the State/Regional and National levels.

Mobile van (s) for field visit - collection of data, material for control of diseases including reagents / antigens / vaccines to be carried in the Refrigerator in the van.

The filed activity has to be carried out in close collaboration with the 'Teaching Veterinary Clinical Complex, allied departments of the college and veterinary officers of the Animal Husbandry Department.

(8) DEPARTMENT OF ANIMAL NUTRITION

1. Slide Projector 1
2. Distillation set 2
3. Chemical balance 5
4. Hot air oven 2
5. Single pan balance 1
6. Electronic monopan balance 2
7. Muffle furnace 1
8. Desicator 5
9. Suction Pump 1
10. Digestion set 2
11. Kjeldahl apparatus 2
12. Micro Kjeldahl set 1
13. Soxhlet apparatus set 1
14. Water bath 1
15. Water still 1
16. Flame photometer 1
17. Spectrophotometer 1
18. Warburg apparatus 1
19. Haldens Gas Analyser 1
20. Spiro meter 1
21. Gas collection bags 6
22. Chromatography unit 1
### (9) DEPARTMENT OF ANIMAL GENETICS AND BREEDING

1. Work table for 30 units
2. Stools
3. Black board
4. Projection screen
5. Slide projector
6. Personal computer
7. Microscopes
8. Slide Boxes
9. Transparencies Boxes
10. Specimen racks, almirahs

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work table for 30 units</td>
<td></td>
</tr>
<tr>
<td>Stools</td>
<td>60</td>
</tr>
<tr>
<td>Black board</td>
<td>1</td>
</tr>
<tr>
<td>Projection screen</td>
<td>1</td>
</tr>
<tr>
<td>Slide projector</td>
<td>1</td>
</tr>
<tr>
<td>Personal computer</td>
<td>As per need*</td>
</tr>
<tr>
<td>Microscopes</td>
<td>20</td>
</tr>
<tr>
<td>Slide Boxes</td>
<td>As per need</td>
</tr>
<tr>
<td>Transparencies Boxes</td>
<td>As per need</td>
</tr>
<tr>
<td>Specimen racks, almirahs</td>
<td>As per need</td>
</tr>
<tr>
<td>Storage boxes for charts, diagrams etc.</td>
<td>As per need</td>
</tr>
</tbody>
</table>

*Can be a common facility.

### (10) DEPARTMENT OF LIVESTOCK PRODUCTION MANAGEMENT

1. Over head projector
2. Slide projector
3. Sprayer
4. Shearing and clipping equipment
5. Debeaking equipment
6. Tattooing set tags etc.
7. A.I. equipment (different species)
8. Egg Candler
9. Incubator (Hatchery)
10. Battery Brooder
11. Trap nest
12. Egg Grading Machine
13. Making Machine Set
14. Chick sexing machine
15. Automatic scalder
16. Vernier Callipers
17. Screw Gauge
18. Maximum-Minimum Thermometer
19. Psychro-meter
20. Hair Hygrometer
21. Milking cans
22. Making piles
23. Milk measures
24. Cream seperater
25. Butter chums
26. Branding set
27. Castrator (for different species)
28. Electric clipper
29. Garter's centrifuge

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over head projector</td>
<td>1</td>
</tr>
<tr>
<td>Slide projector</td>
<td>1</td>
</tr>
<tr>
<td>Sprayer</td>
<td>1</td>
</tr>
<tr>
<td>Shearing and clipping equipment</td>
<td>1 set</td>
</tr>
<tr>
<td>Debeaking equipment</td>
<td>1</td>
</tr>
<tr>
<td>Tattooing set tags etc.</td>
<td>1</td>
</tr>
<tr>
<td>A.I. equipment (different species)</td>
<td>1 set each</td>
</tr>
<tr>
<td>Egg Candler</td>
<td>1</td>
</tr>
<tr>
<td>Incubator (Hatchery)</td>
<td>1</td>
</tr>
<tr>
<td>Battery Brooder</td>
<td>1</td>
</tr>
<tr>
<td>Trap nest</td>
<td>5</td>
</tr>
<tr>
<td>Egg Grading Machine</td>
<td>1</td>
</tr>
<tr>
<td>Making Machine Set</td>
<td>1</td>
</tr>
<tr>
<td>Chick sexing machine</td>
<td>1</td>
</tr>
<tr>
<td>Automatic scalder</td>
<td>1</td>
</tr>
<tr>
<td>Vernier Callipers</td>
<td>5</td>
</tr>
<tr>
<td>Screw Gauge</td>
<td>5</td>
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<tr>
<td>Maximum-Minimum Thermometer</td>
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</tr>
<tr>
<td>Psychro-meter</td>
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</tr>
<tr>
<td>Hair Hygrometer</td>
<td>1</td>
</tr>
<tr>
<td>Milking cans</td>
<td>2</td>
</tr>
<tr>
<td>Making piles</td>
<td>2</td>
</tr>
<tr>
<td>Milk measures</td>
<td>1</td>
</tr>
<tr>
<td>Cream seperater</td>
<td>1</td>
</tr>
<tr>
<td>Butter chums</td>
<td>1</td>
</tr>
<tr>
<td>Branding set</td>
<td>1</td>
</tr>
<tr>
<td>Castrator (for different species)</td>
<td>1</td>
</tr>
<tr>
<td>Electric clipper</td>
<td>1</td>
</tr>
<tr>
<td>Garter's centrifuge</td>
<td>1</td>
</tr>
</tbody>
</table>
Housing models, dairy models, photographs of different breeds, models of silo pits, chart, photographs showing different points of body of various species / breeds, models of drainage, models of water troughs for different species, samples of feeds and fodders. Registers / Account procedures.

(11) DEPARTMENT OF LIVESTOCK PRODUCT TECHNOLOGY

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>1. Refrigerator</td>
<td>1</td>
</tr>
<tr>
<td>2. Deepfreeze</td>
<td>1</td>
</tr>
<tr>
<td>3. Electronic monopan balance</td>
<td>1</td>
</tr>
<tr>
<td>4. Balance for weighing birds</td>
<td>1</td>
</tr>
<tr>
<td>5. Large animal balance (weigh bridge type)</td>
<td>1</td>
</tr>
<tr>
<td>6. Bone cutting machine</td>
<td>1</td>
</tr>
<tr>
<td>7. Incubator</td>
<td>1</td>
</tr>
<tr>
<td>8. Hot air oven</td>
<td>1</td>
</tr>
<tr>
<td>9. Spring balance</td>
<td>1</td>
</tr>
<tr>
<td>10. Stunning machine (for different species)</td>
<td>1</td>
</tr>
<tr>
<td>11. Automatic scaler</td>
<td>1</td>
</tr>
<tr>
<td>12. Feather plucking machine</td>
<td>1</td>
</tr>
<tr>
<td>13. Student's microscope</td>
<td>10</td>
</tr>
<tr>
<td>14. L.T.C. set</td>
<td>1</td>
</tr>
<tr>
<td>15. Meat mincing machine</td>
<td>1</td>
</tr>
<tr>
<td>16. Sausage maker</td>
<td>1</td>
</tr>
<tr>
<td>17. Smoking unit</td>
<td>1</td>
</tr>
<tr>
<td>18. Salting instruments</td>
<td>1</td>
</tr>
<tr>
<td>19. Meat slicer</td>
<td>1</td>
</tr>
<tr>
<td>20. Butchering sets (Knives etc)</td>
<td>2</td>
</tr>
<tr>
<td>21. Packing unit</td>
<td>1</td>
</tr>
<tr>
<td>22. Lactometer</td>
<td>5</td>
</tr>
<tr>
<td>23. Butyro refrectometer</td>
<td>1</td>
</tr>
<tr>
<td>24. Butter moisture balance</td>
<td>1</td>
</tr>
<tr>
<td>25. Gerber's centrifuge</td>
<td>1</td>
</tr>
<tr>
<td>26. Gerber's tubes</td>
<td>20</td>
</tr>
<tr>
<td>27. Vacuum pump</td>
<td>1</td>
</tr>
<tr>
<td>28. Melting point apparatus</td>
<td>1</td>
</tr>
<tr>
<td>29. Warning blunder</td>
<td>1</td>
</tr>
<tr>
<td>30. Homogenizer</td>
<td>1</td>
</tr>
<tr>
<td>31. pH meter</td>
<td>1</td>
</tr>
<tr>
<td>32. Microscope binocular</td>
<td>1</td>
</tr>
<tr>
<td>33. Flame photometer</td>
<td>1</td>
</tr>
<tr>
<td>34. Spectrophotometer</td>
<td>1</td>
</tr>
<tr>
<td>35. Freeze drying unit</td>
<td>1</td>
</tr>
<tr>
<td>36. Rotary Milk evaporator</td>
<td>1</td>
</tr>
<tr>
<td>37. Defreeze drying unit</td>
<td>1</td>
</tr>
<tr>
<td>38. Cream separator</td>
<td>1</td>
</tr>
<tr>
<td>39. Butter Workers</td>
<td>1</td>
</tr>
<tr>
<td>40. Butter churners</td>
<td>1</td>
</tr>
<tr>
<td>41. Butter print</td>
<td>1</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>42.</td>
<td>Steel utensils for ghee, curd, khoa 2 each</td>
</tr>
<tr>
<td>43.</td>
<td>Richmend’s scale 1</td>
</tr>
<tr>
<td>44.</td>
<td>Hand sealing machine for bottle, cans, plastic, bags 1</td>
</tr>
<tr>
<td></td>
<td>Charts and Models of different meat cuts, slaughter house</td>
</tr>
</tbody>
</table>

**DEPARTMENT OF VETERINARY GYNAECOLOGY AND OBSTETRICS**

1. Work table / lab table (with sinks water source light points etc.) for 20 pairs of students 2
2. Lab stools (revolving) 40
3. Compound microscopes (complete with objectives eye pieces and other accessories) (one projection / Close circuit television attachment be procured) 25
4. Binocular microscopes 5
5. Haemocytometers 25 sets
6. Travis (examination) 1
7. Travis (service) 1
8. Phantom boxes 5
9. Palpation tables 5
10. Embryotomy sets 5
11. Kelver training cow for IU therapy. A.I etc 1
12. Electroejaculator 1
13. Artificial Vaginas (assort) 2 each
14. Oscilloscope for measuring sperm motility 1
15. Autoclave 2
16. Mono pan balance 1
17. Instrument cabinets 5
18. Obstetrical sets 2
19. Whelping sets 2
20. Surgical instruments 4
21. Holmes needles 5
22. Vaginal clamps (large & small) 10
23. Vaginal speculum (cow, goat, dog, cat) 3 each
24. Automatic pipette washer 1
25. Incubator 1
26. Semen shippers 4
27. Thermos flasks 2
28. Insemination catheters As per need
29. Storage tubes (cylinders) 4
30. Stands for storage cylinders 2
31. Swab holders 10
32. Instrument sterilizers 4
33. Record syringes 5
34. Injection cannula 5
35. Rinsing cans 1-2 lit 1
36. Nose Tongs 2
37. Protective clothes 5 sets
38. Latex lining for assorted A.V. 5 each
<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>39. Latex funnel</td>
<td>4 each</td>
</tr>
<tr>
<td>40. Insulating bags</td>
<td>4</td>
</tr>
<tr>
<td>41. Metal funnel</td>
<td>2</td>
</tr>
<tr>
<td>42. Measures</td>
<td>2</td>
</tr>
<tr>
<td>43. Drop pipettes with nibber nipples</td>
<td>20</td>
</tr>
<tr>
<td>44. Filter papers</td>
<td>As per need</td>
</tr>
<tr>
<td>45. Water suction pump</td>
<td>2</td>
</tr>
<tr>
<td>46. Autoclave</td>
<td>1 each</td>
</tr>
<tr>
<td>47. Glass-ware</td>
<td>As per need</td>
</tr>
</tbody>
</table>

**DEPARTMENT OF VETERINARY SURGERY AND RADIOLOGY**

1. Operation table for small animals stainless steel top
   (Hydraulic or pinion type)                                           8
2. Small animal preparation tables stainless steel top                 2
3. Foot operated waste bins                                           8
4. Dressing drums (small)                                             8
5. Dressing drums (large)                                             4
6. Instrument/syringe sterilizers                                     3
7. Enameled iron trays 12"x15"x/15"x18"                               8
8. Enameled iron trays 8"x10"                                         8
9. Scissors 8"/10" dipping                                             2
10. Scissors dressing                                                 4
11. Forceps cheatle                                                   8
12. Lamps (shadow4ess)                                                4
13. Screens (ward)                                                    4
14. Intravenous drip stands                                           8
15. Foot operated dressing drum stands                                4
16. Foot/Elbow soap dispenser                                         4
17. Gray's mouth gag                                                   10
18. Endotracheal tubes (cuffed and non-cuffed)                        4 each
19. Boyles' Anaesthesia apparatus (major)                             1
   with ether, halothance, circle absorber and methoxyfluorance evaporator
20. Ambu's respirator                                                 2
21. Electrocardiogram battery operated/portable                       1
22. Catheters, manometers etc.                                        As per need
23. Cotton tapes for control of animals                               2
24. Sand bags for positioning                                          4
25. Surgical pack for small animals                                   4
26. Surgical pack for large animals                                   4
27. Gloves and other rubber wares                                     10
28. Trevis for calves, adults, horse etc.                             10
29. Large animal trolley-cum-operation tables                         As per need
30. Operation tables for calves with drain                            6
31. Rope. E.I. buckets, irrigators etc.                                As per need
32. Autoclave horizontal with S.S.jacket 16" dia./rectangular         1
   with descalor (BIS-marked)                                          

114
<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoclave</td>
<td>2</td>
</tr>
<tr>
<td>Instrument cabinets</td>
<td>6</td>
</tr>
<tr>
<td>Orthopaedic instruments</td>
<td></td>
</tr>
<tr>
<td>Ophthalmic instruments/scopes etc.</td>
<td></td>
</tr>
<tr>
<td>Dental instruments for Large and small animals</td>
<td></td>
</tr>
<tr>
<td>Teat and udder instruments</td>
<td></td>
</tr>
<tr>
<td>Endoscope</td>
<td></td>
</tr>
<tr>
<td>Refrigerator</td>
<td>1</td>
</tr>
<tr>
<td>Weighing instruments/scale</td>
<td>1</td>
</tr>
<tr>
<td>Biopsy instruments</td>
<td>2</td>
</tr>
<tr>
<td>Electro surgery (diathermy) units</td>
<td>1</td>
</tr>
<tr>
<td>Cautery sets</td>
<td>2</td>
</tr>
<tr>
<td>Electric stimulators/glavenine, faredic etc.</td>
<td>1 each</td>
</tr>
<tr>
<td>Short-wave/micro-wave diathermy unit with disc, pad and coil electrodes</td>
<td>1</td>
</tr>
<tr>
<td>Ultra-sonic stimulators/therapy units</td>
<td>1</td>
</tr>
<tr>
<td>X-ray unit 500 Ma, 150 Kvp over-head model</td>
<td>1</td>
</tr>
<tr>
<td>X-ray unit trolley model with 'C'arms fluoroscope, image-intensifier, spot-films, video-recording and image freezing facility</td>
<td>1</td>
</tr>
<tr>
<td>Ultra-sonic diagnostic unit with video recorder</td>
<td>1</td>
</tr>
<tr>
<td>Ultraviolet lamp</td>
<td>1</td>
</tr>
<tr>
<td>Infra-red lamps</td>
<td>2</td>
</tr>
<tr>
<td>X-ray accessories, cassettes, film-carrier, dividers, grids, intensifying screens (rare-earth preferred.)</td>
<td></td>
</tr>
<tr>
<td>Protection gadgets (film-badges, lead gloves, lead aprons, goggles, lead screens)</td>
<td></td>
</tr>
<tr>
<td>Dark-room accessories (processing tank, dryer, hangers, safety lamps, film storage box, film-exchange windows, speaking grill, dark-room exhaust etc.)</td>
<td></td>
</tr>
<tr>
<td>Animal transport trolley for large animals</td>
<td>1</td>
</tr>
<tr>
<td>Stretcher for small animals</td>
<td>2</td>
</tr>
<tr>
<td>Glass-ware, syringes, drugs, medicine, etc.</td>
<td>As per need</td>
</tr>
<tr>
<td>X-ray film viewers</td>
<td>6</td>
</tr>
<tr>
<td>Sport film viewer</td>
<td>1</td>
</tr>
<tr>
<td>X-ray film museum, with film record-racks</td>
<td></td>
</tr>
<tr>
<td>Different equipment for restraining of animals including capture gun</td>
<td>1 set</td>
</tr>
<tr>
<td>Shoes and shoeing equipment</td>
<td>1 set</td>
</tr>
</tbody>
</table>

(14) **DEPARTMENT OF VETERINARY MEDICINE**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black boards-cum-display boards</td>
<td>4</td>
</tr>
<tr>
<td>Lab stools</td>
<td>40</td>
</tr>
<tr>
<td>Microscopes</td>
<td>20 sets</td>
</tr>
<tr>
<td>Microscopes-binocular</td>
<td>5 sets</td>
</tr>
<tr>
<td>Centrifuges</td>
<td>4</td>
</tr>
<tr>
<td>Common balances</td>
<td>5</td>
</tr>
<tr>
<td>Electronic monopan balance</td>
<td>1</td>
</tr>
<tr>
<td>Distillation units</td>
<td>4</td>
</tr>
<tr>
<td>Digital pH meters</td>
<td></td>
</tr>
<tr>
<td>Spectrophotometers(digital preferred)</td>
<td>2</td>
</tr>
</tbody>
</table>
11. Microhaematocrits       2  
12. Incubators         4  
13. Hot-air Ovens        4  
14. Water baths        2  
15. Dark field microscope       1  
16. Autoclave         1  
17. Autoclave(vertical)       2  
18. B.O.D Incubator        1  
19. Microscope with attachment for microphotographs       1  
20. Stethoscopes with multiple ear-pieces       3 sets  
21. Glass-ware As per need  

(15) DEPARTMENT OF VETERINARY AND ANIMAL HUSBANDRY 
EXTENSION EDUCATION  

1. Conference / discussion table (preferably) round tables of 4-6 ca 12  
2. Chairs         60  
3. Drawing boards, T-scales, drawing sets etc.        20 sets  
4. Work table to accommodate 40 students       1 set  
5. Black boards, display boards, chart stands etc       2 sets  
6. Projection screens (fixed & portable)       2  
7. Epidiascope         1  
8. Overhead projector         1  
9. Slide projectors (automatic & manual)       2  
10. Amplifiers ( 2 models)       2  
11. Stage mikes A.S.M. 7       11  
12. Horns         4  
13. Unit         4  
14. Hooters         2  
15. Generators (a) 2.5 Kv (b) 0.5 Kv       1 each  
16. Television (coloured)       1  
17. Video Cassette Recorder       1  
18. Video Cassette Player with recording facility       1  
19. Video camera (complete set)       1  
20. Camera 35 mm (with assorted lenses, filters etc.)       1  
21. Enlarger       1  
22. Dark room set (safe light, process unit, film store, film dryer, cutter etc.)       1  
23. Display boards (assorted models, with accessories  
24. Panel boards  
25. Tents, campers ropes, pegs, threads etc  
26. Wood cutting machine       1 set  
27. Stencils, felt pens, drawing sets       20 sets  
28. Film cutter, scissors, tin cutters etc.  
29. Work tools       2 sets
### (16) TEACHING VETERINARY CLINICAL COMPLEX

The TVCC should have the following common facilities to be used by other departments for the purpose of offering their respective courses:

<table>
<thead>
<tr>
<th>Number</th>
<th>Equipment Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Phonandoscopes</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Pleximeters and percussion-hummers</td>
<td>10 sets</td>
</tr>
<tr>
<td>3</td>
<td>Electronic stethoscope</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Ophthalmoscopes</td>
<td>3 sets</td>
</tr>
<tr>
<td>5</td>
<td>Electrocardiograms (portable model)</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Blood-pressure monitors</td>
<td>3 sets</td>
</tr>
<tr>
<td>7</td>
<td>Otoscopes</td>
<td>3 sets</td>
</tr>
<tr>
<td>8</td>
<td>Laryngoscopes</td>
<td>3 sets</td>
</tr>
<tr>
<td>9</td>
<td>Oesophagoscopes</td>
<td>3 sets</td>
</tr>
<tr>
<td>10</td>
<td>Tracheo-scopes</td>
<td>3 sets</td>
</tr>
<tr>
<td>11</td>
<td>Fibroptic endoscopy desirable</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Blood-Analyser</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Haemocytometers</td>
<td>30</td>
</tr>
<tr>
<td>14</td>
<td>Haemoglonbinometers</td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>Glass-ware</td>
<td>As per need</td>
</tr>
<tr>
<td>16</td>
<td>Small animal examination table (Hydraulic or pinion type)</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>Instrument Trolleys</td>
<td>6</td>
</tr>
<tr>
<td>18</td>
<td>Travis with noise protection</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Travis (service)</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Travis (examination)</td>
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</tr>
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</table>

### (17) INSTRUCTIONAL LIVESTOCK FARM COMPLEX

<table>
<thead>
<tr>
<th>Number</th>
<th>Equipment Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sprayer</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Shearing and clipping equipment</td>
<td>1 set</td>
</tr>
<tr>
<td>3</td>
<td>Debeaking equipment</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Tattooing set tags etc</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>AI equipment (different species)</td>
<td>1 set each</td>
</tr>
<tr>
<td>6</td>
<td>Egg Candler</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Incubator (Hatchery)</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Battery Brooder</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Trap nest</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>Egg Grading Machine</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Milking Machine Set</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Chick sexing machine</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Automatic scalders</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Vernier Callipers</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Screw Gauge</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>Maximum-Minimum Thermometer</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>Psychro-meter</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>Hair Hygrometer</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Milking cans</td>
<td>2</td>
</tr>
</tbody>
</table>
20. Milking piles        2
21. Milk measures        1
22. Cream separator      1
23. Butter chums         1
24. Branding set         1
25. Castrator (for different species)  1
26. Electric clipper        1
27. Tractor, Farm Equipment and Implement, Machinery as per requirement
### Annexure – I

**Method of calculation and recording of grade points**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Credit Hours</th>
<th>Marks obtained</th>
<th>Total (100)</th>
<th>Grade point (10 Point Basis)</th>
<th>Credit Points</th>
<th>Total Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Internal (30)</td>
<td>External (30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Theory (30)</td>
<td>Practical (20)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Veterinary Anatomy Paper I (Credit Hours 7)</td>
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<td></td>
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</tr>
<tr>
<td>VAN-111</td>
<td>1+2</td>
<td>24.5</td>
<td>16.5</td>
<td>22.5</td>
<td>17.5</td>
<td>81.0</td>
</tr>
<tr>
<td>VAN-121</td>
<td>2+2</td>
<td>25.5</td>
<td>16.0</td>
<td>23.5</td>
<td>16.5</td>
<td>81.5</td>
</tr>
<tr>
<td>Veterinary Physiology- Paper I (Credit Hours-6)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>VPB-111</td>
<td>2+1</td>
<td>26.0</td>
<td>18.0</td>
<td>23.5</td>
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</tr>
<tr>
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<td>2+1</td>
<td>25.0</td>
<td>16.0</td>
<td>23.5</td>
<td>17.5</td>
<td>82.0</td>
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<tr>
<td>Veterinary Biochemistry- Paper I (Credit Hours- 5)</td>
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<tr>
<td>VPB-112</td>
<td>1+1</td>
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<td>18.5</td>
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</tr>
<tr>
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<tr>
<td>Animal Genetics and Breeding- Paper I (Credit Hours-6)</td>
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<tr>
<td>AGB-111</td>
<td>2+1</td>
<td>24.5</td>
<td>18.0</td>
<td>21.5</td>
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Current: total Credit Hours: 38 Total Credit Points Earned: 317.90 GPA 8.365

Results: 1. Pass with Grade Point Average (GPA) of 8.365/10.000
   2. Eligible for Compartment Examination in the Paper (s)
   3. Fail
Annexure - II

DETAILED MARKS CERTIFICATE
FIRST PROFESSIONAL B.V.SC. & A.H.

Name:              Father's Name:  
Mother's Name:           Batch 

<table>
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<tr>
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<th>Marks obtained</th>
<th>Total (100)</th>
<th>Grade point (10 Point Basis)</th>
<th>Credit Points</th>
<th>Total Credit Points</th>
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<td><strong>Internal</strong></td>
<td><strong>External</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>Theory (30)</strong></td>
<td><strong>Practical (20)</strong></td>
<td><strong>Theoretical (30)</strong></td>
<td><strong>Practical (20)</strong></td>
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Veterinary Physiology- Paper I (Credit Hours-6)

| VPB-111 | 2+1 | 26.0 | 18.0 | 23.5 | 16.5 | 84.0 | 8.40 | 25.20 |
| VPB-121 | 2+1 | 25.0 | 16.0 | 23.5 | 17.5 | 82.0 | 8.20 | 24.60 |

Veterinary Biochemistry- Paper I (Credit Hours- 5)

| VPB-112 | 1+1 | 28.5 | 18.5 | 20.0 | 18.5 | 85.5 | 8.55 | 17.10 |
| VPB-122 | 2+1 | 28.0 | 16.5 | 19.0 | 19.0 | 82.5 | 8.25 | 24.75 |

Animal Genetics and Breeding- Paper I (Credit Hours-6)

| AGB-111 | 2+1 | 24.5 | 18.0 | 21.5 | 20.0 | 84.0 | 8.40 | 25.20 |
| AGB-121 | 2+1 | 25.5 | 15.0 | 21.0 | 18.0 | 79.5 | 7.95 | 23.85 |

Livestock Production Management- Paper I (Credit Hours-8)

| LPM-111 | 3+1 | 28.0 | 16.0 | 21.5 | 18.0 | 85.5 | 8.55 | 34.20 |
| LPM-121 | 1+1 | 23.0 | 16.0 | 27.5 | 18.0 | 84.5 | 8.45 | 16.90 |
| LPM-122 | 1+1 | 26.0 | 16.0 | 23.0 | 17.0 | 82.0 | 8.20 | 16.40 |
### Animal Nutrition- Paper 1 (Credit Hours-6)

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<th>Grade Points</th>
<th>GPA</th>
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Current: total Credit Hrs: 38  Total Credit Points Earned 317.90  GPA: 8.365

Results:
1. Pass with Grade Point Average (GPA)  8.365/10.000
2. Eligible for Compartment Examination in the Paper.
3. Fail

Signature with seat
Annexure - III

<table>
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<th>Credits Hrs.</th>
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<td>Veterinary Clinical Medicine Paper-I</td>
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<td>Veterinary Preventive Medicine Paper-I</td>
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<td>Veterinary Public Health &amp; Epidemiology Paper-II</td>
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<td>Veterinary and A.H. Extension Paper-II</td>
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Entrepreneurial Training: Name Activity
Tracking Programme: Names: 1 2 Grade (A/B/C):
Study Circles: Names: 1 2 Grade (A/B/C):
Internship: Grade Satisfactory/Unsatisfactory
Grand Total of Credit Hours: Grand Total of Credit Points
Over All Grade Point Average (OGPA): Percentage of Marks:
RESULT: PASSED WITH ------- DIVISION CONDUCT. SATISFACTORY
DATE: Official Signatory
Seal
# Annexure - IV

## LIST OF PAPERS & CONSTITUENT COURSES FOR ANNUAL EXAMINATION

### FIRST PROFESSIONAL

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<th>Subject</th>
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<td>Vety. Anatomy Paper-I</td>
<td>VAN-111 &amp; VAN-121</td>
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<td>Vety. Physiology Paper-I</td>
<td>VPB-111 &amp; VPB-121</td>
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<tr>
<td>Animal Genetics &amp; Breeding Paper-I</td>
<td>AGB-111 &amp; AGB-121</td>
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<td>Livestock Production Management Paper-I</td>
<td>LPM-111 LPM-121 &amp; LPM-122</td>
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<td>Animal Nutrition Paper-I</td>
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<td>Vety. Parasitology Paper-I</td>
<td>VPA-211, VPA-221 &amp; VPA-222</td>
</tr>
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<td>Vety. Microbiology Paper-I</td>
<td>VMC-211 &amp; VMC-221</td>
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<tr>
<td>Very. Pathology Paper-I</td>
<td>VPP-211 &amp; VPP-221</td>
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<td>Livestock Production Management Paper-II</td>
<td>LPM-211, LPM-221 &amp; LPM-222</td>
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<td>Animal Genetics &amp; Breeding Paper-II</td>
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<td>Vety Pathology Paper-II.</td>
<td>VPP-311, VPP-321 &amp; VPP-322</td>
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<tr>
<td>Very. Public Health &amp; Epidemiology Paper-I</td>
<td>VPE-311 &amp; VPE-321</td>
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<td>Vety. Biochemistry Paper-II</td>
<td>VPB-321</td>
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<tr>
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<td>VPT-411 &amp; VPT-421</td>
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<tr>
<td>Vety. Clinical Medicine Paper-I</td>
<td>VMD-411 &amp; VMD-421</td>
</tr>
<tr>
<td>Vety. Preventive Medicine Paper-I</td>
<td>VMD-412 &amp; VMD-422</td>
</tr>
<tr>
<td>Very. Laboratory Diagnosis Paper-I</td>
<td>VLD-411 &amp; VLD-121</td>
</tr>
<tr>
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### FIFTH PROFESSIONAL

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<td>Vety. Gynaecology &amp; Obstetrics Paper-II</td>
<td>VGO-511</td>
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<tr>
<td>Vety. Clinical Medicine Paper-II</td>
<td>VMD-511, VMD-512 &amp; VMD-513</td>
</tr>
<tr>
<td>Vety. Public Health &amp; Epidemiology Paper-II</td>
<td>VPE-511</td>
</tr>
<tr>
<td>Vety. &amp; A.H. Extension Paper-II</td>
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</tr>
<tr>
<td>Veterinary Clinical Practice Paper-II</td>
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**Total External Papers: 34**

**Total Courses: 65**
### Annexure – V

**List of courses of Bachelor of Veterinary and Animal Husbandry (B.V.Sc. & A.H.)**

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
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<td>Veterinary Gross Anatomy-I (Osteology, Arthrology &amp; Biomechanics)</td>
<td>VPT-311</td>
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<td>Veterinary Gross Anatomy-II (Myology, Neurology, Angiology &amp; Aesthesiology)</td>
<td>VPT-321</td>
<td>Veterinary Neuropharmacology</td>
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<td>VAN-211</td>
<td>Veterinary Histology &amp; Embryology</td>
<td>VPT-411</td>
<td>Veterinary Chemotherapy</td>
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<td>VAN-221</td>
<td>Veterinary Splanchnology &amp; Applied Anatomy</td>
<td>VPT-421</td>
<td>Veterinary Toxicology</td>
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<td>VPB-111</td>
<td>Veterinary Physiology-I (Blood, Cardiovascular &amp; Excretory Systems, Body Fluids)</td>
<td>VPE-311</td>
<td>Milk and Meat Hygiene, Safety and Public Health</td>
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<td>VPB-112</td>
<td>General Veterinary Biochemistry</td>
<td>VPE-321</td>
<td>Veterinary Epidemiology and Zoonosis</td>
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<td>VPB-121</td>
<td>Veterinary Physiology-II (Neuromuscular, Digestive &amp; Respiratory Systems)</td>
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<td>Environment and Environmental Hygiene</td>
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<td>VPB-122</td>
<td>Veterinary Intermediary Metabolism</td>
<td>VAE-311</td>
<td>Principles and Techniques Veterinary &amp; A.H. Extension</td>
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<td>Veterinary Physiology-III (Endocrinology, Reproduction, Growth Environmental Physiology)</td>
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<td>Livestock Economics, Marketing and Business Management</td>
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<td>Animal Biotechnology</td>
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<td>Livestock Enterprisehip</td>
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<td>LPM-111</td>
<td>Livestock Production Management-I (General Principles and Ruminants)</td>
<td>LPT-311</td>
<td>Milk and Milk Products Technology</td>
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<td>Fodder Production &amp; Grassland Management</td>
<td>LPT-312</td>
<td>Abattoir Practices and Animal Product Technology</td>
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<td>Livestock Production Management-II (Monogastric and Laboratory Animals)</td>
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<td>Avian Production Management</td>
<td>VSR-411</td>
<td>General Veterinary Surgery, Anaesthesiology and Diagnostic Imaging</td>
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<td>Commercial Poultry Production and Hatchery Management</td>
<td>VSR-421</td>
<td>Regional Veterinary Surgery</td>
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<td>Livestock Production Management (Regional interest)</td>
<td>VSR-511</td>
<td>Veterinary Orthopedics and Lameness</td>
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<td>AGB-111</td>
<td>Biostatistics and computer Application</td>
<td>VGO-411</td>
<td>Veterinary Gynaecology</td>
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<td>AGB-121</td>
<td>Principles of Animal Genetics and Population Genetics</td>
<td>VGO-421</td>
<td>Veterinary Obstetrics</td>
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<td>AGB-211</td>
<td>Livestock and Poultry Breeding</td>
<td>VGO-511</td>
<td>Veterinary Andrology and Reproductive Techniques</td>
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<td>Principles of Animal Nutrition and Feed Technology</td>
<td>VMD-411</td>
<td>Veterinary Clinical Medicine – I (General and Systemic)</td>
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<td>Applied Nutrition – I (Ruminants)</td>
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<td>Veterinary Preventive Medicine (Bacterial, Fungal &amp; Rickettsial Diseases)</td>
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<td>VPA-221</td>
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<td>VMD-511</td>
<td>Animal Welfare, Ethics and Jurisprudence</td>
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<td>Veterinary Protozoology</td>
<td>VMD-512</td>
<td>Zoo/Wild Animal Breeding, Management, Nutrition and Health care</td>
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<td>Pet Animal Breeding, Management, Nutrition care and Health care</td>
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<td>Aquatic Animal Diseases, Health Care and Management</td>
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**Calculation of Overall Grade Point Average (OGPA)**

OGPA = Total Points earned divided by sum of Paper credits

The points awarded in paper will be the total marks obtained by a student out of 100 divided by 10.
* Points secured in a paper will be Points in a paper multiplied by credits of the paper
* Total Points earned = sum of the points secured.
* The points earned will be zero if the points in a paper are less than 5.000.
* Percentage of Marks = OGPA multiplied by 100 then divided by 10

NOTE:

1. Evaluation

Overall performance of the student in various examinations including the internal and annual/ board examination by procuring 50% in theory and practical separately shall be the criterion of passing or failing in a paper and not in the internal examination conducted in each semester. A student is required to secure an aggregate of 50% marks in theory and an aggregate of 50% marks in practical to be declared to have passed in a paper. If a student fails in one paper only, he/she is eligible to appear in the compartment examination of that paper which includes external theory and practical examination

2. Division

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<tr>
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<td>Pass</td>
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<tr>
<td>Second Division</td>
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<td>First Division</td>
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<tr>
<td>First Division with Distinction</td>
<td>8.000 and above</td>
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3. In case a student has passed a course through Compartment Examination, the same be mentioned against the particular course in the Transcript.
GUIDE LINES TO PAPER SETTER

Course wise distribution of marks (Objective & Subjective) for a theory paper is given in the annexure – VI

1. Each Theory question paper should be of 100 marks for three hours duration.

2. Paper having one course should be 60 marks of objective and 40 marks of subjective.
   
   Example- Animal Genetics & Breeding Paper-II (AGB-211)

3. Paper having two course should be set as per the theory credit hours
   
   Example -Veterinary Pathology Paper – I (VPP-211 & VPP-221)
   
   VPP- 211- Objective 20 marks and Subjective-15.0 marks- Total- 35.0
   VPP-221- Objective 40 marks and Subjective - 25.0 marks- Total- 65.0

4. Paper having three courses should be set as per the theory credit hours
   
   Example Veterinary Parasitology Paper-I
   
   VPA-211- Objective 30 marks and Subjective 20 marks -   Total- 50.0
   VPA-221- Objective 10 marks and Subjective 05 marks -   Total- 15.0
   VPA-222- Objective 20 marks and Subjective 15 marks -   Total- 35.0

5. Objective
   i. Should be set for 60% from each course
   ii. Each bit should carry 0.5 marks.
   iii. Should be of one hour & 15 minutes
   iv. Question may be of fill in the blanks, multiple choices, matching, true or false or any other types.

6. Subjective
   i. Should be 1 hour and 45 minutes.
   ii. It should be set for 40% marks.
   iii. Choice should be given to the extent of 20%.

7. Paper should cover entire syllabus
Annexure – VI

Guidelines for Pondicherry University
Setting of question paper for the Annual Board Examination of B.V.Sc. & A.H. degree programme of the Rajiv Gandhi College of Veterinary & Animal Sciences, Puducherry

THEORY

FIRST PROFESSIONAL YEAR

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*Marks to be proportionately converted to 30 for each course
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| *Marks to be proportionately converted to 30 for each course
THIRD PROFESSIONAL YEAR

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*Marks to be proportionately converted to 30 for each course*
FOURTH PROFESSIONAL YEAR

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*Marks to be proportionately converted to 30 for each course
# FIFTH PROFESSIONAL YEAR

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*Marks to be proportionately converted to 30 for each course*
B.V.Sc. & A.H. Degree Programme
(Semester System)

Revised Academic Rules,
Regulations & Syllabus
(2009-10 onwards)

(As per Veterinary Council of India Regulation)
2008

Rajiv Gandhi College of Veterinary and Animal Sciences,
Kurumbapet, Puducherry – 605 009.
(Affiliated to Pondicherry University)
The Rajiv Gandhi College of Veterinary & Animal Sciences (RAGACOVAS) was established by the Pondicherry Veterinary College Society (PVCS), a Society registered under Societies Registration Act by the Government of Puducherry. This college one of its kind fully funded by the Government of Puducherry and administered by a Governing Body with the Chief Secretary to the Government of Puducherry as its Chairman and Secretary, Animal Husbandry as its Vice Chairman and Dean of the College as Member Secretary.

The College offers a ten semester (5 year) under graduate programme as per the minimum standards of Veterinary Education, Degree Course – B.V.Sc. & A.H. Regulations, 1993 prescribed by the Veterinary Council of India (VCI), the Statutory Body which governs the Veterinary Education in the country. RAGACOVAS, since the day it came into its existence on 14th October, 1994 is adopting the course curriculum, syllabus and regulations laid down by the VCI. The College was recognized by the VCI in 1999. RAGACOVAS is permanently affiliated to Pondicherry University.

The semester wise syllabus, rules and regulations conforming to the standards prescribed by VCI are compiled in 1994 and revised in 2008, to serve as a reference manual for the faculty, students and academic authorities of the Pondicherry University.