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कृषि एवं कृषक कल्याण मंत्रालय

(पशु पालन, डेयरी एवं मात्स्यिकी विभाग)

(भारतीय पशु चिकित्सा परिषद्)

अधिसूचना

नई दिल्ली, 8 जुलाई, 2016

मिसिल संख्या 12-5/2015-वीसीआई.—भारतीय पशु चिकित्सा परिषद् अधिनियम, 1984 की धारा 66 के साथ पठित धारा 22 की उप-धारा (1) तथा धारा 21 की उप-धारा (1) के वाक्यांश (ख) के तहत दिए गए अधिकारों का प्रयोग करते हुए, तथा भारतीय पशु चिकित्सा परिषद् ने एतद्वारा भारतीय पशु चिकित्सा परिषद् — पशु चिकित्सा के न्यूनतम मानदंड — डिग्री कोर्स (पशु चिकित्सा विज्ञान एवं पशु पालन स्नातक) विनियम, 2008 के अधिक्रमण में तथा केंद्र सरकार की पूर्वानुमति से भारतीय पशु चिकित्सा परिषद् ने निम्नलिखित विनियम तैयार किए हैं, जो इस प्रकार हैं:

भाग I**प्रस्तावना****1. संक्षिप्त नाम और परिचय:—**

(1) इन विनियमों को भारतीय पशु चिकित्सा — पशु चिकित्सा के न्यूनतम मानदंड— डिग्री कोर्स (बी.वी.एस.सी. और ए.एच.) विनियम, 2016 कहा जाएगा।

(2) बशर्ते कि वार्षिक प्रवेश संख्या में कोई भी वृद्धि परिषद् के अनुमति से की जाएगी और इस बारे में विश्वविद्यालय स्वयं एक पक्षीय निर्णय नहीं लेगा। संख्या में उक्त वृद्धि की अनुमति सुविधाओं और जनशक्ति में वृद्धि के अनुपात में की जाएगी जैसाकि परिषद् द्वारा भारतीय पशु चिकित्सा अधिनियम के अनुच्छेद 19 के तहत इन विनियमों में प्रावधान किया गया है।

(3) यह विनियम भारत सरकार के राजपत्र में इनके प्रकाशन की तारीख से लागू होंगे।

2. परिभाषाएं — (1) इन विनियमों में, जब तक कि अन्य संदर्भ में अपेक्षित न हो।

(क) “अधिनियम” का तात्पर्य है, भारतीय पशु चिकित्सा परिषद् अधिनियम, 1984 (1984 का 52);

(ख) “पाठ्यक्रम” का तात्पर्य है, किसी एक शिक्षण वर्ष में शामिल किए जाने वाले अध्यापन यूनिट, जैसाकि किसी विभाग के पाठ्यक्रम में निर्धारित किया गया हो।

(ग) “क्रेडिट घंटों” का तात्पर्य है, विश्वविद्यालय द्वारा जारी की गई पाठ्यक्रम सूची के अनुसार, किसी विशेष विषय के लिए मान्य कार्य की साप्ताहिक ईकाई। प्रति सप्ताह एक घंटे की लैक्चर कक्षा को एक क्रेडिट गिना जाएगा जबकि प्रति सप्ताह होने

सहायक रजिस्ट्रार (शैक्षणिक)

कृते रजिस्ट्रार

ग्रेड पॉइंट (जीपी), क्रेडिट पॉइंट (सीपी), ग्रेड पॉइंट औसत (जीपीए) तथा कुल ग्रेड पॉइंट औसत (ओजीपीए) की गणना

- किसी विषय में **जीपी** निकालने के लिए, छात्र द्वारा 100 में से प्राप्त अंकों को 10 से विभाजित किया जाएगा।
- किसी विषय में **सीपी** निकालने के लिए, जीपी को क्रेडिट घंटों से गुणा किया जाएगा।
- **जीपीए**= कुल अर्जित क्रेडिट पॉइंटों के योग को क्रेडिट घंटों के योग से विभाजित किया जाएगा।
- **ओजीपीए**= अर्जित किए गए क्रेडिट पॉइंटों के कुल योग के योग को क्रेडिट घंटों के कुल योग से विभाजित किया जाएगा।
- **प्रतिशत अंक**= ओजीपीए का 10 से गुणनफल।

टी. पी. सिंह, सहायक सचिव

[विज्ञापन III/4/असा./168(141)]

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Department of Animal Husbandry, Dairying and Fisheries)

(VETERINARY COUNCIL OF INDIA)

NOTIFICATION

New Delhi, the 8th July, 2016

F. No. 12-5/2015-VCI.—In exercise of the powers conferred by sub-section (1) of section 66 read with sub-section (1) of section 22 and clause (b) of sub-section (1) of section 21 of the Indian Veterinary Council Act, 1984 (52 of 1984) and in supersession of the Veterinary Council of India – Minimum Standards of Veterinary Education – Degree Course (B.V.Sc. & A.H.) Regulations, 2008, the Veterinary Council of India, with the previous approval of the Central Government hereby makes the following regulations, namely:-

PART I

PRELIMINARY

1. Short title and commencement -

- (1) These regulations may be called the Veterinary Council of India Minimum Standards of Veterinary Education- (Bachelor of Veterinary Science and Animal Husbandry - Degree Course) Regulations, 2016.
- (2) Provided that any increase in the annual admission may be made after seeking the permission of the Council and may not be done unilaterally by the University. Such increase shall be allowed subject to proportionate increase in facilities and manpower as provided under these Regulations and verification by the Council as per Section 19 of the IVC Act.
- (3) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions – (1) In these regulations, unless the context otherwise requires,-

- (a) “Act” means the Indian Veterinary Council Act, 1984 (52 of 1984);
- (b) “Course” means teaching units of a subject to be covered within a professional year as prescribed in the syllabus of a department;
- (c) “Credit Hour” means the weekly unit of work recognised 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 and a working period of three hours in the Veterinary Clinical Complex (VCC) and Livestock Farm Complex (LFC) per week shall count as one credit.

- (d) “Degree Course” means the course of study in Veterinary Science, namely Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc. and A.H.);
 - (e) “First Schedule” and “Second Schedule” means the First Schedule and Second Schedule respectively appended to the Act;
 - (f) “Guidelines or Instructions” means the guidelines or 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) “Professional Year” means a period consisting of minimum two hundred and ten instructional days, excluding annual examination days except fourth professional year which consists of 315 instructional days;
 - (k) “Secretary” means the Secretary of the Veterinary Council of India appointed under section 11 of the Act;
 - (l) “Syllabus” and “curriculum” means the syllabus and curriculum for courses of study as specified by the Veterinary Council of India;
 - (m) “teaching experience” means the experience of teaching in the subject concerned in a recognised veterinary college or provisionally recognised veterinary college or recognised veterinary university after obtaining post graduate qualification in the concerned subject;
 - (n) “Veterinary hospital or institution” means the Veterinary Clinical Complex of the college or Veterinary hospital of State Government or private hospital recognised by the University and duly approved by Veterinary Council of India which shall have the basic infrastructure such as diagnostic lab, X-ray, Ultrasonographic facilities etc. or institution relevant to livestock health, reproduction and diagnostics by whatever name called;
 - (o) “Visitor” means a Visitor appointed under sub-section (1) of section 20 of the Act;
 - (p) “recognised veterinary college” means any veterinary college or institution either a constituent College of the University or affiliated to a University and engaged in imparting teaching of Bachelor of Veterinary Science and Animal Husbandry degree course and recognised by the Central Government on the recommendation of Veterinary Council of India after inclusion in the First Schedule for the Act under overall administrative control of the Dean or Principal or Associate Dean;
 - (q) “University” means any university or other institution within or outside India which grants degrees and post graduate diplomas.
 - (r) “provisionally recognised veterinary college” means a newly established veterinary college where admission shall be allowed by the Veterinary Council of India on annual basis after conducting inspection and subject to fulfillment of Minimum Standards of Veterinary Education regulations 2016.
- (2) Words and expressions used herein and not defined but are defined in the Act shall have the same meaning as assigned to them in the Act.

PART II

COURSE OF STUDY

3. **Degree Course-** (1) A degree course of Bachelor of Veterinary Science and Animal Husbandry shall comprise of a course of study consisting of curriculum and syllabus specified in Part IV of these regulations spread over five and half complete professional years including a compulsory internship of “one year” duration undertaken after successful completion of all credits as prescribed in the syllabus.
- (2) During the course of study there shall be training in veterinary clinical complex or state veterinary hospital, private veterinary hospital, animal farm or livestock farm complex as part of the course.

4. **Duration of professional year-**

- (1) First professional year of Bachelor of Veterinary Science and Animal Husbandry classes shall commence latest by 1st September of every year.
- (2) The annual examination shall be conducted prior to summer vacation for the year.
- (3) Each professional year shall cover at least two hundred ten days of instruction excluding time spent for annual examinations.

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

- (1) The Veterinary Clinical Complex shall be a separate department in every veterinary college under the independent charge of a Faculty Member of the rank of a Professor with specialisation in any of the clinical subjects and shall operate round the clock.
- (2) Veterinary Clinical Complex shall be recognised only if it has an average minimum of 500 outdoor cases and 10 indoor cases in a month.
- (3) In case the Veterinary Clinical Complex does not have requisite number of out-patient and in-patient cases as provided in sub-regulation(2) above, the University or College shall set up outreach facilities not beyond twenty km radius of the College to fulfill the above minimum requirements. Such outreach clinical facility shall have the entire infrastructure as prescribed for a veterinary clinical complex under these regulations.
- (4) The attached veterinary hospitals shall have properly built in-door wards, client accommodation, emergency service and the necessary facilities to conduct and demonstrate or train all medical, surgical and gynaecological cases and separate "in Health" care facilities like artificial insemination, pregnancy diagnosis, animal birth control, health verification tests, prophylaxis etc.
- (5) There shall be residential accommodation for clinical and hospital staff and suitable accommodation for students on emergency or night duties and cafeteria or canteen for staff, students and clients.
- (6) All the concerned staff on duty in the Veterinary Clinical Complex or veterinary hospital or both shall be responsible for the treatments and allied public services and shall invariably attend the clinics including emergencies or night duties and on Sundays or any holidays and the staff as well as students shall be properly attired { Apron, Coverall (dangree), etc } and equipped for the performance of clinical duties.
- (7) The teaching institutions shall maximally utilise the animal or patient information observing all the time the principles of animal welfare and ethics, and arrange the following namely:-
 - (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 or euthanasia detailed necropsy be demonstrated and specimens preserved;
 - (v) maintenance of clinical data registers;
- (8) The Livestock Farm Complex shall be a separate department in every veterinary college under the independent charge of a faculty member of the rank of a Professor of animal production departments preferably with specialization in Livestock Production Management subject and shall operate twenty four hours and the farm complex shall be for teaching in rearing of livestock species and poultry with the following facilities namely:-
 - (i) housing, feeding, breeding and management of large and small ruminant, 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;
- (9) In case other facilities like Gaushalas or community farms are utilised, these shall be in addition to the above requirements but shall not serve as a substitute
- (10) Being a twenty four hours service there shall be suitable accommodation for staff and students on duties.
- (11) All the concerned staff on duty in the Livestock Farm Complex shall be responsible for management including emergencies of the animals in the livestock Farm and they shall arrange and supervise the routine managemental practices from time to time and shall maintain records for the same and shall also be responsible for production activity in each of the units

PART III

ADMISSION TO THE BACHELOR OF VETERINARY SCIENCE AND ANIMAL HUSBANDRY DEGREE COURSE

6. **Criteria for admission** - A candidate shall not be admitted to Bachelor of Veterinary Science and Animal Husbandry degree course unless,
- (a) he or she has completed the minimum age of 17 years and the maximum age of 25 years on or before the 31st December of that year of his or her admission to the 1st year of Bachelor of Veterinary Science and Animal Husbandry course; and there shall be relaxation of maximum age by five years for Scheduled Caste or Scheduled Tribe or Other Backward Class candidates.
 - (b) he or she has passed the qualifying examination as defined under these regulations with the subjects of Physics, Chemistry, Biology or Biotechnology and English (as a core course) and obtained marks as specified under regulations (7) or an examination equivalent to intermediate science examination of an Indian University or Board recognised by the Association of Indian Universities taking Physics, Chemistry and Biology including a practical test in each of these subjects and English.
7. **Selection of students** – (1) The selection of students for admission to Bachelor of Veterinary Science and Animal Husbandry Degree Course in Government or Private Colleges shall only be on the basis of merit through a competitive entrance examination conducted by University or State Government or Veterinary Council of India to achieve a uniform evaluation, as there may be variation among students at qualifying examinations conducted by different agencies and reservation policy shall be as per Government of India for Veterinary Council of India seats and for States as per their reservation policy.
- (2) To be eligible for competitive entrance examination, a candidate shall have to pass any of the qualifying examinations as enumerated under the head, “Admission to Bachelor of Veterinary Science and Animal Husbandry Degree Course” specified under regulation 6.
 - (3) A candidate under General Category for admission to the Bachelor of Veterinary Science and Animal Husbandry degree course shall have to qualify in each of the subjects of English, Physics, Chemistry and Biology, and obtained 50% marks in aggregate of these subjects, at the qualifying examination and admission of students to B.V.Sc. and A.H. degree course shall be made only on the basis of his or her merit in the competitive entrance examination and no other merit or weightage shall be considered for admission to Bachelor of Veterinary Science and Animal Husbandry degree course.
 - (4) In respect of candidates belonging to the Scheduled Castes or the Scheduled Tribes or other special category of students as specified by the Government from time to time, marks required for admission shall be 5% less than that prescribed for general category i.e 47.5 % and 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 requirement 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 obtaining not less than the minimum prescribed pass percentage.
 - (5) The students who are educated abroad seeking admission in veterinary colleges in India should have passed the subjects of Physics, Chemistry, Biology or Biotechnology and English up to the 12th Standard level with 50% marks in aggregate of these subjects.
 - (6) Sponsored candidates shall have to qualify the admission procedures as laid down for the students under general category.

- (7) Admission of candidates to Bachelor of Veterinary Science and Animal Husbandry degree course under bilateral exchange programme shall be regulated by Veterinary Council of India or on recommendation of Government of India.
- (8) 15% of the total number of seats of each recognised veterinary college which is included in the First Schedule of the Act shall be reserved and filled on an all India basis through Common Entrance Examination and seats for the candidates belonging to Schedule Caste or Schedule Tribes or Physically handicapped or Other backward classes against said 15% quota of Veterinary Council of India shall be reserved to be filled up as per Government of India Policy.
- (9) The candidates selected through this examination shall be admitted in various recognised 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 or Veterinary Institution shall be 15th September of that year irrespective of the closing date of admission of that University or Veterinary Institution for that year, if earlier, the vacant seats may be filled by the veterinary college or university by 30th September which shall be the final cut-off date for the admission and thereafter no admission shall be made.
- (10) A candidate shall not be allowed admission to Bachelor of Veterinary Science and Animal Husbandry degree course including those admitted under 15% reserved quota of Veterinary Council of India if he or she suffers the following disabilities, namely:-
 - (a) disability of total body including disability of chestorspine more than 50%,
 - (b) disability of lower limb of more than 50%,
 - (c) disability of upper limb,
 - (d) visually handicapped candidates and those with hearing disability,
 - (e) candidates with progressive diseases like myopathies etc.
 - (f) disabilities which otherwise would interfere in the performance of the duties of a veterinarian.
- (11) The disability shall be certified by a duly constituted and Government authorized Medical Board comprising of at least three specialists out of which two shall be of the specialty concerned and the candidate has to present him or her-self before the Medical Board and the last valid disability certificate of the candidate from a Medical Board shall not be more than three months old from the date of submitting his or her certificate for disabled candidates.
- (12) After the final admissions, each Veterinary college shall submit the details of the students admitted in the first professional of BVSc and AH programme and similarly the list of students who pass out shall also be submitted to the Veterinary Council of India.

PART IV

VETERINARY CURRICULUM – STRUCTURING AND ORGANIZATION OF COURSE CURRICULUM

8. **Veterinary Curriculum – (1)** The following shall be the veterinary curriculum, namely:-
 - (a)
 - (i) Core Courses; and
 - (ii) Internship including Enterpreneurial Training;
 - (b) the curriculum shall 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) medium of instruction for B.V.Sc. and A.H. degree course shall be in English;
 - (d) practical training at Livestock Farm Complex or Clinical practice shall be organised in small groups of 5 to 10 students so that each teacher can give personal attention to each student with a view to improve his or her skill and competence in handling of the patients and each practical batch for a course shall be preferably not more than twenty students;

- (e) efforts shall be made to encourage students to participate in group discussions and seminars to enable them to develop personality, character expression and other abilities which are necessary for a veterinary graduate to function either in solo practice or as a team member when he or she begins his or her independent professional career and an appropriate time slot for this activity be provided in the student study time table.
9. **Subjects to be covered in the Bachelor of Veterinary Science and Animal Husbandry Degree Course –** The following shall be the subjects for B.V.Sc. and A.H. degree course, namely:-
- Veterinary Anatomy,
 - Veterinary Physiology,
 - Veterinary Biochemistry,
 - Veterinary Pharmacology and Toxicology,
 - Veterinary Parasitology,
 - Veterinary Microbiology,
 - Veterinary Pathology,
 - Veterinary Public Health and Epidemiology,
 - Animal Nutrition,
 - Animal Genetics and Breeding,
 - Livestock Production Management,
 - Livestock Products Technology,
 - Veterinary Gynaecology and Obstetrics,
 - Veterinary Surgery and Radiology,
 - Veterinary Medicine,
 - Veterinary and Animal Husbandry Extension Education,
 - Veterinary Clinical Practices,
 - Livestock Farm Practices.
10. **Migration or Transfer of Student –** (1) student studying in a recognised veterinary college which is included in the First Schedule of the Act may be allowed to migrate or be transferred to another recognised veterinary college under another or same University.
- The migration or transfer may be allowed by the university concerned after passing 1st year of Bachelor of Veterinary Science and Animal Husbandry degree course within one month of the start of academic session of 2nd year of the receiving College or University.
 - The number of students migrating or 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.
 - The cases not covered under sub regulations, (1) to (3) may be referred to the Veterinary Council of India for consideration on merits.
 - An intimation about the admission of migrated or transferred students into any veterinary college shall be sent to the Veterinary Council of India by the respective Institution.
11. **Syllabus. –** (1) The details of syllabus comprising of 81 credits (equivalent to 179 credit hrs. as per semester system) are the minimum requirement for a programme leading to Bachelor of Veterinary Science and Animal Husbandry degree and the summary of the distribution of courses shall be as follows:-

Professional Year	Theory	Practical	Total
First (one year)	12	6	18
Second (one year)	15	7	22
Third (one year)	15	9	24
Fourth (one and a half year)	8	9	17
	50	31	81

(equivalent to 179 credit hrs. as
per semester system)

- (2) In addition to the Core Courses above, a student shall have to successfully complete the Internship including Enterpreneurial Training as has been specified in sub-regulation (1) of regulation 8 for the award of Bachelor of Veterinary Science and Animal Husbandry degree.
- (3) Remount Veterinary Squadron or National Cadet Crop or Equestrian or National Social Service or Sports and games shall be non- credit (0+1) training programmes any of which for all the Professional Years shall be compulsory (except fourth) for the award of Bachelor of Veterinary Science and Animal Husbandry degree and the performance of the students in these training programmes shall be assessed and graded as 'Satisfactory' or 'Unsatisfactory' and student has to obtain 'Satisfactory' grading for successful completion of course requirements.
- (4) The Syllabus prescribed in regulation 11 is the minimum instructional syllabus and is illustrative of the course content for teaching different courses at the veterinary colleges in the country for Bachelor of Veterinary Science and Animal Husbandry degree programme:

Provided that there is scope for flexibility of addition of topics or courses in the programme as per need or regional or institutional demand from time to time and such changes shall be non-violative and commensurate to the basic structure, curriculum and infrastructure prescribed in these regulations.

12. **Internship.** – (1) Every student of Bachelor of Veterinary Science and Animal Husbandry degree course shall be required after passing the fourth professional examination to undergo compulsory rotating internship to the satisfaction of the University for a minimum period of twelve calendar months so as to be eligible for the award of the degree of Bachelor of Veterinary Science and Animal Husbandry and full registration with the council.

- (2) Compulsory rotating internship shall include a full time training in veterinary and animal husbandry services (including emergencies and night duties, Sundays and holidays) and the intern shall devote whole time to the training and shall not be allowed to accept a whole time or part time appointment paid or otherwise.
- (3) Internship shall be undertaken only after completion of all credit requirements of veterinary curriculum including Remount Veterinary Squadron or National Cadet Crop or Equestrian or National Social Service or Sports and games as applicable under these regulations.
- (4) The university shall issue a provisional course completion certificate of having passed all the professional examinations and having successfully completed prescribed course work.
- (5) The State or Union territory Veterinary Council shall grant provisional registration to the candidate on production of provisional Bachelor of Veterinary Science and Animal Husbandry course completion certificate and the provisional registration shall be valid for a minimum period of twelve months and maximum of sixteen months.
- (6) After provisional registration with the State or Union Territory Veterinary Council, the candidate shall register for internship of twelve calendar months.
- (7) Interns shall be actively involved in rendering veterinary service under the supervision of an experienced teacher.
- (8) The intern shall assist the teacher or incharge in all activities of the units they are posted in.

- (9) During the period of internship the intern shall be provided accommodation or lodging and paid consolidated remuneration in the form of internship allowance as may be decided by the University or Institution from time to time.
- (10) The intern shall be entitled for fifteen days casual leave and the leave cannot be claimed as a matter of right until and unless the sanctioning authority sanctions it and an intern willfully absents from the training programme even if for part of a day or during off hours duty (including Sundays and holidays) he or she may be treated absent for that day and the candidate shall be required to undergo training for the additional days in lieu of the absence period and internship allowance shall not be paid for these additional days.
- (11) The internship programme shall be monitored by a Committee constituted by the Dean and the Committee shall comprise of Dean or Representative or nominee of the Vice Chancellor, incharge of Veterinary Clinical Complex, incharge of Livestock Farm Complex and Associate Professor (Internship) as members and this Committee shall monitor effective implementation of the internship training programme from time to time and shall be required to inspect the internship programme at different intervals of time randomly.
- (12) In case of unsatisfactory work or performance or shortage of attendance or both the period of compulsory rotating internship shall be extended by two months and the student shall be reevaluated, if again found unsatisfactory or is unable to secure 50 marks, he shall be given one more chance after another two months and if he still is found unsatisfactory due to any reason, the intern has to re-register afresh for internship programme for entire twelve calendar months including registration with the State or Union Territory Veterinary Council.
- (13) Internship allowance shall be paid only for twelve calendar months and no internship allowance shall be paid for the period of absence or unsatisfactory performance or extended period or re-registration period.
- (14) The compulsory rotating internship shall be in the following areas, namely:-
 - (i) posting in Veterinary Clinical Complex for Clinical training covering veterinary medicine, surgery and radiology, gynaecology and obstetrics, clinical emergencies, indoor ward care, lab diagnosis, ambulatory, hospital management, record keeping etc;
 - (ii) posting at Veterinary Clinical Complex of veterinary college of other state in India with provision of rent free accommodation;
 - (iii) posting in any four of Zoo or wild life centre or eNational Parks, Meat Plant or Abattoirs, Milk Plants, Poultry Farms, Field Hospital, Animal Welfare Organization, Vaccine Institute, Remount Veterinary Corps, Pharmaceutical, Feed Industry for hands on training in each establishment;
 - (iv) entrepreneurial training and management covering farm routines of cattle and buffalo farms, piggery or rabbitary, sheep and goat farms, and equine or camel unit etc. Poultry production and management covering layer and broiler production, hatchery and chick management and learning farm practices like record keeping and other related activities;
 - (v) each intern shall submit a Project Report on completion of entrepreneurial training and this training is aimed at developing entrepreneurial skill for self-employment and the university or college shall provide interest free loans, technical support and infrastructure for these activities. Inputs, day-to-day work and financial accounting shall be undertaken by the students;
 - (vi) the profits, if any, shall be kept by the students, provided, in case of loss, the Dean of the college through the Entrepreneurial 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;

- (vii) the Incharge or nominee of each posting shall regulate the training of such interns and submit the evaluation report of each intern out of 20 marks which shall be accounted at the time of final evaluation;
- (viii) the remaining days shall be utilised for the final assessment of interns as prescribed in these regulation, with the objective of having achieved following core competency namely:-
 - (a) restraint of cow, sheep, horse, dog and pig. Haltering, snaring, muzzling, tail switch, bandaging of horse for exercise and stable bandaging;
 - (b) animal identification, dentition and ageing of animals;
 - (c) housing layout or requirements of livestock and poultry;
 - (d) computation of ration of livestock of different breeds and age groups in health and disease;
 - (e) fodder management and interpretation of feed quality evaluation;
 - (f) physical evaluation of livestock health parameters (auscultation, percussion, recording of temperature, pulse, heart rate, respiration rate etc.);
 - (g) recording and interpretation of cardiovascular response;
 - (h) testing of milk and milk products for quality, clean milk production;
 - (i) carcass quality evaluation (ante-mortem & post-mortem examination);
 - (j) specific diagnostic tests for zoonotic diseases;
 - (k) sample collection, handling and dispatch of biological materials for laboratory examination;
 - (l) staining techniques for routine clinico-pathological examinations;
 - (m) relating post-mortem lesions to major livestock diseases;
 - (n) haematological evaluation (total leukocyte count, differential leukocyte count, haemoglobin, packed cell volume, erythrocyte sedimentation rate etc.) and interpretation;
 - (o) tests and their interpretation for haemoprotozoan diseases;
 - (p) body fluids collection, examination and interpretation as an aid to diagnosis;
 - (q) urine evaluation procedures and interpretation as indicators for diagnosis of diseases;
 - (r) fecal examination- procedures and interpretation;
 - (s) examination of skin scrapings and interpretation;
 - (t) interpretation of blood chemistry profile in diseases;
 - (u) deworming procedures and doses for different species of animals or birds;
 - (v) managing an outbreak of infectious or contagious disease;
 - (w) approach to diagnosis of a given disease condition;
 - (x) pre-anesthetic administration and induction, maintenance of general anaesthesia and dealing with anesthetic emergencies;
 - (y) local anaesthetic administration;
 - (z) nerve blocks- sites, functional application;
 - (za) suture material, suture pattern and tying knots;

- (zb) common surgical procedures including dehorning, docking, caesarian section, ovariectomy, castration, rumenotomy;
 - (zc) application of plaster castorsplint for fracture immobilization and other bandaging procedure in large and small animals;
 - (zd) soundness in horses;
 - (ze) rectal examination—palpation of pelvic or abdominal organs in cattle or horses or buffaloes,
 - (zf) detection of oestrus, artificial insemination, pregnancy diagnosis;
 - (zg) management of vaginal or uterine prolapse and dystocia;
 - (zh) andrological examination of bull, handling, preservation and evaluation of semen;
 - (zi) vaccination procedures , vaccination schedules and vaccine types for different diseases;
 - (zj) handling of radiograph, interpretation of a given radiograph of large and small animals;
 - (zk) client management;
 - (zl) managing a clinical practice, ambulatory van, transporting a sick animal requirements, etc.;
 - (zm) dosage regimens of important drugs;
 - (zn) drug administration techniques in different species of animals—oral, parenteral, rectal, intra-peritoneal and intra-uterine;
 - (zo) identification of major livestock or poultry breeds;
 - (zp) measuring climatic parameters and their interpretation;
 - (zq) communication technology tools.
- (15) 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 and the activities of interns shall be regulated by an Associate Professor (Internship) posted in Veterinary Clinical Complex and Assistant Professor (Internship and Entrepreneurship) Livestock Farm Complex.
- (16) The intern shall have the following functions, responsibilities and duties namely:-
- (i) participation with clinical faculty in the hospital practice;
 - (ii) to Share the emergency and night duties on rotation in the large and small animal hospitals including Sundays and holidays;
 - (iii) participation with staff of the place of posting in Veterinary Practice, Production or Technology;
 - (iv) hands-on diagnostic and treatment procedures for hospitalized cases under the supervision of the attending veterinarian;
 - (v) to administer primary care to emergency cases and participate in service such as anesthesia, radiology, ultrasonography, endoscopy, laboratory and diagnostic procedures. Medicine, Gynaecology and Surgery rounds are held periodically allowing the interns to present cases and participate in topic discussion.
- (17) The training shall be supplemented by fortnightly sessions of clinical conference, farm operation and data analysis, preparation of feasibility reports, project report, campaigns or discussions in clinical training, farm training and technology.
- (18) The intern shall maintain a log book of day to day work which shall be verified and certified by the supervisor under whom he or she works and in addition, the interns shall prepare a brief project report on the basis of his or her case study or case analysis, survey reports etc. and shall be based on his or her own study during the internship and such reports be supervised by more than one teacher, if required and the interns shall present such report in seminar organised for the purpose.

- (19) The assessment of each intern shall be based upon the evaluation of log book or project report, his or her performance reports from all the minimum prescribed training postings, entrepreneurial output, clinical case reports and their presentation, viva and comprehensive examination in core competence in veterinary skills through a written test by an Evaluation Committee comprising of the faculty representing the concerned departments appointed by the Dean for this purpose and the distribution of marks for various components of assessment shall be as under, namely:-

Log book or Project Report:	10 marks
Performance in different postings:	20 marks
Entrepreneurial output:	20 marks
Case Reports or Presentation:	10 marks
Written test:	30 marks
Viva :	10 marks
Total:	100 marks

- (20) The minimum pass marks in internship assessment shall be 50 out of 100.
- (21) After successful completion of Internship, the Dean shall then issue the certificate of satisfactory completion of internship training as prescribed by the Veterinary Council of India.
- (22) A candidate shall become eligible for registration with State or Union Territory Veterinary Council only on the award of the B.V.Sc and A.H. degree or production of a provisional degree certificate by the University.

13. **Examination and Evaluation.** – (1) It shall be the responsibility of the teacher(s) or instructor(s) to ensure that the topics to be covered in the theory and practical in each course shall be recorded through a lecture or practical schedule and distributed to the students at the beginning of each course and the Head of the Department or 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 shall be available with Dean's office for inspection of the Council and in each subject, professors and senior teachers shall be actively involved in teaching, especially in conducting practical for degree course.
- (3) The examination shall be to assess whether the student has been able to achieve a level of competence and for academic assessment, evaluation of practical aspects of the curriculum shall 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.
- (5) The distribution of marks for objective and subjective questions in each subject shall be in the ratio of 40:60 respectively in annual examinations provided the format of question paper in internal assessment shall be as per the choice of instructor(s).
- (6) The schedule of examination during Bachelor of Veterinary Science and Animal Husbandry course shall consist of internal assessment and annual examinations as detailed below, namely:-

Internal Assessment	Course coverage	Max. Marks 40	Weightage 10
First	30%	Max. Marks 40	Weightage 10
Second	60%	Max. Marks 40	Weightage 10
Third	90%		
Annual examination (Theory)	Paper-I Paper-II	Max. Marks 100 Max. Marks 100	Weightage 20 Weightage 20
Annual examination (Practical)	Paper-I Paper-II	Max. Marks 60 Max. Marks 60	Weightage 20 Weightage 20

- (7) There shall be four professional examinations- one each after 1st, 2nd, and 3rd year, and the fourth after one and half year and these professional examinations shall have only the theory component with external system and the practical component shall be dealt with internally.
- (8) The examination for Livestock Farm Complex and Veterinary Clinical Complex shall be conducted twice a year i.e. first practical exam after completion of 50% syllabus and the second one, when the course is completed but the second exam shall comprise of entire syllabus and annual professional examination shall be held after the completion of 100% course content in each subject and the result of the best of two internal assessments shall be accounted for.
- (9) The evaluation of answer books of internal examinations shall be done by the concerned teacher(s) whereas evaluation of answer books of annual theory examinations shall be done by the external examiner(s).
- (10) The practical examinations shall be conducted by a Board of Examiners consisting of concerned Head of the Department, teacher(s) and a representative of the Dean and the teachers while evaluating practical, shall take into account the followings, namely:-
 - (i) a record or log book maintained by each student as practical records;
 - (ii) written test or observation and recording of the skill with which each student executes the practical;
 - (iii) assessment of the comprehensive skill and knowledge of each student through an oral examination (viva-voce).
- (11) The answer-books of internal assessment shall be shown to students and the records of internal assessment as well as that of annual practical examination shall be submitted to Controller of Examination.
- (12) The practical manuals shall be prepared by the respective departments for each subject.
- (13) The duration of internal assessment shall be atleast one hour whereas the duration of annual theory examination shall be three hours and one month prior to the commencement of annual examinations the best of two internal assessment marks shall be submitted by the instructor through the Head to the Controller of Examinations or Registrar.
- (14) The annual theory examination(s) shall be conducted by inviting the question paper from appointed paper setter(s) and a paper setter shall be provided the courses and syllabus prescribed by the Veterinary Council of India including detailed course outline and the paper setter shall be requested to prepare two sets of question subjects, each for main examination and compartment examination (if any).
- (15) The internal assessment shall be conducted by the concerned instructor(s) during free period without affecting the teaching schedule provided the annual examinations shall be held on such dates, time and places as the university may determine and shall be completed in time so that the results are announced before the onset of the ensuing academic year.
- (16) The schedule of annual examinations shall be adhered to strictly and no re-examination shall be allowed in events of students' strike, boycott, walkouts, medical grounds or what-so-ever may be the reason.
- (17) The compartment examination shall be conducted within twenty calendar days of subsequent year registration:

Provided that a candidate may be allowed to provisionally sit in the next class provided he or she has failed only in two subjects and cannot be promoted to next Bachelor of Veterinary Science and Animal Husbandry class unless he or she has cleared the failed subject(s).
- (18) 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.

14. **Teachers, Examiners, Paper Setters.** – (1) The persons with only basic veterinary qualification, included in Schedules to the Act, registered with a State Veterinary Council and having a Post-graduate Degree in the concerned subject, shall be recruited as teaching faculty in the Veterinary Colleges and preference shall be given to the candidates who have qualified National Eligibility Test conducted by

Agricultural Scientist Recruitment Board and in case National Eligibility Test qualified candidates are not available they shall qualify National Eligibility Test prior to their promotion and the College or University may employ Graduate Assistants with BVSc and AH or MVSc degree against the vacant post for a maximum period of two years and not more than one in each department.

- (2) The post of Dean and Head of Department in a Veterinary College shall be filled up only with a teacher with basic veterinary qualification and the teaching staff in a veterinary college shall be whole-time teacher and shall be entitled for Non-Practicing Allowance (NPA).
- (3) 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 Bachelor of Veterinary Science and Animal Husbandry course:

Provided that a person without the qualifications mentioned above may also be appointed examiner in his or her concerned subject provided he or she possesses the doctorate degree in that subject and a minimum three years under graduate teaching experience.

Provided, further that -

- (a) no such person shall be appointed as an external examiner unless he or she has at least three year's teaching experience;
 - (b) no person below the rank of Lecturer or Assistant Professor or equivalent shall be appointed as internal examiner;
 - (c) no person shall be appointed as an external examiner in any para clinical or clinical subject unless he or she possesses a recognised veterinary qualification and holds a postgraduate degree and teaching experience in the subject concerned.
 - (d) persons working in Government or Semi Government or similar organisations may also be considered for appointment as external examiners provided they possess qualification and experience as laid down above.
 - (e) local person(s) shall normally not be appointed as paper setter(s) or external examiner(s), provided, under exceptional circumstances or unavoidable exigencies arising at the time of examination (like not arrival of appointed examiner or non-receipt of question paper from paper setter etc.), the University may appoint any qualified person for the purpose to avoid postponement or cancellation of annual board examination.
15. **Attendance.** – (1) The required condition of attendance shall not be deemed to have been satisfied in respect of the subject, unless the student has ordinarily attended all the scheduled theory and practical classes, provided, the minimum requirement of attendance shall not be less than 75% of scheduled theory and practical separately with relaxation of twenty working days for NCC or NSS, Co-curricular activities and medical ground and for the course of 0+1 credit, the relaxation shall be of only seven days.
- (2) A candidate having attendance below 75% in a subject shall not be eligible to appear in the annual examination of that subject.
 - (3) The percentage of attendance of a student in a subject 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, provided, 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 and the attendance for the First year shall be counted from the date of registration.
16. **Promotion.** – (1) Promotion of a student in a professional year shall be decided only on the basis of aggregate marks of internal assessment and annual examinations.
- (2) A student shall be promoted to next higher professional class only if he or she has passed in all the subjects of his or her class by obtaining at least 50% marks in theory (internal and external combined) and practical separately.
 - (3) A student should secure OGPA of 5.00 out of 10.00 at the end of degree programme to be eligible to get Bachelor of Veterinary Science and Animal Husbandry degree.

- (4) A student may also be allowed provisional promotion to next higher class till the declaration of the result of the compartment examination, provided the provisional promotion shall be subject to clearance in the compartment examination of that or those subject(s) and shall be provisional and if the student fails in the compartment examination, he or she shall stand automatically reverted to the class from where he or she was allowed provisional promotion.
 - (5) Failed students shall register again for the entire professional class they failed and 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 Bachelor of Veterinary Science and Animal Husbandry degree programme shall be finally dropped automatically from the University on account of poor academic performance (except fourth professional year).
 - (7) In no case, a student shall be allowed to continue his or her Bachelor of Veterinary Science and Animal Husbandry studies beyond Nine academic years (excluding Internship) in a Veterinary College.
17. **Compartmental examination.** – (1) A student failing in a maximum of two subjects only may be allowed to appear in compartment examination for those subject(s) and the compartment examination shall comprise of the annual component of both the theory and practical of the failed subject(s) which shall constitute 40 and 40 per cent weightage, respectively, and the marks obtained in internal assessment of theory shall be considered for the evaluation of compartment examination.
- (2) The compartmental examination shall be conducted within twenty calendar days of subsequent year registration and if the student fails in the compartmental examination, he or she shall be reverted back to the original class and the results of such compartment examination shall be declared within ten days after the examination is conducted.
18. **Scrutiny of answer papers and rectification of errors.** – (1) There shall be a provision of scrutiny of answer book(s).
- (2) A student, however, may be allowed to get his or her theory answer book(s) scrutinised, for which, the student shall have to apply to Controller of Examination or Coordinator of examination within three days after the declaration of result and after paying prescribed fee.
 - (3) The Controller or Coordinator (Examination) shall arrange the scrutiny of answer book(s) by the Screening Committee to be constituted by the Dean.
 - (4) The scrutiny shall be for re-totalling of the marks, and evaluation of unmarked question(s), if any.
 - (5) In case, the total marks are found to be incorrect on scrutiny, the same shall be corrected and the result shall be revised accordingly (even if it is towards lower side) and if, 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 result(s) shall be revised accordingly if there occurs any change in the marks.
 - (6) No representation by the student(s) shall be entertained regarding the outcome of the result after scrutiny.
 - (7) In case a student on the basis of the result of scrutiny becomes eligible for the compartmental examination, he or she may apply to the concerned authority to appear in the compartment examination on the announced scheduled date and the scheduled date of the compartment examination shall under no circumstances be changed on this account.
 - (8) The Controller or 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 and the Committee shall review the results and recommend the moderation in the event of failure of more than 10% of the student actually appearing in that particular subject and any moderation suggested shall be uniformly applied to all students for that paper (s) without altering the merit of the passed candidates.
 - (9) 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 than 3 marks in one subject and the provisions for

moderation of results shall not apply to Compartment Examinations and there shall be no provision for grace marks in any case.

19. **Grading.** – (1) Grade Point in a subject shall be the total marks obtained by a student out of 100 divided by 10
- (2) Credit Point in a subject shall be Grade Point multiplied by the credit hours.
- (3) Total Credit Points shall be the sum of the credit points secured.
- (4) Grade Point Average shall be the sum of the total credit points earned divided by the sum of credit hours.
- (5) Overall Grade Point Average shall be the sum of the grand total of credit points earned divided by the grand sum of credit hours.
- (6) The corresponding ranking of Overall Grade Point Average with respect to traditional scoring system of division ranking shall be as follows, namely:-
- | | | |
|-----------------|---|---------------------------------|
| 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 |
- (7) The formats of detailed mark certificate and degree transcript are annexed at **Annexure I and II** to these regulation.

PART V

COURSES AND COURSE CONTENTS

20. **PROFESSIONAL YEARWISE DISTRIBUTION OF COURSES**

- (1) **FIRST PROFESSIONAL**
- | | |
|---------------------------------|---------------|
| Veterinary Anatomy | 4+3=7 |
| Veterinary Physiology | 4+1=5 |
| Veterinary Biochemistry | 2+1=3 |
| Livestock Production Management | 4+2=6 |
| | Total 14+7=21 |
- (2) **SECOND PROFESSIONAL**
- | | |
|------------------------------|---------------|
| Veterinary Microbiology | 3+2=5 |
| Veterinary Pathology | 4+2=6 |
| Animal Genetics and Breeding | 3+1=4 |
| Animal Nutrition | 3+1=4 |
| | Total 13+6=19 |
- (3) **THIRD PROFESSIONAL**
- | | |
|---|---------------|
| Veterinary Pharmacology and Toxicology | 4+1=5 |
| Veterinary Public Health and Epidemiology | 3+1=4 |
| Veterinary Parasitology | 3+2=5 |
| Livestock Products Technology | 2+1=3 |
| Veterinary and Animal Husbandry Extension Education | 3+1=4 |
| Veterinary Clinical Practices – I | 0+1=1 |
| Livestock Farm Practices | 0+2=2 |
| | Total 15+9=24 |

(4)	FOURTH PROFESSIONAL	
	Veterinary Surgery and Radiology	2+1=3
	Veterinary Medicine	4+1=5
	Veterinary Gynaecology and Obstetrics	2+1=3
	Veterinary Clinical Practices –II	0+6=6
		Total 8+9=17

21. COURSE CONTENTS

(1) GENERAL REMARKS

Alternate use of animals as model for demonstration shall be encouraged and the computer simulations, Interactive CD-Rom, films, charts and life like models shall be used for better understanding of the subject and the programme to obtain cadavers ethically be established at all veterinary colleges.

(2) DEPARTMENT-WISE DESCRIPTION

(i) DEPARTMENT OF VETERINARY ANATOMY

VETERINARY ANATOMY

Credit Hours: 4+3

Dissection will be carried out on cadavers procured by way of donation of animals or animals obtained from post-mortem section and the donated animals should be either incurable or in terminal stages and prosected specimens should be used.

Within one year each college must setup a body donation programme or wild body programme.

Computer simulations software's, models, mannequins, plastinated specimens, preserved body organs, models should be used for better understanding of the subject.

THEORY

UNIT: 1

Introduction to anatomy and branches of anatomy and descriptive terms used in anatomy and study of anatomical planes.

General Osteology, Arthrology and Myology: Study of properties and structure of bone. Classification of skeletons, classification of bones with suitable examples and terms used in osteology Introduction to arthrology, classification of joints, different diarthrodial joints, structure of diarthrodial joints and movements permitted. Introduction to myology, classification of muscles, etymology of muscles. Description of tendon, ligaments, aponeurosis, synovial bursa and synovial sheath.

(Note: Detailed description of muscles of different regions of the body will be studied in the respective practical).

General Angiology, Neurology and Aesthesiology: Introduction to angiology. Structure of heart. General plan of systemic and pulmonary circulations, lymphatic and venous systems. Introduction to neurology and parts of central, peripheral and autonomic nervous system and sense organs. Formation of spinal nerve. Structure of meninges, brain, spinal cord.

Different surface regions, joint regions, Palpable Bony areas or prominences of the body of the animal. Palpable Lymph nodes and Arteries of the body and Surface veins for Venepuncture. Sites for collection of Bone marrow and Cerebrospinal fluid.

General Splanchnology: Introduction to splanchnology, boundaries of thoracic, abdominal and pelvic cavities, topography of different organs of digestive, respiratory, urinary, endocrine, male and female reproductive systems of domestic animals and fowl.

Principles and application of Radiography and Ultrasound for bones and soft tissues.

UNIT-2

Fore limb: Study of bones of fore limb of ox and differences in horse, dog, pig and fowl. Study of hoof of ox and horse. Study of joints, ligaments, stay apparatus, major blood vessels, nerves, veins and lymph nodes of fore limb. Sites for Radial, Median, Ulnar and Volar nerve blocks.

UNIT-3

Head and neck: Study of cranial and facial bones, cervical vertebrae of ox and differences in horse, dog, pig and fowl. Boundaries of the oral, orbital, nasal and cranial cavities. Study of paranasal sinuses in ox, horse, dog and pig. Study of articulations and special ligaments of the head and neck. Muscles of face, mastication, eye, ear, tongue, pharynx, soft

palate, hyoid and larynx. Study of teeth, hard and soft palate, tongue, pharynx, larynx, thyroid, parathyroid and salivary glands and differences in horse, dog, pig and fowl. Study of cranial nerves, blood vessels and lymph nodes of head and neck regions. Study of boundaries of jugular furrow and structures of carotid sheath along with neck muscles. Study of sense organs, trachea and oesophagus. Age determination by Dentition. Sites for Tracheotomy, Esophagotomy, Ligation of Stenosis duct and Mental, Mandibular, Maxillary, Cornual, Infraorbital, Supraorbital (frontal), Orbital and Auriculopalpebral nerve blocks and surgical approach to guttural pouches in horse. Importance of Cornual nerve and superficial Temporal artery in Amputation of Horn in cattle.

UNIT-4

Thorax: Study of thoracic vertebrae, ribs and sternum of ox and differences in horse, dog, pig and fowl. Study of joints, special ligaments, blood vessels, nerves, lymph vessels and lymph nodes of thorax. Study of organs of thorax i.e. trachea, thymus, oesophagus, lungs and differences in horse, dog, pig and fowl. Study of pleura, its reflections and mediastinum. Areas of auscultation and percussion of heart and lungs and site for Paracentesis Thoracis.

UNIT-5

Abdomen: Study of bones of abdomen of ox and differences in horse, dog, pig and fowl. Study of joints, special ligaments, blood vessels, nerves of abdomen region. Blood and nerve supply to abdominal viscera. Study of peritoneal reflections, organs of digestive, urinary, male and female reproductive systems present in abdomen and differences in horse, dog, pig and fowl. Study of mammary glands in cow and differences in mare, bitch and sow. Study of spleen of ox and differences in horse, dog, pig and fowl. Study of major veins, lymph vessels, lymph nodes and endocrine glands of abdomen. Boundaries and Clinical importance of the flank and Para Lumbar Fossa. Sites for Liver, Gall Bladder and Caecal Biopsies, Laparotomy, Rumenocentesis, Rumenotomy, abomasotomy, splenectomy, Cystotomy, Caesarean Operation, enterotomy, and paravertebral block.

UNIT-6

Hind limb and pelvis: Study of bones of hind limb and pelvis of ox and differences in horse, dog, pig and fowl. Study of joints, ligaments, blood vessels, lymph nodes and nerves of hind limb, pelvis and tail region and pelvic viscera. Study of pelvic peritoneal reflections, organs of digestive, urinary, male and female reproductive systems present in pelvic cavity and differences in horse, dog, pig and fowl. Boundaries of the inguinal canal and structures of the spermatic cord, pre pubic tendon and its importance. Study of external genital organs. Sites for Tibial, Peroneal, Plantar and Pudic nerve blocks, Patellar desmotomy, Urethrotomy, Castration, Vasectomy, cranial and caudal epidural anaesthesia.

UNIT-7

Cytology, cell junctions, study of basic tissues i.e. epithelial, connective, muscular and nervous tissues, blood and bone marrow. Study of microscopic structures of digestive, circulatory, urinary, respiratory, nervous, lymphatic, endocrine, male and female genital systems and mammary glands of domestic animals. Study of microscopic structure of sense organs i.e. eye, ear and integument.

UNIT-8

Introduction to embryology, gametogenesis, fertilization, cleavage, types of eggs, morula, blastulation, gastrulation, types of implantation, twinning. Formation of foetal membranes in mammals and birds, Placenta and its classification. Different germ layers and their derivatives. Study of development of organs of digestive system including accessory structures i.e. tongue, teeth, salivary glands, liver and pancreas. Study of development of organs of respiratory, urinary, circulatory, lymphatic, nervous, musculoskeletal, male and female reproductive systems. Development of endocrine glands, sense organs i.e. eye and ear.

PRACTICAL

UNIT-1

Study of general terms used in anatomy, study of anatomical planes. Study of different parts of skeleton, different surface and joint regions. Study of boundaries of thoracic, abdominal and pelvic cavities. Demonstration of different types of joints, muscles, tendons, ligaments, synovial bursa and synovial sheath. In situ demonstration of heart, meninges, brain and spinal cord. Boundaries of Thoracic, Abdominal and Pelvic Cavities and in situ demonstration of organs of digestive, respiratory, urinary, endocrine, male and female reproductive systems of domestic animals.

Demonstration of Different surface regions, joint regions and Palpable Bony areas or prominences of the body of the animal, Common sites of fractures, Palpable Lymph nodes and Arteries of the body (ventral coccygeal artery in ox, femoral artery in dog and cat, facial artery in horse) and Surface veins for Venepuncture (cephalic vein and recurrent tarsal vein in dog and cat, jugular vein in large animals.) and Sites for collection of Bone marrow and Cerebrospinal fluid. Visualization of Radiographs and ultrasound pictures of various organs and Fractures of various bones.

UNIT-2

Fore limb: Demonstration of different bones of fore limb of ox and comparison with horse, dog, pig and fowl. Dissection of the fore limb. Study of joints, ligaments, muscles, major blood vessels, lymph nodes and nerves of fore limb. Study of sites for different nerves blocks or neurectomies in fore-limb. Study of suprascapular nerve paralysis-shoulder sweeney, radial nerve paralysis-capped elbow. Structure of the equine hoof and comparison with ox. Demonstration of radiographs of normal bones of fore limb. Clinical importance of cephalic vein for intravenous injections in dog.

UNIT-3

Head and neck: Demonstration of cranial and facial bones, cervical vertebrae of ox and comparison with horse, dog and fowl. Dissection of muscles of face, mastication, tongue, pharynx, soft palate, hyoid, larynx, eye and ear. Dissection of superficial neck muscles. Dissection of brain and its parts. Dissection or demonstration of tunics of eye. Study of teeth, tongue, pharynx, thyroid, parathyroid and salivary glands and differences in horse, dog, pig and fowl. Study of cranial nerves, and blood vessels of head and neck regions. Study of trachea and oesophagus. Study of nerve blocks of the head i.e. cornual, auriculo-palpebral, Peterson's orbital nerve block, mandibulo-alveolar and mental nerve blocks. Importance of facial artery for recording pulse in horse. Surgical importance of Stenson's duct in domestic animals. Surgical approach to guttural pouches-Viborg's triangle. Clinical importance of jugular vein for intravenous injections in large animals. Demonstration of radiographs of normal bones of head and neck.

UNIT-4

Thorax: Demonstration of thoracic vertebrae, ribs and sternum of ox and comparison with horse, dog, pig and fowl. Dissection of muscles, blood vessels, nerves and lymph nodes of thorax. Demonstration of organs of thorax i.e. trachea, oesophagus, thymus, lungs and heart and differences in horse, dog, pig and fowl. Study of pleural reflections of thoracic cavity. Demonstration of sites for auscultation and percussion. Recurrent laryngeal nerve paralysis-roaring in horses. Choke or oesophageal obstruction. Demonstration of radiographs and videos of ultrasonography of organs of thorax.

UNIT-5

Abdomen: Demonstration of bones forming boundaries of abdomen of ox and comparison with horse, dog, pig and fowl. Dissection of muscles, blood vessels and nerves of abdomen. Demonstration of peritoneum, omentum, mesentery and organs of digestive, urinary, male and female reproductive systems present in abdomen and differences in horse, dog, pig and fowl. Demonstration of mammary glands of cow, mare, bitch and sow. Demonstration of major veins, lymph vessels and lymph nodes of abdomen. Topographic location of abdominal viscera of ox and comparison with horse, dog, pig and fowl. Demonstration of sites for laparotomy, caesarean section, ovario-hysterectomy, catheterization of urinary bladder and sites for paravertebral and epidural anaesthesia. Demonstration of Boundaries and Clinical importance of the flank and Para Lumbar Fossa, Sites for Liver, Gall Bladder and Caecal Biopsies, Laparotomy, Rumenocentesis, Rumenotomy, abomasotomy, splenectomy, Cystotomy, Caesarean Operation, catheterization of urinary bladder and enterotomy and paravertebral block. Demonstration of radiographs and videos of ultrasonography of organs of abdomen.

UNIT-6

Hind limb and pelvis: Demonstration of bones of hind limb of ox and comparison with horse, dog, pig and fowl. Demonstration of joints and ligaments of hind limb and pelvis. Dissection of muscles, blood vessels, lymph nodes and nerves of hind limb and pelvic cavity. Demonstration of peritoneal reflections of pelvic cavity and organs of digestive, urinary, male and female reproductive systems in pelvic cavity and differences in horse, dog, pig and fowl. Study of external genital organs. Clinical importance of femoral artery to record pulse in dog. Clinical importance of recurrent tarsal vein for intravenous injections in dog. Demonstration of radiographs of normal bones and videos of ultrasonography of organs of pelvis. Demonstration of Sites for Tibial, Peroneal, Plantar and Pudic nerve blocks, Patellar desmotomy, Urethrotomy, Castration, Vasectomy and cranial and caudal epidural anaesthesia.

UNIT-7

Microscopy and micrometry. Comparison of light and electron microscopy. Histological techniques, processing of tissues for paraffin sectioning and haematoxylin and eosin staining. Microscopic examination of epithelium, connective tissue, muscular tissue, nervous tissue and blood. Microscopic examination of organs of digestive, circulatory, urinary, respiratory, nervous, lymphatic, endocrine, male and female genital systems and sensory organs of domestic animals.

UNIT-8

Demonstration of Placenta, umbilical cord and foetal membranes of different domestic animals. Demonstration of congenital anomalies of domestic animals as per availability. Study of slides of developing organs of different systems as per the availability.

A embalmed cadaver of buffalo calf (procured through donated animals or cadavers obtained from post-mortem section) for every 24 students to be used for dissection purposes.

ANNUAL EXAMINATION			
PAPERS	UNITS	MAXIMUM MARKS	WEIGHTAGE
THEORY			
Paper-I	1, 2, 3 and 4	100	20
Paper-II	5,6,7 and 8	100	20
PRACTICAL			
Paper-I	1, 2, 3 and 4	60	20
Paper-II	5,6,7 and 8	60	20

(ii) **DEPARTMENT OF VETERINARY PHYSIOLOGY AND BIOCHEMISTRY**

VETERINARY PHYSIOLOGY AND BIOCHEMISTRY

Credit Hours: 6+2

VETERINARY PHYSIOLOGY

Credit Hours: 4+1

VETERINARY BIOCHEMISTRY

Credit Hours: 2+1

VETERINARY PHYSIOLOGY

THEORY

UNIT- 1 (BLOOD, CARDIOVASCULAR, NERVOUS AND MUSCULAR SYSTEMS)

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;

Heart- morphological characteristic, systemic excitability conduction and transmission processes. Cardiac Cycle: Regulation of cardiac output; coronary circulation; properties of pulse; metabolism and energetic of working myocardial cell, extrinsic and intrinsic regulation; Electro Cardio Graph and its significance in Veterinary Sciences - Echocardiography. Haemorrhage haemostasis. Haemodynamics of circulation, circulatory mechanics, resistance to flow, vasoconstriction, nervous and circulating fluid volume controls of blood pressure, neurohormonal control of vascular smooth muscle. Circulatory controls- shock stresses, regional and fetal circulation. Capillary exchange, control of blood pressure. Adjustment of circulation during exercise.

Muscle Physiology-basic muscle unit characteristic-electrical phenomenon in muscle cell - muscle action potential, excitation and propagation of impulse characteristics- latent period refractive ness, threshold level-all and none characteristics - contractile mechanism - excitation - contraction coupling-neuro-muscular transmission, types of muscle contraction, phenomenon of fatigue, rigor mortis. Organization of nervous system- Mechanism of information processing, hierarchical control. Major function system- sensory, consciousness, emotion, motor and visceral control and basic functional unit - neuron structure, type- functional characteristics of sub-units of neuron. Membrane potential - ionic basis of resting membrane potential (RMP) nerve action potential, excitation and propagation of impulse characteristics- latent period- refractive-ness, threshold level-all and none characteristics. Degeneration and regeneration of nerve fibre. Synaptic and junctional transmission. 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, electroencephalography. Sense organs and receptors physiology of special senses - Eye: functional morphology, nourishment and protection neural pathway, receptors- optics, ocular muscles and movements, photochemistry, Vision defects Ear: Physiology of hearing and common hearing impairment. Vestibule apparatus. Physiology of olfaction and taste

UNIT-2 (DIGESTIVE AND RESPIRATORY SYSTEMS)

Morphological characteristic of mono gastric and poly gastric digestive system. Prehension, rumination; defecation; vomiting; 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.