

Academic:

1. Degree Offered –UG, PG, PhD

Title of degree: M.V. Sc. & PhD

Duration: 2 years for MVSc and 3 years for PhD

Eligibility Criteria: BVSc & AH for MVSc and MVSc for PhD

Intake Capacity: MVSc-02 and PhD-02

Opportunities: Government and private sector

2. Academic Regulations:

UG , PG, PhD (VCI, ICAR, IV, V Dean's and Corrigendum) – PDF Copies

3. Course offered :: UG, PG , PhD - Semester / Year wise

- List of UG Courses (B.V.Sc & AH) As per latest MSVE Guidelines) ,
B.Tech. (D.T.) and B.F.Sc as per ICAR – V Deans Committee – 2016.

Sr No	Course No.	Title	Credit	Course offered in the Year
1	Veterinary Pathology	Veterinary Pathology	4+2=6	II year

➤ List of PG Courses (MVSc) and M.Tech. (Dairy Technology)

MVSc: Veterinary Pathology

Sr. No.	Course No.	Title	Credits	Semester
1	VPL 501	General Pathology	2 + 1 = 3	I
2	VPL 502	Techniques in Pathology	0+ 2 = 2	I
3	VPL 503	Animal Oncology	1+ 1 = 2	II
4	VPL 504	Clinical Pathology	1 + 1 = 2	I
5	VPL 505	Necropsy Procedures and Interpretations	0 + 1 = 1	II
6	VPL 506	Necropsy Conference	0 + 1 = 1	II
7	VPL 507	Systemic Pathology	2 + 1 = 3	II
8	VPL 508	Pathology of Infectious Diseases of Domestic Animals	2 + 1 = 3	II
9	VPL 509	Toxicopathology*	2 + 1 = 3	III
10	VPL 510	Avian Pathology	2 + 1 = 3	III
11	VPL 511	Pathology of Wild/ Zoo and Aquatic Animal Diseases*	2 + 1 = 3	III
12	VPL 512	Pathology of Laboratory Animal Diseases*	2 + 1 = 3	III
13	VPL 591	Master's Seminar	1 + 0 = 1	III
14	VPL 599	Masters Research	0 + 10 = 10	III
15	PGS 601	Technical Writing and Communications Skills	1 + 0 = 1	III
16	PGS 602	Agricultural Research, Research Ethics and Rural Development Programmes	1 + 0 = 1	III
17	PGS-603	Basic concepts in laboratory techniques	0 + 1 = 1	III
18	PGS 604	Intellectual Property and its management in Agriculture	1 + 0 = 1	III
19	PGS 605	Library and Information Services	0 + 1 = 1	III
20	VPL 599	Masters Research	0 + 20 = 20	IV

*indicates optional

PhD: Veterinary Pathology (Regular)

Sr. No	Course No.	Title of the course	Credits	Semester
1	VPL 601	Molecular and Ultrastructural Basis of Cell injury	2 + 1 = 3	I
2	VPL 602	Molecular Basis of Inflammation	1 + 1 = 2	I
3	RPE 700	Research & Publication Ethics	1 + 1 = 2	I
4	VPL 603	Molecular Basis of Neoplasia*	1+1 = 2	I
5	VPL 604	Immunopathology	2 + 1 = 3	II
6	VPL 607	Pathology of Important Emerging and Re-Emerging Diseases of Pets and Livestock*	2 + 1 = 3	II
7	VPL 608	Research Methodology in Pathology	1+ 0 = 1	II
8	VPL 609	Necropsy Conference I	0 + 1 = 1	II

9	VPL 691	Doctoral Seminar-I	1 + 0 = 1	II
10	VPL 605	Advances in Diagnostic Pathology*	1 + 2 = 3	II
11	VPL 606	Pathology of Nutritional and Metabolic Disturbances*	2 + 1 = 3	II
12	VPL 699	Doctorate Research	0 + 5 = 5	II
13	VPL 690	Special Problem*	0 + 1 = 1	III
14	VPL 692	Doctoral Seminar-II	1 + 0 = 1	III
15	VPL 699	Doctorate Research	0 + 10 = 10	III
16	VPL 699	Doctorate Research	0 + 20 = 20	IV
17	VPL 699	Doctorate Research	0 + 20 = 20	V
18	VPL 699	Doctorate Research	0 + 20 = 20	VI

*Indicates optional

PhD: Veterinary Pathology (In-service)

Sr. No	Course No.	Title of the course	Credits	Semester
1	VPL 601	Molecular and Ultrastructural Basis of Cell injury	2 + 1 = 3	I
2	VPL 602	Molecular Basis of Inflammation	1 + 1 = 2	I
3	RPE 700	Research & Publication Ethics	1 + 1 = 2	I
4	VPL 603	Molecular Basis of Neoplasia*	1 + 1 = 2	I
5	VPL 604	Immunopathology	2 + 1 = 3	II
6	VPL 605	Advances in Diagnostic Pathology*	1 + 2 = 3	II
7	VPL 606	Pathology of Nutritional and Metabolic Disturbances*	2 + 1 = 3	II
8	VPL 607	Pathology of Important Emerging and Re-Emerging Diseases of Pets and Livestock*	2 + 1 = 3	II
9	VPL 608	Research Methodology in Pathology	1 + 0 = 1	II
10	VPL 609	Necropsy Conference I	0 + 1 = 1	II
11	VPL 691	Doctoral Seminar-I	1 + 0 = 1	III
12	VPL 692	Doctoral Seminar-II	1 + 0 = 1	III
13	VPL 690	Special Problem*	0 + 1 = 1	III
14	VPL 699	Doctorate Research	0 + 15 = 15	IV
15	VPL 699	Doctorate Research	0 + 15 = 15	V
16	VPL 699	Doctorate Research	0 + 15 = 15	VI
17	VPL 699	Doctorate Research	0 + 15 = 15	VII
18	VPL 699	Doctorate Research	0 + 15 = 15	VIII

*Indicates optional

4. Lecture Schedule – UG, PG , PhD - Theory / Practical Schedule – Approved by BoS –
Subject wise

BVSc & AH (MSVE-2016)

Subject : Veterinary Pathology

Theory schedule

Lect. No	Sr. No.	Topics to be covered
UNIT –I General Veterinary Pathology		
1	1	Introduction and scope of Veterinary Pathology - Pathology and its relations with other disciplines, common terminologies used in the subject of pathology, health and diseases.
2, 3	2, 3	Brief outline of major intrinsic (including anomalies) and extrinsic causes of diseases.
4 , 5, 6	4 , 5, 6	Hemodynamic disorders (derangements) – Hyperemia, congestion and hemorrhage
7, 8	7, 8	Hemodynamic disorders (derangements) - Thrombosis, embolism, infarction
9	9	Edema
10	10	Shock
11	11	Cell Injury- Reversible and irreversible cell injury
12	12	Degenerations, glycogen overload, amyloidosis and fatty changes
13	13	Necrosis and its types
14	14	Gangrene and its types
15	15	Apoptosis, difference between PM autolysis and necrosis
16, 17	16, 17	Major exogenous and endogenous pigments, calcification, (Metastatic and Dystrophic). Jaundice in animals, photosensitization dermatitis.
18, 19	18, 19	Disturbances in growth - Aplasia, hypoplasia, hyperplasia, metaplasia, dysplasia, atrophy and hypertrophy.
20, 21	20, 21	Inflammation: Definition, classification, various cell types and their functions, mediators, cardinal signs of inflammation and systemic effects.
22	22	Wound healing by primary and secondary intention including growth factors
23	23	Immunopathology in brief – Immunodeficiency, hypersensitivity and autoimmunity
UNIT-II Systemic Veterinary Pathology		
1	24	Introduction to digestive system. Pathological changes including neoplasms and affections of digestive system - its functional disturbances and anomalies. Affection of mouth (Dental caries, sialadenitis, sialolith, stomatitis, glossitis and ranula).
2	25	Affections of pharynx , esophagus and stomach (impaction, tympany, traumatic reticulitis)
3, 4	26, 27	Affections of intestine (mechanical obstruction, torsion, volvulus, intussusception and incarceration). Detailed study of enteritis and its varieties.
5, 6	28, 29	Study of hepatitis, cirrhosis, its varieties and effects
7	30	Study of affections of gall bladder, cholecystitis, cholangitis and pancreas (diabetes mellitus and diabetes insipidus)
8	31	Introduction to Respiratory system. Pathological changes including neoplasms & affections of respiratory system – its functional disturbances, anomalies and diseases of nasal cavity (epistaxis, bull nose, rhinitis, nasal schistosomiasis)

9, 10	32, 33	Affections of larynx and trachea. Non-inflammatory conditions of lung atelectasis, emphysema, oedema, hemoptysis, pleuritis
11	34	Hydrothorax, Pneumothorax, Pyothorax, Hemothorax in brief.
12	35	Detail study of Pneumonia and its types.
13	36	Pathology of pulmonary adenomatosis (Jaagsiekte) and Maedi
14, 15	37, 38	Introduction to musculoskeletal system. Pathological changes including neoplasms & affections of muscles. Equine rhabdomyolysis (Azoturia / Monday morning sickness), White muscle disease, myositis (Acute, chronic and hemorrhagic)
16, 17	39, 40	Pathology of bone (osteodystrophic diseases, fracture), joints, ligaments and tendons
18	41	Introduction to cardiovascular system including blood circulation. Pathological changes including neoplasm and affections of cardiovascular system - its functional disturbances and anomalies.
19	42	Study of pathology of epicardium and pericardium. Detail study of pericardium-hydropericardium, pyopericardium, pneumopericardium, hemopericardium and pericarditis
First internal assessment / examination		
20, 21	43, 44	Study of pathology of myocardium and endocardium – Myocarditis, right and left side heart failure, changes in the size of heart (hypertrophy, dilatation and atrophy), endocarditis and its types.
22	45	Detail study of pathology of artery (arteritis, arteriosclerosis and atherosclerosis), vein (phlebitis, varicose veins, phleboliths) and aneurysm.
23	46	Introduction to haemopoietic system. Pathological changes including neoplasm and affections of haemopoietic system (oligocythemia, polycythemia, pathology of anemia)
24	47	Study of anemia continued, affections of W.B.C.s (leucocytosis, leucopenia, leukemia)
25	48	Introduction to lymphoid system. Pathological changes including neoplasm and affections of lymphoid system.
26	49	Introduction to urinary system. Pathological changes including neoplasm and affections of urinary system- anomalies and its functional disturbances (proteinuria, glycosuria, ketonuria, hematuria, hemoglobinuria etc.,)
27, 28	50, 51	Study of hydronephrosis, cystitis, urolithiasis and uremia
29	52	Study of pathology of nephritis
30	53	Introduction to male reproductive system. Pathological changes including neoplasm and non-infectious conditions affecting male reproductive system
31, 32	54, 55	Introduction to female reproductive system. Pathological changes including neoplasm and affections of female reproductive system.
33, 34	56, 57	Introduction to Nervous system. Pathological changes including neoplasm and affections of brain and meninges. Reaction of nervous tissue to injury.
35, 36	58, 59	Introduction to endocrine system. Study of affections of adrenal, thyroid, thymus, pituitary, parathyroid and pancreas
37	60	Study of affections of skin and appendages (horn, hoof), eye and ear
UNIT –III Animal oncology, Veterinary clinical pathology and necropsy		
1,2	61, 62	Animal oncology - Definitions, general characteristics, classification and etiology of neoplasms. Differences between benign and malignant tumours.
3	63	Carcinogenesis and spread of neoplasms, tumour immunity
4	64	Effects and diagnosis of tumours, staging and grading of neoplasms

5,6	65, 66	Pathology of various types of tumours in domestic animals (epithelial, connective tissue, hematopoietic tissue etc.)
7	67	Veterinary clinical pathology - Introduction and importance of clinical pathology. Different anticoagulant used in haematology.
8	68	Interpretation of blood tests - haemoglobin, packed cell volume, total erythrocyte count, erythrocytic indices, erythrocytic sedimentation rate
9	69	Interpretation of blood tests - total leukocyte count, absolute count of different leucocytes), blood smear examination and its interpretation
10,11	70, 71	Urinalysis - Interpretation of physical, chemical and microscopic examination of urine
12	72	Study of biopsy and cytology including exfoliative cytology as rapid diagnostic techniques.
13	73	Necropsy - Introduction, objectives, pre-necropsy guidelines, procedure for post mortem examination of various species of animals including wild animals
14	74	Details study of post mortem changes in carcass
15	75	Collection, preservation and dispatch of specimens (morbid materials) for laboratory examination
16	76	Writing of post mortem report
17	77	Veterolegal necropsy, veterolegal wounds
UNIT IV-Pathology of infectious and non-infectious disease of domestic animals		
1	78	General introduction to pathology of bacterial diseases. Study of pathogenesis, gross and microscopic pathology of tuberculosis and Johne's disease
2,3	79, 80	Study of pathogenesis, gross and microscopic pathology of actinomycosis, actinobacillosis and anthrax.
4, 5	81, 82	Study of pathogenesis, gross and microscopic pathology of clostridial group of diseases (black quarter, black disease, enterotoxaemia, braxy, botulism, tetanus),
6	83	Study of pathogenesis, gross and microscopic pathology of streptococcosis including strangles in horses, staphylococcosis, glanders
7,8	84, 85	Study of pathogenesis, gross and microscopic pathology of pasteurellosis, leptospirosis and listeriosis,
Second internal assessment / examination		
9	86	Study of pathogenesis, gross and microscopic pathology of swine erysipelas and corynebacterium infections (caseous lymphadenitis, pseudotuberculosis)
10	87	Study of pathogenesis, gross and microscopic pathology of brucellosis and campylobacteriosis
11	88	Study of pathogenesis, gross and microscopic pathology of salmonellosis and colibacillosis including oedema disease in pigs and necrobacillosis
12,13	89, 90	Study of pathogenesis, gross and microscopic pathology of mycoplasma infection (contagious bovine pleuropneumonia, contagious caprine pleuropneumonia, porcine enzootic pneumonia), diseases of chlamydial group, Q-fever, anaplasmosis and ehrlichiosis
14, 15	91, 92	Study of pathogenesis, gross and microscopic pathology of superficial and deep mycoses - ringworm (dermatophytosis), aspergillosis, zygomycosis, histoplasmosis, cryptococcosis, rhinosporidiosis and candidiasis
16	93	Study of pathogenesis, gross and microscopic pathology of aflatoxicosis, ochratoxicosis, trichothecosis, degnala disease and ergototoxicosis
17	94	General introduction to pathology of viral diseases. Study of pathogenesis, gross and microscopic pathology of FMD, vesicular exanthema, vesicular stomatitis

18	95	Study of pathogenesis, gross and microscopic pathology of rinderpest, pestes des petits ruminants
19	96	Study of pathogenesis, gross and microscopic pathology of blue tongue and pox
20	97	Study of pathogenesis, gross and microscopic pathology of Infectious bovine rhinotracheitis, Bovine viral diarrhea and malignant catarrhal fever.
21, 22	98, 99	Study of pathogenesis, gross and microscopic pathology of Equine infectious anemia, Equine influenza, Equine viral arteritis, Equine rhino-pneumonitis and equine encephalomyelitis
23	100	Study of pathogenesis, gross and microscopic pathology of classical swine fever and swine influenza
24, 25 26	101,102, 103	Study of pathogenesis, gross and microscopic pathology of Rabies , Canine distemper, Infectious canine hepatitis, canine parvovirus infection and feline panleukopenia
27	104	Study of pathogenesis, gross and microscopic pathology of maedi, Jaagziekte, rota and corona viruses.
28	105	Study of pathogenesis, gross and microscopic pathology of prion diseases (scrapie, bovine and feline spongiform encephalopathies).
29, 30	106, 107	Study of pathogenesis, gross and microscopic pathology of fasciolosis, amphistomiasis, ascariasis, strongylosis, haemonchosis, spirocercosis, filariasis, hookworm and tapeworm infections
31, 32	108, 109	Study of pathogenesis, gross and microscopic pathology of haemoprotazoal diseases - babesiosis, theileriosis and trypanosomosis
33	110	Study of pathogenesis, gross and microscopic pathology of coccidiosis, toxoplasmosis, cryptosporidiosis,
34	111	Pathological changes of nutritional imbalances (in brief) due to carbohydrates, proteins and fats
35, 36	112, 113	Pathological changes of nutritional imbalances (in brief) due to minerals and vitamins and metabolic diseases (pregnancy toxemia, post-parturient haemoglobinuria, hypomagnesemic tetany, azoturia, and sway back or enzootic ataxia, pica and rheumatism like syndrome).
37	114	Gross and microscopic pathology (in brief) of toxicities like arsenic, copper, lead, mercury and cadmium
38	115	Gross and microscopic pathology (in brief) of strychnine, nitrate, nitrite, hydrocyanic acid, fluoride, selenium and oxalates
39	116	Gross and microscopic pathology (in brief) of insecticide, pesticide poisoning, plant poisoning (bracken fern, gossypol, ratti and lantana)
UNIT-V Avian Pathology		
1	117	Study of avian inflammation in comparison to mammalian inflammation
2	118	Pathogenesis, gross & microscopic pathology of Ranikhet Disease (RD) and Avian Influenza.
3	119	Pathogenesis, gross & microscopic pathology of Infectious Bronchitis (IB) & Infectious Laryngo-tracheitis (ILT).
4	120	Pathogenesis, gross & microscopic pathology of Infectious Bursal disease (IBD), Inclusion body hepatitis (IBH) & hydropericardium syndrome
5	121	Pathogenesis, gross & microscopic pathology of Marek's Diseases (MD), Avian Leucosis or sarcoma group of diseases & reticuloendotheliosis
6	122	Pathogenesis, gross & microscopic pathology Fowl pox, Chicken infectious anaemia, Avian Nephritis & Avian encephalomyelitis

7	123	Pathogenesis, gross & microscopic pathology of Eggs drop syndrome, (EDS) & Reovirus infection
8	124	Pathogenesis, gross & microscopic pathology of Colibacillosis (yolk sac disease, peritonitis, Coligranuloma) and Infectious coryza.
9	125	Pathogenesis, gross & microscopic pathology of Fowl cholera & tuberculosis
10	126	Pathogenesis, gross & microscopic pathology of Clostridial diseases- botulism, necrotic & ulcerative enteritis and gangrenous dermatitis.
11	127	Pathogenesis, gross & microscopic pathology of Salmonellosis, Fowl typhoid & Spirochaetosis
12	128	Pathogenesis, gross & microscopic pathology of <i>Mycoplasma gallisepticum</i> (CRD) & <i>M. synovae</i> infection, Chlamydiosis
Third internal assessment / examination		
13	129	Pathogenesis, gross & microscopic pathology of aspergillosis, thrush, favus, aflatoxicosis, ochratoxicosis & trichothecenes
14	130	Gross & microscopic pathology of parasitic disease. Helminthic diseases of poultry in brief (flukes, cestodes, nematodes), ectoparasites. Common vices of poultry
15	131	Pathogenesis, gross & microscopic pathology of coccidiosis & histomoniasis
16	132	Gross and microscopic pathology Nutritional and metabolic disease- deficiency / excess of carbohydrate, proteins, minerals and vitamins in poultry.
17,18	133, 134	Miscellaneous diseases (Heat stroke, vent gleet, internal layer, false layer, pendulous crop, breast blister, ascites syndrome, fatty liver and kidney syndrome, fatty liver syndrome, cage layer fatigue, gout, hemorrhagic syndrome, round heart disease, impaction of oviduct, egg bound condition, bumble foot).
UNIT-VI Pathology of diseases of laboratory and wild animals		
1,2,3	135, 136 137	Pathology of important diseases of rats, mice, and guinea pigs (Tyzzer's disease, Pseudotuberculosis, Salmonellosis, Infectious ectromelia, Infantile diarrhea, Murine hepatitis virus, Lymphocytic choriomeningitis);
4,5	138, 139	Pathology of important diseases of rabbits (Pasteurellosis, Blue breasts, Treponematosis, Enterotoxaemia, Rabbit pox, Infectious myxomatosis, Papillomatosis, Coccidiosis, Mite infestation).
6,7, 8	140, 141 142	Gross and microscopic pathology of important diseases of wild animals (West Nile Fever, Rabies, FMD, Pox, Kyasanaur forest disease, Infectious hepatitis virus, Anthrax, Tuberculosis, Colibacillosis, Clostridial infections Trypanosomosis, Babesiosis, Theileriosis, Nutritional deficiency diseases)

Practical Schedule

Pract. No.	Sr. No.	Topics to be covered
UNIT –I General Veterinary Pathology		
1, 2	1, 2	Study of gross pathological specimens and recognition of pathological lesions
3, 4, 5	3, 4, 5	Histopathological techniques– Processing of tissue for paraffin embedding technique, section cutting, staining and identification of microscopic lesions
6, 7, 8, 9, 10	6, 7, 8 9, 10	Examination of histopathological slides showing general pathological alterations.
UNIT –II Systemic Veterinary Pathology		
1, 2	11, 12	Study of gross specimens and histopathological slide- Digestive system
3,4	13, 14	Study of gross specimens and histopathological slide - Respiratory system

5,6	15, 16	Study of gross specimens and histopathological slide - Musculoskeletal system
7,8	17, 18	Study of gross specimens and histopathological slide - Cardiovascular system
9,10	19, 20	Study of gross specimens and histopathological slide - Haemopoietic & lymphoid system
11,12	21, 22	Study of gross specimens and histopathological slide - Urinary system
13,14	23, 24	Study of gross specimens and histopathological slide - Reproductive system (Male & Female)
15,16	25, 26	Study of gross specimens and histopathological slide - Nervous system
17,18	27, 28	Study of gross specimens and histopathological slide - Endocrine, skin and appendages
UNIT –III Animal oncology, veterinary clinical pathology and necropsy		
1,2	29, 20	Macroscopic and microscopic examinations of various types of benign tumors
3,4	31, 32	Macroscopic and microscopic examinations of various types of malignant tumors
5	33	Examination of blood for routine haematological tests (Hb, PCV, ESR, Erythrocytic Indices) in domestic animals
6	34	Total Erythrocyte Count, Total Leucocytes Count
7	35	Differential Leukocyte Count
8	36	Haematology in Poultry
9	37	Physical, chemical and microscopic examination of urine
10,11	38, 39	Post mortem examination of different species of animals
12	40	Post mortem examination of wild animals
13	41	Post mortem examination of laboratory animals
UNIT IV-Pathology of infectious and non-infectious disease of domestic animals		
1,2	42, 43	Post mortem examination and its interpretations in infectious and non-infectious disease of domestic animals
3, 4,5 6	44, 45, 46, 47	Study of gross specimens and histopathological slides of various organs pertaining to infectious and non- infectious diseases of domestic animals
7,8,9 10	48, 49, 50, 51	Demonstration of causative agents in tissue section by special staining methods and use of rapid diagnostic tests.
UNIT- V Avian Pathology		
1	52	Post-Mortem examination in poultry and diagnosis of poultry diseases.
2	53	Writing of post mortem examination reports of important diseases
3	54	Collection, preservation & dispatch of morbid material in poultry diseases.
4	55	Study of gross specimens & microscopic lesions of viral diseases of poultry.
5	56	-----do-----
6	57	Study of gross specimens & microscopic lesions of bacterial diseases
7	58	-----do-----
8	59	Study of gross specimens & microscopic lesions of parasitic and fungal diseases of poultry.
9	60	Study of gross specimens & microscopic lesions of nutritional (deficiency /excess) and miscellaneous diseases of poultry.
UNIT-VI Pathology of diseases of laboratory and wild animals		
1,2	61, 62	Post mortem examination of laboratory and wild animals
3,4	63, 64	Post mortem examination of laboratory and wild animals
5,6	65, 66	Study of gross specimen and histopathological slides of diseases affecting laboratory animals.
7,8	67, 68	Study of gross specimen and histopathological slides of diseases affecting wild animals.

PG : Semester II, Academic year : 2023-24

Time Table for MVSc (II - Sem) 2023-24

DAY	TIME							
	10.00 to 11.00	11.00 to 12.00	12.00 to 13.00	13.00 to 14.00	14.00 to 15.00	15.00 to 16.00	16.00 to 17.00	17.00 to 18.00
Monday				B R E A K			VPL-508 (P)	
Tuesday					VPL- 506 (P)		VPL-507 (P)	
Wednesday			VPL-508				VPL-507 (T)	VPL-507 (T)
Thursday		VPL-508						
Friday							VPL-505 (P)	
Saturday	L I B R A R Y				L I B R A R Y			