

**DEPARTMENT OF VETERINARY PHYSIOLOGY AND BIOCHEMISTRY
APOLLO COLLEGE OF VETERINARY MEDICINE, JAIPUR**

Second Professional year B.V.Sc. and A.H.

Course Instructors:

- 1) Dr. Vijay D. Dimple, Ph.D., Professor & Head
- 2) Dr. Lavudya Naveen, Ph.D., Assistant Professor

Unit- I: General Veterinary Biochemistry

Unit-II: Intermediary Metabolism

Unit-III: Veterinary Analytical Biochemistry

**VETERINARY BIOCHEMISTRY
THEORY**

Credit Hours 2+1

S.No	Date	Title		Hours -1
		UNIT- I : GENERAL VETERINARY BIOCHEMISTRY		
1	18.11.2024	Scope and importance of Biochemistry	Dr. Vijay Dimple	1
2	19.11.2024	Structure of Biological membrane and transport across membrane	Dr. Vijay Dimple	1
3	25.11.2024	Donnan membrane equilibrium and its application	Dr. Vijay Dimple	1
4	26.11.2024	Dissociation of acids, acidity of base/ basicity of acid, pH and its measurement	Dr. Vijay Dimple	1
5	02.12.2024	Buffer system: mechanism of buffer action, buffering capacity, buffers of biological importance.	Dr. Vijay Dimple	1
6	03.12.2024	Handeson-Hasselbalch equation.	Dr. Vijay Dimple	1
7	09.12.2024	Biochemistry of carbohydrate, classification and structural configuration.	Dr. Vijay Dimple	1
8	10.12.2024	Chemistry of monosaccharides : ribose, glucose, fructose, galactose, mannose, aminosugars and deoxy sugars. Structure and their significance. Optical isomerism and Mutarotation.	Dr. Vijay Dimple	1
9	16.12.2024	Structure and function of Disaccharides : maltose, isomaltose, lactose, sucrose and cellobiose. Inversion of sugar	Dr. Vijay Dimple	1
10	17.12.2024	Chemistry of polysaccharides : starch. Dextrins, dextrans, glycogen, cellulose, inulin, chitin.	Dr. Vijay Dimple	1
11	23.12.2024	Chemistry of mucopolysaccharides (Heteroglycans):	Dr. Vijay	1

VETERINARY BIOCHEMISTRY

		Hyaluronic acid, heparin, chondroitin sulphate (dermatin, keratin) and its importance. Bacterial cell wall polysaccharides .	Domple	
12	24.12.2024	Classification and biochemistry of lipids	Dr. Vijay Domple	1
13	30.12.2024	Fatty acids: structure and function. Nomenclature, saturated and unsaturated fatty acids. Isomerism in unsaturated fatty acids (cis-trans). Essential and non essential fatty acids	Dr. Vijay Domple	1
14	31.12.2024	Fat indices: saponification number, acid number, iodine number, acetyl number, Polenske number, Reichert-Meissl number Rancidity of fat	Dr. Vijay Domple	1
15	07.1.2025	Simple lipids: triglycerides, neutral lipids and waxes	Dr. Vijay Domple	1
16	20.1.2025	Compound lipids: phosphatidic acid, glycerophospholipids, non phosphorolipids, (sphingolipids, glycolipids, gangliosides, sulphatides)	Dr. Vijay Domple	1
17	21.1.2025	Derived lipids: Structure and function of steroids, eicosanoids, prostaglandins, leukotriene, thromboxane	Dr. Vijay Domple	1
18	27.1.2025	Lipo-protein and bile acids: structure and function	Dr. Vijay Domple	1
19	28.1.2025	amino acids: Structure and Classification	Dr. Vijay Domple	1
20	03.2.2025	Physical and Chemical properties of amino acids: optical activity, peptide bond formation, isoelectric pH (amphoteric nature).	Dr. Vijay Domple	1
21	04.2.2025	Protein: classification (Simple, conjugated and derived proteins)	Dr. Vijay Domple	1
22	17.2.2025	Structure of proteins: primary, secondary, tertiary and quaternary structures	Dr. Vijay Domple	1
23	18.2.2025	Biological significance of protein	Dr. Vijay Domple	1
24	24.2.2025	Biochemistry of nucleic acids , purines and pyrimidines, Nucleosides and nucleotides	Dr. Vijay Domple	1
25	25.2.2025	Biological significance of nucleoside and nucleotides	Dr. Vijay Domple	1
26	03.3.2025	Types of RNA: chemistry, structure and function	Dr. Vijay Domple	1
27	04.3.2025	Chemistry of DNA: structure and function	Dr. Vijay Domple	1
		UNIT- II : INTERMEDIARY METABOLISM		
28	10.3.2025	Enzyme: Definition and classification	Dr. Vijay Domple	1

VETERINARY BIOCHEMISTRY

29	11.3.2025	Co-enzyme, cofactors and iso-enzymes.	Dr. Vijay Domple	1
30	17.3.2025	Unit of enzymes: International units, katal, turnover number and specific activity	Dr. Vijay Domple	1
31	18.3.2025	Properties: Protein nature, enzyme substrate complex formation. Modern concept of active center of enzyme. Specificity of enzyme action: Substrate specificity, group specificity, stereo or optical specificity.	Dr. Vijay Domple	1
32	24.3.2025	Factors influencing enzyme action: Effect of temperature, pH, concentration of substrate and enzyme	Dr. Vijay Domple	1
33	25.3.2025	Enzyme inhibition: Competitive, non-competitive, uncompetitive and suicidal. Allosteric enzyme (Enzyme kinetics)	Dr. Vijay Domple	1
34	04.4.2025	Biological oxidation: Enzyme and coenzyme involved in oxidation and reduction	Dr. Vijay Domple	1
35	07.4.2025	Oxido-reductase, oxidases, aerobic dehydrogenase, hydroperoxidase, anaerobic dehydrogenase, cytochrome	Dr. Vijay Domple	1
36	08.4.2025	Respiratory chain/ electron transport chain, oxidative phosphorylation, inhibitors, uncouplers and other factors influencing electron transport chain.	Dr. Vijay Domple	1
37	15.4.2025	Carbohydrate metabolism: Glycolysis	Dr. Vijay Domple	1
38	21.4.2025	HMP shunt	Dr. Vijay Domple	1
39	22.4.2025	Kreb's cycle	Dr. Vijay Domple	1
40	28.4.2025	Gluconeogenesis. Cori cycle.	Dr. Vijay Domple	1
41	01.5.2025	Glycogenesis and Glycogenolysis	Dr. Vijay Domple	1
42	02.5.2025	Hormonal control of carbohydrate metabolism. Regulation of blood sugar	Dr. Vijay Domple	1
43	08.5.2025	Bioenergetics of carbohydrate metabolism	Dr. Vijay Domple	1
44	09.5.2025	Lipid metabolism: β oxidation of fatty acid,	Dr. Lavudya Naveen	1
45	15.5.2025	ketone bodies formation	Dr. Lavudya Naveen	1
46	16.5.2025	Biosynthesis of fatty acid	Dr. Lavudya Naveen	1
47	22.5.2025	Bioenergetic of lipid metabolism	Dr. Lavudya	1

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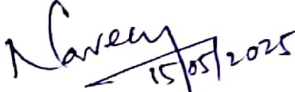
			Naveen	
48	23.5.2025	Protein metabolism Biosynthesis and degradation	Dr. Lavudya Naveen	1
49	30.5.2025	Deamination, transamination and decarboxylation of amino acid	Dr. Lavudya Naveen	1
50	05.6.2025	Ammonia transport and urea cycle.	Dr. Lavudya Naveen	1
51	06.6.2025	Nucleic acids metabolism	Dr. Lavudya Naveen	1
52	12.6.2025	Metabolism of purines and pyrimidines	Dr. Lavudya Naveen	1
53	13.6.2025	DNA and RNA biosynthesis and regulation	Dr. Lavudya Naveen	1
54	19.6.2025	Regulation and Integration of metabolism	Dr. Lavudya Naveen	1
		UNIT III : VETERINARY ANALYTICAL BIOCHEMISTRY	Dr. Lavudya Naveen	
55	20.6.2025	Disorder of carbohydrate metabolism: Diabetes mellitus : Hyperglycaemia, Hormonal control of carbohydrate metabolism and regulation of blood sugar, glucose transporters	Dr. Lavudya Naveen	1
56	26.6.2025	Ketosis, bovine ketosis, pregnancy toxemia, hypoglycaemia in baby pigs, hyperinsulinism in Dogs	Dr. Lavudya Naveen	1
57	27.6.2025	Biochemical tests for the detection of disturbance in carbohydrate metabolism: Blood glucose, glycated proteins (HbA1c, fructosamine), glucose tolerance tests	Dr. Lavudya Naveen	1
58	03.7.2025	Glycogen storage diseases	Dr. Lavudya Naveen	1
59	04.7.2025	Plasma protein and clinical significance: Function of plasma protein, factors influencing plasma protein	Dr. Lavudya Naveen	1
60	10.7.2025	Proteins and dysproteinemias, hyper and hypoproteinemia, A/G ratio, acute phase proteins	Dr. Lavudya Naveen	1
61	11.7.2025	Lipid profile in disease diagnosis. hyperlipidemia	Dr. Lavudya Naveen	1
62	17.7.2025	Clinical enzymology: diagnostic importance of non-functional enzymes and isoenzymes. Enzymes of Clinically diagnostic importance	Dr. Lavudya Naveen	1
63	18.7.2025	Liver function tests: Classification.	Dr. Lavudya Naveen	1
64	24.7.2025	Biochemical test for differential diagnosis (laboratory assessment of hepatic diseases)	Dr. Lavudya Naveen	1
65	25.7.2025	Biochemical tests of renal function:	Dr. Lavudya	1

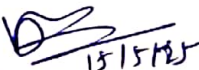
VETERINARY BIOCHEMISTRY

		Role of serum BUN, uric acid and creatinine in diagnosis	Naveen	
66	31.7.2025	Urine analysis	Dr. Lavudya Naveen	1
67	01.8.2025	Disturbance in acid base balance and its diagnosis.	Dr. Lavudya Naveen	1
68	07.8.2025	Biochemistry of digestive disorders: vomition, volvulus, ischemia, diarrheas, malabsoprtion, lactic acidosis	Dr. Lavudya Naveen	1
69	08.8.2025	Biochemistry of oxidative stress and shock.	Dr. Lavudya Naveen	1
70	14.8.2025	Biochemical basis of fluid therapy: regulation of body fluids and electrolytes. Acidosis and alkalosis	Dr. Lavudya Naveen	1
71	15.8.2025	ADH, rennin-angiotensin, aldosteron, atrialnatriuretic factor	Dr. Lavudya Naveen	1
72	21.8.2025	Detoxification in body: metabolism of xenobiotics	Dr. Lavudya Naveen	1
73	22.8.2025	General reactions for biotransformation of different groups of substance.	Dr. Lavudya Naveen	1
74	28.8.2025	Cytochrome p450 system of enzymes	Dr. Lavudya Naveen	1

Name of Teachers


15/8/25
Dr. Vijay Dimple
Professor & Head


15/08/2025
Dr. Lavudya Naveen
Asst. Professor


15/8/25
HOD/Incharge

VETERINARY BIOCHEMISTRY

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Second Professional year B.V.Sc. and A.H.

VETERINARY BIOCHEMISTRY PRACTICAL

Credit Hours 2+1

S. no	Date	Title	Batch	Instructor	Hours 2
UNIT- 1 : GENERAL VETERINARY BIOCHEMISTRY					
1	21.11.2024	Methods of expressing concentration	C	Dr. Vijay Domple	2
2	20.11.2024		B		2
3	19.11.2024		A		2
4	18.11.2024		D		2
5	06.12.2024	Preparation/standardization of acid & alkali	C	Dr. Vijay Domple	2
6	27.11.2024		B		2
7	26.11.2024		A		2
8	25.11.2024		D		2
9	13.12.2024	Neutralization or acidimetry or alkalimetry reactions/titration	C	Dr. Vijay Domple	2
10	04.12.2024		B		2
11	03.12.2024		A		2
12	02.12.2024		D		2
13	20.12.2024	pH, Preparation of buffers and determination of pH	C	Dr. Vijay Domple	2
14	11.12.2024		B		2
15	10.12.2024		A		2
16	09.12.2024		D		2
17	27.12.2024	Qualitative tests and identification of carbohydrates	C	Dr. Vijay Domple	2
18	18.12.2024		B		2
19	17.12.2024		A		2
20	16.12.2024		D		2
21	03.1.2025	Molisch's, Iodine, Benedict's, Barfoed's, Saliwanoff's, phloroglucinol, osazone tests	C	Dr. Vijay Domple	2
22	01.1.2025		B		2
23	24.12.2024		A		2
24	23.12.2024		D		2
25	10.1.2025	Identification of unknown sugar.	C	Dr. Vijay Domple	2
26	08.1.2025		B		2
27	31.12.2024		A		2
28	30.12.2024		D		2
29	17.1.2025	Acid number of oil	C	Dr. Vijay Domple	2
30	15.1.2025		B		2
31	07.1.2025		A		2
32	13.1.2025		D		2
33	24.1.2025	Colour reaction of proteins	C	Dr. Vijay Domple	2
34	22.1.2025		B		2
35	21.1.2025		A		2
36	20.1.2025		D		2
37	31.1.2025	Precipitation reactions of protein	C	Dr. Vijay Domple	2
38	29.1.2025		B		2
39	28.1.2025		A		2

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40	27.1.2025		D		2
41	21.2.2025	Estimation of amino acid (Sorenson method)	C	Dr. Vijay Domple	2
42	19.2.2025		B		2
43	4.2.2025		A		2
44	03.2.2025		D		2
45	28.2.2025	Demonstration of effect of pH and Temperature on enzyme activity	C		Dr. Vijay Domple
46	05.3.2025		B	2	
47	18.2.2025		A	2	
48	24.2.2025		D	2	
UNIT II					
49	07.3.2025	Principles, procedure and interpretation of sugar estimation in blood.	C	Dr. Lavudya Naveen	2
50	12.3.2025		B		2
51	25.2.2025		A		2
52	03.3.2025		D		2
53	28.3.2025	Principles, procedure and interpretation of plasma protein estimation by Biuret method (Colorimetric).	C	Dr. Lavudya Naveen	2
54	19.3.2025		B		2
55	04.3.2025		A		2
56	10.3.2025		D		2
57	09.4.2025	Principles, procedure and interpretation of plasma Inorganic phosphate estimation by Fiske and SubbaRow method	C	Dr. Lavudya Naveen	2
58	26.3.2025		B		2
59	11.3.2025		A		2
60	17.3.2025		D		2
61	25.4.2025	Principles, procedure and interpretation of serum Calcium estimation by Clark and Collip method	C	Dr. Lavudya Naveen	2
62	02.4.2025		B		2
63	18.3.2025		A		2
64	24.3.2025		D		2
65	02.5.2025	Principles, procedure and interpretation of serum Magnesium by Dennis method	C	Dr. Lavudya Naveen	2
66	09.4.2025		B		2
67	25.3.2025		A		2
68	07.4.2025		D		2
69	16.5.2025	Principles, procedure and interpretation of Ascorbic acid estimation by method of Stanley et al.	C	Dr. Lavudya Naveen	2
70	16.4.2025		B		2
71	01.4.2025		A		2
72	21.4.2025		D		2
73	23.5.2025	Estimation of lactose in milk by titrimetric method	C	Dr. Lavudya Naveen	2
74	23.4.2025		B		2
75	08.4.2025		A		2
75	28.4.2025		D		2
76	30.5.2025	Estimation of Vitamin A antimony trichloride method	C	Dr. Lavudya Naveen	2
77	14.5.2025		B		2
78	15.4.2025		A		2
79	12.5.2025		D		2

VETERINARY BIOCHEMISTRY

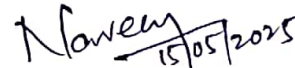
80	06.6.2025	Estimation of sodium and potassium by flame photometry.	C	Dr. Lavudya Naveen	2
81	21.5.2025		B	Dr. Lavudya Naveen	2
82	22.4.2025		A	Dr. Lavudya Naveen	2
83	19.5.2025		D	Dr. Lavudya Naveen	2
84	13.6.2025	Demonstration of Chromatography and electrophoresis techniques.	C	Dr. Lavudya Naveen	2
86	28.5.2025		B	Dr. Lavudya Naveen	2
87	13.5.2025		A	Dr. Lavudya Naveen	2
88	26.5.2025		D	Dr. Lavudya Naveen	2
89	20.6.2025	Demonstration of Chromatography and electrophoresis techniques.	C	Dr. Lavudya Naveen	2
90	04.6.2025		B	Dr. Lavudya Naveen	2
91	20.5.2025		A	Dr. Lavudya Naveen	2
92	02.6.2025		D	Dr. Lavudya Naveen	2
UNIT III : VETERINARY ANALYTICAL BIOCHEMISTRY					
93	27.6.2025	Lecture of general principles of instrumentation	C	Dr. Vijay Domple	2
94	11.6.2025		B	Dr. Vijay Domple	2
95	27.5.2025		A	Dr. Vijay Domple	2
96	09.6.2025		D	Dr. Vijay Domple	2
97	04.7.2025	Colorimetric and photometric techniques employed in the estimation of biological fluids.	C	Dr. Vijay Domple	2
98	18.6.2025		B	Dr. Vijay Domple	2
99	03.6.2025		A	Dr. Vijay Domple	2
100	16.6.2025		D	Dr. Vijay Domple	2
101	11.7.2025	Qualitative analysis of organic and inorganic constituents of urine.	C	Dr. Vijay Domple	2
102	25.6.2025		B	Dr. Vijay Domple	2
103	10.6.2025		A	Dr. Vijay Domple	2
104	23.6.2025		D	Dr. Vijay Domple	2
105	18.7.2025	Detection of pathological constituents of urine and interpretation	C	Dr. Vijay Domple	2
106	02.7.2025		B	Dr. Vijay Domple	2
107	17.6.2025		A	Dr. Vijay Domple	2
108	30.6.2025		D	Dr. Vijay Domple	2
109	18.7.2025	General procedures in blood analysis	C	Dr. Vijay Domple	2
110	09.7.2025		B	Dr. Vijay Domple	2
111	24.6.2025		A	Dr. Vijay Domple	2
112	07.7.2025		D	Dr. Vijay Domple	2
113	25.7.2025	Preparation of protein free filtrate	C	Dr. Vijay Domple	2
114	16.7.2025		B	Dr. Vijay Domple	2
93	01.7.2025		A	Dr. Vijay Domple	2
94	14.7.2025		D	Dr. Vijay Domple	2
95	01.8.2025	Principles, procedure and interpretation of sugar estimation in blood.	C	Dr. Vijay Domple	2
96	23.7.2025		B	Dr. Vijay Domple	2
97	08.7.2025		A	Dr. Vijay Domple	2
98	21.7.2025		D	Dr. Vijay Domple	2
99	08.8.2025	Principles, procedure and interpretation of plasma protein	C	Dr. Vijay Domple	2

VETERINARY BIOCHEMISTRY

		estimation by Biuret method (Colorimetric).		Domple	
100	30.7.2025		B		2
101	15.7.2025		A		2
102	28.7.2025		D		2
103	15.8.2025	Principles, procedure and interpretation of serum bilirubin estimation (Colorimetric)	C	Dr. Vijay Domple	2
104	06.8.2025		B		2
105	22.7.2025		A		2
106	04.8.2025		D		2
107	22.8.2025	Principles, procedure and interpretation of serum urea estimation (Colorimetric)	C	Dr. Lavudya Naveen	2
108	13.8.2025		B		2
109	29.7.2025		A		2
110	11.8.2025		D		2
111	29.8.2025	Principles, procedure and interpretation of total cholesterol estimation in serum (Colorimetric)	C	Dr. Lavudya Naveen	2
112	20.8.2025		B		2
113	05.8.2025		A		2
114	18.8.2025		D		2
115	05.9.2025	Principles, procedure and interpretation of serum creatinine estimation (Colorimetric)	C	Dr. Lavudya Naveen	2
116	27.8.2025		B		2
117	12.8.2025		A		2
118	25.8.2025		D		2

Name of Teachers


15/5/25
Dr. Vijay Domple
Professor & Head


15/05/2025
Dr. Lavudya Naveen
Asst. Professor


15/5/25
HOD/Incharge