

**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. **51** /VBC/BVC, Patna

Date: **31/07/18**

Course Title: **VETERINARY CLINICAL BIOCHEMISTRY AND LABORATORY
DIAGNOSIS –I**

Course number: **VLD-411**

Professional year: **IV B.V.Sc & A.H.**

Semester: **VII**

Credit hours: **0+1**

Course Instructors: **Dr. Ajeet Kumar*, Dr. Deepak Kumar, Kaushal Kumar & Dr. Anil Gattani**

Lecture Schedule for Practical

Lecture No.	Topic	Instructor
1	Training in examining clinical samples (biochemical, pathological, parasitological and bacteriological	Ajeet Kumar
2	Analysing and correlating with clinical findings and interpreting the results	Ajeet Kumar
3	Collection, labeling, transportation, and preservation of body fluid samples	Ajeet Kumar
4	Writing results and report Interpretation of data in relation to specific diseases	Ajeet Kumar
5	Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples	Ajeet Kumar
6	Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples	Ajeet Kumar
7	Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples	Ajeet Kumar
8	Clinical significance and interpretation of examination of urine samples	Kaushal Kumar
9	Clinical significance and interpretation of examination of urine samples	Kaushal Kumar
10	Clinical evaluation of blood (Haemoglobin, packed cell volume, total erythrocytic count erythrocytic sedimentation rate, total leukocytic count and differential leucocytic count) from clinical samples	Deepak Kumar
11	Clinical evaluation of blood (Haemoglobin, packed cell volume, total erythrocytic count erythrocytic sedimentation rate, total leukocytic count and differential leucocytic count) from clinical samples	Deepak Kumar
12	Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts)	R.K. Sharma
13	Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts)	R.K. Sharma

14	Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts)	R.K. Sharma
15	Examination of skin scrapings, examination of blood smear/blood for diagnosis of blood protozoan diseases	R.K. Sharma
16	Examination of skin scrapings, examination of blood smear/blood for diagnosis of blood protozoan diseases	R.K. Sharma

*** Course Incharge**

Manual

1. Practical Manual on Veterinary Laboratory Diagnosis provided by the Department.

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Deptt. Vety. Biochemistry
BVC, Patna

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**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. **53**/VBC/ BVC, Patna

Date: **31/07/18**

Course Title: **Applications of Genomics and Proteomics in Molecular Biology**

Course number: **VBC 603**

Professional year: **M.V.Sc**

Semester: **I**

Credit hours: **2+0**

Course Instructors: **Dr. Ajeet Kumar**

Lecture Schedule for Theory

Lecture No.	Lecture topic	Name of course instructor
1	Nucleotides and Nucleic Acids Structure & Function	Ajeet Kumar
2	High Order Structures Of Chromosome, Cohesions & Condensins in Chromosome Structure	Ajeet Kumar
3	Structural Maintenance of Chromosomes (SMC) Proteins	Ajeet Kumar
4	DNA Sequencing	Ajeet Kumar
5	Mutation and Evolution	Ajeet Kumar
6	DNA Libraries	Ajeet Kumar
7	Bacterial RNA Polymerase & RNA Interference	Ajeet Kumar
8	DNA replication	Ajeet Kumar
9	RNA synthesis & Control of gene expression	Ajeet Kumar
10	DNA microarrays/chips.	Ajeet Kumar
11	Polymerase Chain Reaction	Ajeet Kumar
12	Recombinant DNA technology in improving domestic animals.	Ajeet Kumar
13	Restriction Fragment Length Polymorphism (RFLP) Gene and Gene Products	Ajeet Kumar
14	Genetic Changes in Hereditary Diseases	Ajeet Kumar
15	Cancer & Detection ion DNA Probes	Ajeet Kumar
16	Gene Therapy	Ajeet Kumar
17	DNA Vaccines & Antitumor Antibodies	Ajeet Kumar
18	Telomerases & Topoisomerases in Treatment of Diseases	Ajeet Kumar
19	Staphylococcus Resistance to Erythromycin	Ajeet Kumar
20	Peptide bonds, acid-base properties & stereochemistry of protein	Ajeet Kumar
21	Side Chain Modifications in Amino Acid & Biological Activities of Amino Acid and Peptide.	Ajeet Kumar
22	Green Fluorescent Protein & Polypeptide Diversity	Ajeet Kumar

23	Protein Purification & Analysis	Ajeet Kumar
24	Protein Sequencing & Reconstructing the Sequence	Ajeet Kumar
25	Gene Duplication & Protein Families	Ajeet Kumar
26	Protein Modules & Combinatorial Peptide Libraries Folding	Ajeet Kumar
27	Structural Bio-informatics	Ajeet Kumar
28	Protein Structure Prediction and Design and Proteomics	Ajeet Kumar
29	Drug molecules & Myoglobin and Haemoglobin structure	Ajeet Kumar
30	Mechanism and Co-operativity in Hb.	Ajeet Kumar
31	High Altitude Adaptation in Ruminants & Equines	Ajeet Kumar
32	Use of Amino Acid Analysis in Disease Diagnosis	Ajeet Kumar

Text Books

David L Nelson & Cox, Michael M. 2007. Lehninger's Principles of Biochemistry. 4th Ed. Freeman.

Reference Books

Berg J M, Tymoczko J L and Stryer L 2006. Biochemistry. 5th Ed. WH Freeman and Company

Voet D, Voet JG & Pratt CW. 2006. Fundamentals of Biochemistry of Life at the Molecular Level. 2nd Ed. John Wiley & Sons.

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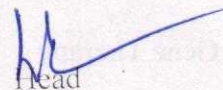
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**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. 54 VBC/ BVC, Patna

Date: 31/07/18

Course Title: **Central Dogma and Protein Function**

Course number: **VBC 609**

Professional year: **M.V.Sc**

Semester: **I**

Credit hours: **2+0**

Course Instructors: Dr. Ajeet Kumar

Lecture Schedule for Theory

Lecture No.	Lecture topic	Name of course instructor
1	Overview of Transcription in Eukaryotes	Ajeet Kumar
2	Overview of Transcription in Eukaryotes	Ajeet Kumar
3	Overview of Translation in Eukaryotes.	Ajeet Kumar
4	Overview of Translation in Eukaryotes.	Ajeet Kumar
5	Collision between DNA Polymerase and RNA Polymerase	Ajeet Kumar
6	Inhibitors of Transcription & Introns	Ajeet Kumar
7	Evolution and Expansion of the Genetic Code	Ajeet Kumar
8	The Effects of Antibiotics and Toxins on Protein Synthesis.	Ajeet Kumar
9	X Chromosome Inactivation.	Ajeet Kumar
10	Eukaryotic Gene Expression	Ajeet Kumar
11	Protein Targeting	Ajeet Kumar
12	Actin Structure	Ajeet Kumar
13	Microfilament Dynamics	Ajeet Kumar
14	Actin-Myosin Reacting Cycle & Tubulin Dimmer	Ajeet Kumar
15	Microtubules Dynamics	Ajeet Kumar
16	Kinensins & dyeins Protein	Ajeet Kumar
17	Antigen-antibody Binding Reaction	Ajeet Kumar
18	Cytokines	Ajeet Kumar
19	Principles of Immunochemical Methods: Agglutination & Precipitation	Ajeet Kumar
20	Typing of Major Histo-Compatibility (MHC) Antigens	Ajeet Kumar
21	Blood Group Substances in Farm Animals	Ajeet Kumar
22	Proteins as Infectious Agents (prions - BSE)	Ajeet Kumar
23	Protein Misolding	Ajeet Kumar
24	Protein Aggregation	Ajeet Kumar

25	Plasma Proteins Synthesis & Functions	Ajeet Kumar
26	Influences of Physiological Factors and Inflammation on Proteins	Ajeet Kumar
27	Dysproteinemias	Ajeet Kumar
28	Defects in Collagen Synthesis	Ajeet Kumar
29	Transmissible Multiple Drug Resistance	Ajeet Kumar
30	Transcription Factors and Cardiovascular Diseases	Ajeet Kumar
31	Transferrin & Lactoferrin, Protein	Ajeet Kumar
32	Ferritin & Ceruloplasmin Protein	Ajeet Kumar

Text Books

David L Nelson & Cox Michael M. 2007. Lehninger's Principles of Biochemistry. 4th Ed. Freeman.

Reference Books

Berg J M, Tymoczko J L and Stryer L 2006. Biochemistry. 5th Ed. WH Freeman and Company

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Department of Veterinary Biochemistry
Bihar Veterinary College

No. **55** /VBC/ BVC, Patna

Date: **31/07/18**

Course Title: **Techniques in biochemistry**

Course number: **VBC- 602**

Professional year: **M.V.Sc**

Semester: **I**

Credit hours: **0+2**

Course Instructors: **Dr. Ajeet Kumar**

Lecture Schedule for Practical

Lecture No.	Lecture topic	Name of course instructor
1	Solving problems using Henderson- Hasselbalch equation	Ajeet Kumar
2	pH and pKa	Ajeet Kumar
3	Buffer concentration and Normality	Ajeet Kumar
4	Colorimetry and its application	Ajeet Kumar
5	Spectrophotometry and its application	Ajeet Kumar
6	NMR and its application	Ajeet Kumar
7	X ray crystallography and its application	Ajeet Kumar
8	Paper chromatography and application	Ajeet Kumar
9	Column chromatography and application	Ajeet Kumar
10	Thin layer chromatography and application	Ajeet Kumar
11	Partition and adsorption coefficient	Ajeet Kumar
12	Quantitative and qualitative chromatography of amino acids	Ajeet Kumar
13	Quantitative and qualitative chromatography of lipids	Ajeet Kumar
14	Quantitative and qualitative chromatography of sugars	Ajeet Kumar
15	Gas chromatography and its application	Ajeet Kumar
16	Packing of column and choice of detectors	Ajeet Kumar
17	Densitometry	Ajeet Kumar
18	Electrophoresis and application of electrophoresis	Ajeet Kumar
19	Electrophoresis of proteins	Ajeet Kumar
20	Electrophoresis of nucleic acids	Ajeet Kumar
21	Use of sodium dodecyl sulfate and molecular weight determination of protein by electrophoresis	Ajeet Kumar
22	Densitometry procedures and quantitative assays	Ajeet Kumar
23	Immunoelectrophoresis and its applications	Ajeet Kumar
24	Isoelectrofocussing and its applications	Ajeet Kumar
25	Isotacophoresis and its applications	Ajeet Kumar
26	Molecular sieving and its application in Biochemistry	Ajeet Kumar
27	General properties of dextran and acrylamide used for gel filtration.	Ajeet Kumar
28	General properties of agar and other media used for gel filtration.	Ajeet Kumar
29	Ultracentrifugation its principle and use	Ajeet Kumar
30	Preparative analytical and density gradient ultracentrifugation	Ajeet Kumar
31	Fractionation of sub-cellular components by Ultracentrifugation	Ajeet Kumar

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David I. Nelson & Cox Michael M. 2007. *Lehninger's Principles of Biochemistry*. 4th Ed. Freeman.

Gowenlock AH. 1996. *Varley's Practical Clinical Biochemistry*. 6th Ed. CBS.

Holme DJ & Hazel P. 1983. *Analytical Biochemistry*. Longman.

Wilson K & Walker J. 2005. *Principals and Techniques of Biochemistry and Molecular Biology*.

Reference Books

Berg J M, Tymoczko J L and Stryer L 2006. *Biochemistry*. 5th Ed. WH Freeman and Company

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Department of Veterinary Biochemistry
Bihar Veterinary College

No. **56** /VBC/ BVC, Patna

Date: **31/07/18**

Course Title: **Clinical Biochemistry of Animals**

Course number: **VBC- 610**

Professional year: **M.V.Sc**

Semester: **II**

Credit hours: **2+1**

Course Instructors: Dr. Ajeet Kumar

Lecture Schedule for Theory

Lecture No.	Lecture topic	Name of course instructor
1	Disturbances of gastro-intestinal function	Ajeet Kumar
2	Disturbances of gastro-intestinal function	Ajeet Kumar
3	Disturbances of rumen function	Ajeet Kumar
4	Disturbances of rumen function	Ajeet Kumar
5	Lactic acidosis	Ajeet Kumar
6	Pickled pigs and malignant hyperthermia	Ajeet Kumar
7	Diagnosis of neuromuscular disorders	Ajeet Kumar
8	Diagnosis of neuromuscular disorders	Ajeet Kumar
9	Myocardial infarction	Ajeet Kumar
10	respiratory distress syndrome	Ajeet Kumar
11	Primary renal dysfunctions and test	Ajeet Kumar
12	Primary renal dysfunctions and test	Ajeet Kumar
13	Doping	Ajeet Kumar
14	Problems in game horses	Ajeet Kumar
15	Enzymes of diagnostic importance	Ajeet Kumar
16	Enzymes of diagnostic importance	Ajeet Kumar
17	Toxicity of ammonia in animals	Ajeet Kumar
18	Genetic defects in urea cycle	Ajeet Kumar
19	Lysosomal storage diseases	Ajeet Kumar
20	ATP synthase inhibitory protein during ischemia	Ajeet Kumar
21	Ischaemic reperfusion injury	Ajeet Kumar
22	Molecular oncology and tumor markers	Ajeet Kumar
23	Molecular oncology and tumor markers	Ajeet Kumar
24	Molecular oncology and tumor markers	Ajeet Kumar
25	CSF characteristics in diseases	Ajeet Kumar
26	Clinical biochemistry in toxicology	Ajeet Kumar
27	Clinical biochemistry in toxicology	Ajeet Kumar
28	Glycosylated hemoglobin	Ajeet Kumar
29	HbA1c and Fructosamine.	Ajeet Kumar
30	Deranged glucose metabolism in cancerous tissue	Ajeet Kumar
31	Free Radical damage	Ajeet Kumar
32	Free Radical damage	Ajeet Kumar

Text Books

J. Jerry Kaneko, John W. Harvey and Michael L. Bruss 2008. Clinical Biochemistry of Domestic Animals, Sixth Edition.

Devlin 2005. *Textbook of Medical Biochemistry with Clinical Correlations*. Wiley Liss.

Satyanarayana U. and Chakrapani U. 2006. Biochemistry. 3rd Ed. Books & Allied(P) Ltd.

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David L. Nelson and Cox Michael M. 2007. Lehninger's Principal of Biochemistry . Fourth Ed. WH Freeman and Company.

Practical

Lecture No.	Topic	Instructor
1	Sampling methods, units, lab safety	Ajeet Kumar
2	Estimation of Bilirubin	Ajeet Kumar
3	Estimation of Glucose	Ajeet Kumar
4	Estimation of Total Protein	Ajeet Kumar
5	Serum protein Electrophoresis	Ajeet Kumar
6	Estimation of GGT	Ajeet Kumar
7	Estimation of Urea	Ajeet Kumar
8	Estimation of Cholesterol	Ajeet Kumar
9	Estimation of Calcium	Ajeet Kumar
10	Estimation of Phosphorus	Ajeet Kumar
11	Estimation of Creatinine	Ajeet Kumar
12	Estimation of Sodium, Potassium	Ajeet Kumar
13	Urine Analysis	Ajeet Kumar
14	Urine Analysis	Ajeet Kumar
15	Estimation of lipid profile	Ajeet Kumar
16	ELISA	Ajeet Kumar

Manual

Practical Manual on General Veterinary Biochemistry provided by the Department

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**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. **83** /VBC/ BVC, Patna

Date: **29/09/18**

Course Title: **VETERINARY CLINICAL BIOCHEMISTRY AND LABORATORY
DIAGNOSIS –I**

Course number: **VLD-411**

Professional year: **IV B.V.Sc & A.H.**

Semester: **VII**

Credit hours: **0+1**

Course Instructors: Dr. Ajeet Kumar*, Dr. Deepak Kumar, Kaushal Kumar & Dr. R.K. Sharma

Lecture Schedule for Practical

Lecture No.	Topic	Instructor
1	Training in examining clinical samples (biochemical, pathological, parasitological and bacteriological)	Ajeet Kumar
2	Analysing and correlating with clinical findings and interpreting the results	Ajeet Kumar
3	Collection, labeling, transportation, and preservation of body fluid samples	Ajeet Kumar
4	Writing results and report Interpretation of data in relation to specific diseases	Ajeet Kumar
5	Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples	Ajeet Kumar
6	Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples	Ajeet Kumar
7	Clinical significance and interpretation of serum glucose, lipids, proteins, blood urea nitrogen, creatinine, uric acid, ketone bodies, bilirubin & electrolytes from samples	Ajeet Kumar
8	Clinical significance and interpretation of examination of urine samples	Kaushal Kumar
9	Clinical significance and interpretation of examination of urine samples	Kaushal Kumar
10	Clinical evaluation of blood (Haemoglobin, packed cell volume, total erythrocytic count erythrocytic sedimentation rate, total leukocytic count and differential leucocytic count) from clinical samples	Deepak Kumar
11	Clinical evaluation of blood (Haemoglobin, packed cell volume, total erythrocytic count erythrocytic sedimentation rate, total leukocytic count and differential leucocytic count) from clinical samples	Deepak Kumar
12	Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts)	R.K. Sharma
13	Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts)	R.K. Sharma

14	Laboratory evaluation and diagnosis of samples for parasitic diseases (routine faecal examinations- direct smear method, simple sedimentation and floatation methods, Quantitative faecal examination, pastoral larval counts)	R.K. Sharma
15	Examination of skin scrapings, examination of blood smear/blood for diagnosis of blood protozoan diseases	R.K. Sharma
16	Examination of skin scrapings, examination of blood smear/blood for diagnosis of blood protozoan diseases	R.K. Sharma

*** Course Incharge**

Manual

1. Practical Manual on Veterinary Laboratory Diagnosis provided by the Department.

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**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. **84**/VBC/ BVC, Patna

Date: **29/09/18**

Course Title: **Clinical Biochemistry of Animals**

Course number: **VBC- 610**

Semester: **II**

Professional year: **M.V.Sc**

Credit hours: **2+1**

Course Instructors: Dr. Ajeet Kumar

Lecture Schedule for Theory

Lecture No.	Lecture topic	Name of course instructor
1	Disturbances of gastro-intestinal function	Ajeet Kumar
2	Disturbances of gastro-intestinal function	Ajeet Kumar
3	Disturbances of rumen function	Ajeet Kumar
4	Disturbances of rumen function	Ajeet Kumar
5	Lactic acidosis	Ajeet Kumar
6	Pickled pigs and malignant hyperthermia	Ajeet Kumar
7	Diagnosis of neuromuscular disorders	Ajeet Kumar
8	Diagnosis of neuromuscular disorders	Ajeet Kumar
9	Myocardial infarction	Ajeet Kumar
10	respiratory distress syndrome	Ajeet Kumar
11	Primary renal dysfunctions and test	Ajeet Kumar
12	Primary renal dysfunctions and test	Ajeet Kumar
13	Doping	Ajeet Kumar
14	Problems in game horses	Ajeet Kumar
15	Enzymes of diagnostic importance	Ajeet Kumar
16	Enzymes of diagnostic importance	Ajeet Kumar
17	Toxicity of ammonia in animals	Ajeet Kumar
18	Genetic defects in urea cycle	Ajeet Kumar
19	Lysosomal storage diseases	Ajeet Kumar
20	ATP synthase inhibitory protein during ischemia	Ajeet Kumar
21	Ischaemic – reperfusion injury	Ajeet Kumar
22	Molecular oncology and tumor markers	Ajeet Kumar
23	Molecular oncology and tumor markers	Ajeet Kumar
24	Molecular oncology and tumor markers	Ajeet Kumar
25	CSF characteristics in diseases	Ajeet Kumar
26	Clinical biochemistry in toxicology	Ajeet Kumar
27	Clinical biochemistry in toxicology	Ajeet Kumar
28	Glycosylated hemoglobin	Ajeet Kumar
29	HbA1c and Fructosamine.	Ajeet Kumar
30	Deranged glucose metabolism in cancerous tissue	Ajeet Kumar
31	Free Radical damage	Ajeet Kumar
32	Free Radical damage	Ajeet Kumar

Text Books

J. Jerry Kaneko, John W. Harvey and Michael L. Bruss 2008. Clinical Biochemistry of Domestic Animals, Sixth Edition.

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David L. Nelson and Cox Michael M. 2007. Lehninger's Principal of Biochemistry . Fourth Ed. WH Freeman and Company.

Practical

Lecture No.	Topic	Instructor
1	Sampling methods, units, lab safety	Ajeet Kumar
2	Estimation of Bilirubin	Ajeet Kumar
3	Estimation of Glucose	Ajeet Kumar
4	Estimation of Total Protein	Ajeet Kumar
5	Serum protein Electrophoresis	Ajeet Kumar
6	Estimation of GGT	Ajeet Kumar
7	Estimation of Urea	Ajeet Kumar
8	Estimation of Cholesterol	Ajeet Kumar
9	Estimation of Calcium	Ajeet Kumar
10	Estimation of Phosphorus	Ajeet Kumar
11	Estimation of Creatinine	Ajeet Kumar
12	Estimation of Sodium, Potassium	Ajeet Kumar
13	Urine Analysis	Ajeet Kumar
14	Urine Analysis	Ajeet Kumar
15	Estimation of lipid profile	Ajeet Kumar
16	ELISA	Ajeet Kumar

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**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. **85** /VBC/ BVC, Patna

Date: **29/09/18**

Course Title: **Techniques in biochemistry**

Course number: **VBC- 602**

Professional year: **M.V.Sc**

Semester: **I**

Credit hours: **0+2**

Course Instructors: **Dr. Ajeet Kumar**

Lecture Schedule for Practical

Lecture No.	Lecture topic	Name of course instructor
1	Solving problems using Henderson–Hasselbalch equation	Ajeet Kumar
2	pH and pKa	Ajeet Kumar
3	Buffer concentration and Normality	Ajeet Kumar
4	Colorimetry and its application	Ajeet Kumar
5	Spectrophotometry and its application	Ajeet Kumar
6	NMR and its application	Ajeet Kumar
7	X ray crystallography and its application	Ajeet Kumar
8	Paper chromatography and application	Ajeet Kumar
9	Column chromatography and application	Ajeet Kumar
10	Thin layer chromatography and application	Ajeet Kumar
11	Partition and adsorption coefficient	Ajeet Kumar
12	Quantitative and qualitative chromatography of amino acids	Ajeet Kumar
13	Quantitative and qualitative chromatography of lipids	Ajeet Kumar
14	Quantitative and qualitative chromatography of sugars	Ajeet Kumar
15	Gas chromatography and its application	Ajeet Kumar
16	Packing of column and choice of detectors	Ajeet Kumar
17	Densitometry	Ajeet Kumar
18	Electrophoresis and application of electrophoresis	Ajeet Kumar
19	Electrophoresis of proteins	Ajeet Kumar
20	Electrophoresis of nucleic acids	Ajeet Kumar
21	Use of sodium dodecyl sulfate and molecular weight determination of protein by electrophoresis	Ajeet Kumar
22	Densitometry procedures and quantitative assays	Ajeet Kumar
23	Immunoelectrophoresis and its applications	Ajeet Kumar
24	Isoelectrofocussing and its applications	Ajeet Kumar
25	Isotacophoresis and its applications	Ajeet Kumar
26	Molecular sieving and its application in Biochemistry	Ajeet Kumar
27	General properties of dextran and acrylamide used for gel filtration.	Ajeet Kumar
28	General properties of agar and other media used for gel filtration.	Ajeet Kumar
29	Ultracentrifugation– its principle and use	Ajeet Kumar
30	Preparative analytical and density gradient ultracentrifugation	Ajeet Kumar
31	Fractionation of sub-cellular components by Ultracentrifugation	Ajeet Kumar

32	Molecular weight determination using ultracentrifuge.	Ajeet Kumar
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Text Books

David L Nelson & Cox Michael M. 2007. *Lehninger's Principles of Biochemistry*. 4th Ed. Freeman.

Gowenlock AH. 1996. *Varley's Practical Clinical Biochemistry*. 6th Ed. CBS.

Holme DJ & Hazel P. 1983. *Analytical Biochemistry*. Longman.

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**Department of Veterinary Biochemistry
Bihar Veterinary College**

No. ~~86~~ /VBC/ BVC, Patna

Date: 28/09/18

Course Title: **Applications of Genomics and Proteomics in Molecular Biology**

Course number: **VBC 603**

Professional year: **M.V.Sc**

Semester: **I**

Credit hours: **2+0**

Course Instructors: Dr. Ajeet Kumar

Lecture Schedule for Theory

Lecture No.	Lecture topic	Name of course instructor
1	Nucleotides and Nucleic Acids Structure & Function	Ajeet Kumar
2	High Order Structures Of Chromosome, Cohesions & Condensins in Chromosome Structure	Ajeet Kumar
3	Structural Maintenance of Chromosomes (SMC) Proteins	Ajeet Kumar
4	DNA Sequencing	Ajeet Kumar
5	Mutation and Evolution	Ajeet Kumar
6	DNA Libraries	Ajeet Kumar
7	Bacterial RNA Polymerase & RNA Interference	Ajeet Kumar
8	DNA replication	Ajeet Kumar
9	RNA synthesis & Control of gene expression	Ajeet Kumar
10	DNA microarrays/chips.	Ajeet Kumar
11	Polymerase Chain Reaction	Ajeet Kumar
12	Recombinant DNA technology in improving domestic animals.	Ajeet Kumar
13	Restriction Fragment Length Polymorphism (REL P) Gene and Gene Products	Ajeet Kumar
14	Genetic Changes in Hereditary Diseases	Ajeet Kumar
15	Cancer & Detection ion DNA Probes	Ajeet Kumar
16	Gene Therapy	Ajeet Kumar
17	DNA Vaccines & Antitumor Antibodies	Ajeet Kumar
18	Telomerases & Topoisomerases in Treatment of Diseases	Ajeet Kumar
19	Staphylococcus Resistance to Erythromycin	Ajeet Kumar
20	Peptide bonds, acid-base properties & stereochemistry of protein	Ajeet Kumar
21	Side Chain Modifications in Amino Acid & Biological Activities of Amino Acid and Peptide.	Ajeet Kumar
22	Green Fluorescent Protein & Polypeptide Diversity	Ajeet Kumar

23	Protein Purification & Analysis	Ajeet Kumar
24	Protein Sequencing & Reconstructing the Sequence	Ajeet Kumar
25	Gene Duplication & Protein Families	Ajeet Kumar
26	Protein Modules & Combinatorial Peptide Libraries Folding	Ajeet Kumar
27	Structural Bio-informatics	Ajeet Kumar
28	Protein Structure Prediction and Design and Proteomics	Ajeet Kumar
29	Drug molecules & Myoglobin and Haemoglobin structure	Ajeet Kumar
30	Mechanism and Co-operativity in Hb.	Ajeet Kumar
31	High Altitude Adaptation in Ruminants & Equines	Ajeet Kumar
32	Use of Amino Acid Analysis in Disease Diagnosis	Ajeet Kumar

Text Books

David L Nelson & Cox Michael M. 2007. Lehninger's Principles of Biochemistry. 4th Ed. Freeman.

Reference Books

Berg J M, Tymoczko J L and Stryer L 2006. Biochemistry. 5th Ed. WH Freeman and Company

Voet D, Voet JG & Pratt CW. 2006. Fundamentals of Biochemistry of Life at the Molecular Level. 2nd Ed. John Wiley & Sons.

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Copy forwarded to DRT-Cum Dean PGS, BASU, Patna/Dean, BVC/ course Instructors/ All chairman, BVC, Patna/ Concerned Students BVC Patna for information and necessary action.

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Department of Veterinary Biochemistry
Bihar Veterinary College

No. 87 /VBC/ BVC, Patna

Date: 03/10/18

Course Title: **Veterinary Biochemistry**
Professional year: **I B.V.Sc & A.H.**

Course number: **Unit I**
Credit hours: **2+1**

Course Instructors: Dr. Ajeet Kumar

Lecture Schedule for Theory

Lecture No.	Topic (Theory)	Instructor
1	Scope & Importance of Biochemistry	Ajeet Kumar
2	Structure of Biological membrane- lipid bilayer model, fluid mosaic model. Liposome's, micelles	Ajeet Kumar
3	composition and architecture of membrane: Phospholipids , membrane raft, lipid anchor membrane protein, membrane dynamics, membrane fusion	Ajeet Kumar
4	Transport across Membranes –carrier proteins, channels simple diffusion, facilitated diffusion, sodium-potassium ATPase active transport, uniport symport, antiport, endocytosis exocytosis	Ajeet Kumar
5	Dissociation of Acids, pH	Ajeet Kumar
6	Buffer system, Henderson- Hasselbalch equation	Ajeet Kumar
7	Biochemistry of Carbohydrates, Classification, Structures	Ajeet Kumar
8	Physical properties of monosaccharide -optical activity of sugar, epimers, anomers, enantiomers,	Ajeet Kumar
9	Chemical reaction of monosaccharide: tautomerization, reducing properties, oxidation, reduction, dehydration, osazone formation	Ajeet Kumar
10	Structure and biological Significance of Important Monosaccharides(Ribose, Glucose, Fructose, Galactose, Mannose and Amino Sugars)	Ajeet Kumar
11	Structure and biological Significance of Important disaccharides (Maltose, Isomaltose, Lactose, Sucrose and Cellobiose)	Ajeet Kumar
12	Structure and biological Significance of Important polysaccharides ((Starch, Dextrins, Dextrans, Glycogen, Cellulose, Inulin, Chitin)	Ajeet Kumar
13	Mucopolysaccharides and Bacterial cell wall	Ajeet Kumar
14	Biochemistry of Lipids, Classification, function, Structure	Ajeet Kumar
15	Fatty acid- classification, structure, properties	Ajeet Kumar
16	Triacylglycerol- structure, properties	Ajeet Kumar
17	Phospholipid, glycolipid and lipoprotein- Classification, function, Structure	Ajeet Kumar
18	Biological Significance, Structure & Function of sterol Prostaglandins Chemistry of Bile & Bile acids	Ajeet Kumar
19	Biological Significance, Chemical reactions and classification of Amino Acids	Ajeet Kumar
20	Biological Significance, Chemical reactions and classification of Amino Acids	Ajeet Kumar
21	Biological Significance, Chemical reactions and classification of Proteins	Ajeet Kumar

22	Biochemistry of Nucleic Acids : Chemistry of purines, pyrimidines, nucleosides and nucleotides.	Ajeet Kumar
23	Structures and functions of deoxyribonucleic acid (DNA)	Ajeet Kumar
24	Structures and functions of and a typical ribonucleic acid (RNA)	Ajeet Kumar

Text Books

1. David L. Nelson and Cox Michael M. 2007. *Lehninger's Principal of Biochemistry* . Fourth Ed. WH Freeman and Company.
2. Voet D., Voet J G and Pratt C W. 2006. *Fundamental of Biochemistry of Life at Molecular level*. 2nd Ed. John Wiley & Son's.
3. West E S and Todd W R 1968. *Text Book of Biochemistry*. 4th Ed.
4. Satyanarayana U. and Chakrapani U. 20018. *Biochemistry*. 4th Ed. Elsevier publication

Practical

Lecture No.	Topic	Instructor
1	Concentration of solutions, System International	Ajeet Kumar
2	Concentration of solutions, System International	Ajeet Kumar
3	Preparation and Standardization of Acids and Alkalies	Ajeet Kumar
4	Preparation and Standardization of Acids and Alkalies	Ajeet Kumar
5	Determination of pH	Ajeet Kumar
6	Preparation of Buffers	Ajeet Kumar
7	Titration Curve	Ajeet Kumar
8	Qualitative tests for Carbohydrates	Ajeet Kumar
9	Qualitative tests for Carbohydrates	Ajeet Kumar
10	Qualitative tests for Carbohydrates	Ajeet Kumar
11	Lactose in milk	Ajeet Kumar
12	Determination of acid number of an oil	Ajeet Kumar
13	Qualitative tests for Protein	Ajeet Kumar
14	Qualitative tests for Protein	Ajeet Kumar
15	Qualitative tests for Protein	Ajeet Kumar
16	Estimation of Amino Acid by Sorenson method	Ajeet Kumar

Manual

1. Practical Manual on Veterinary Biochemistry Volume I provided by the Department.

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