



## DEPARTMENT OF VETERINARY PHYSIOLOGY & BIOCHEMISTRY

College of Veterinary Science & Animal Husbandry

Navsari Centre (Kamdhenu University), Gandhinagar

Eru Char Rasta, Vijalpore, Ta: Jalalpore, Dist. Navsari - 396450



### Teaching Faculty in Department

Sr. No.	Name	Designation	Contact Details	Joining Year in NAU	Qualification	Total Experience	Publications
1	Dr. Sandhya S. Chaudhary	Professor & Head	sandhyachaudhary@kamdhenuuni.edu.in+91-94273 79421	2011	M.V.Sc., PhD	35 years	Research papers: 75 Book chapters : 02
2	Dr. Gopal Puri	Associate Professor	<a href="mailto:drgopalpuri@kamdhenuuni.edu.in">drgopalpuri@kamdhenuuni.edu.in</a> +91-99137 82084	2012	M.V.Sc., PhD	18 years	Research papers: 46 Book chapters : 02
3	Dr. Virendra Kumar Singh	Assistant Professor	<a href="mailto:virendrasingh@kamdhenuuni.edu.in">virendrasingh@kamdhenuuni.edu.in</a> +91-90990 68358	2010	M.V.Sc., PhD	11 years	Research papers: 21 Book chapters :-
4	Dr. Sanjaykumar Bhagubhai Patel	Assistant Professor	<a href="mailto:sanjaypatel@kamdhenuuni.edu.in">sanjaypatel@kamdhenuuni.edu.in</a> +91-98259 78801	2013	M.V.Sc.,	9 years	Research papers: 20 Book chapters :-
5	Dr. Tanvi D. Manat	Assistant Professor	<a href="mailto:tanvimanat@kamdhenuuni.edu.in">tanvimanat@kamdhenuuni.edu.in</a> +91-78748 55279	2016	M.V.Sc.,	5 years	Research papers: 12 Book chapters :-

#### **About the Department:**

Department of Veterinary Physiology & Biochemistry is one of the basic departments of College of Veterinary Sciences and Animal Husbandry, Navsari (Gujarat). The primary mandate of the department is to impart training to undergraduate (B. V. Sc. & A.H.) and post-graduate students in the fields of general, experimental, and specialized areas of Veterinary

Physiology and Biochemistry. The M.V.Sc. and Doctorate programme in Veterinary Physiology and Biochemistry was introduced in the department from 2011-12 onwards.

Department has established under graduate and post graduate laboratories with sophisticated equipments viz; UV-VIS Spectrophotometer, Trinocular microscope with photographic facility, Atomic absorption spectrometry (AAS), Eppendorf Bio-Spectrometer, CO<sub>2</sub> Incubator, Inverted microscope, Hematology cell counter, Refrigerated centrifuge, Deep freezer, Flame photometer etc. that can be used for hematology, blood biochemical analysis, mineral, hormonal estimation and in vitro culture study. The ultra modern equipments are used for teaching of undergraduate and postgraduate students. Apart from undergraduate and postgraduate teaching, the department has been involved in the field of research and carried out pioneering work in field of climate change and heat ameliorative measures on Surti buffaloes, in vitro culture of goat and buffalo oocytes, nutritional supplemental effects on Surti buffaloes and goats.

#### **Research Projects (External agency / Institutional project)**

<b>Sr.No.</b>	<b>Title</b>	<b>Funding Agency</b>	<b>Principal Investigator / Co PI</b>	<b>Completed/ On-going</b>
1.	National Initiative on Climate Resilient Agriculture (NICRA) in collaboration with NDRI Karnal	ICAR, New Delhi	PI Dr Sandhya S. Chaudhary	Concluded
2.	To study diaphoretic pattern of Surti buffalo vis-à-vis environmental and body condition.	AGRESCO	PI – Dr. V. K. Singh Co-PI – Dr Sandhya S. Chaudhary, Dr. R. A. Siddique, Dr. A. K. Sharma, Dr. R.R Singh Dr. M.D. Patel	Concluded
3.	Comparative study of fetal bovine serum and estrus buffalo serum on in vitro maturation of oocytes in buffalo	AGRESCO	PI - Dr Gopal Puri Co-PI – Dr. Sandhya S. Chaudhary Dr. A. K. Sharma Dr. R.A. Siddique Dr. V K Singh Dr. K.K. Tyagi	Concluded
4.	Establishment of fibroblast culture in buffalo	AGRESCO	PI – Dr. V. K. Singh Co-PI – Dr. Sandhya S Chaudhary	Concluded

			Dr. G. Puri Dr. S.B.Patel Dr. A.K. Sharma Dr. M.D. Patel	
5.	Strategies to mitigate the impact of climate change	AGRESKO	PI – Dr.P. K. Srivastava Co-PI – Dr. Sandhya S. Chaudhary	Concluded
6.	Effect of heat ameliorative measures (fans, foggers and green net) on physiological, haematological, biochemical and productive performance of lactating Surti buffaloes	AGRESKO	PI – Dr. Sandhya S. Chaudhary Co-PI – Dr R R Singh Dr V K Singh Dr S B Patel Dr Tanvi D.Manat Dr L M Sorathiya Dr V B Kharadi Dr Lalit Modi	Concluded
7.	Strategies to mitigate the impact of climate change: Effect of 75% green net on production, reproduction and stress parameters in Surti Buffaloes	AGRESKO	PI – Dr. Sandhya S. Chaudhary Co-PI – Dr R R Singh Dr V K Singh Dr S B Patel Dr L M Sorathiya Dr V B Kharadi	Concluded
8.	<i>In vitro</i> embryo development from goat ovaries with supplementation of epidermal growth factor and $\alpha$ -tocopherol in maturation media	AGRESKO	PI – Dr. A. K. Sharma Co-PI – Dr. Gopal Puri Dr. C F Chaudhary	Concluded
9.	Effect of supplementary cooling on body temperature, behavior, milk composition and haemato-biochemical changes in hot dry and hot humid season in lactating Surti buffaloes.	AGRESKO	PI – Dr. Sandhya S. Chaudhary Co-PI – Dr R R Singh Dr V K Singh Dr V B Kharadi Dr L M Sorathiya Dr Tanvi Manat	Concluded
10.	Measurement of heat	AGRESKO	PI:	Concluded

	stress and its impact on behavior and production performance in Surti buffaloes in different seasons		Dr. Gopal Puri Co- PI: Dr. S B Patel Dr. R R Singh Dr. S.S. Chaudhary Dr. N.B. Patel	
11.	Cutaneous thermal profiling of Surti does in different seasons	AGRESKO	PI – Dr. V. K. Singh  Co-PI – Dr Sandhya S Chaudhary Dr Tanvi D Manat Dr N.B. Patel	Concluded
12.	Haemato-biochemical and oxidative stress profiling in young Surti goats	AGRESKO	PI – Dr. Tanvi D. Manat  Co-PI – Dr. Sandhya S Chaudhary Dr. V.K.Singh Dr. Nikhil Dangar	Concluded
13.	Effect of heat ameliorative measures during dry period on haematobiochemical, behaviour and thermographic changes and production performance in subsequent lactation in Surti buffaloes.	AGRESKO	PI – Dr. Sandhya S. Chaudhary Co-PI – Dr. V K Singh Dr. R R Singh Dr. Tanvi D. Manat Dr. A.P Raval	Concluded
14.	Effect of rumen protected niacin supplementation on sweating rate, oxidative stress and skin temperature during summer in Surti buffaloes	AGRESKO	PI – Dr. Sandhya S. Chaudhary Co-PI – Dr. Tanvi D. Manat Dr S B Patel Dr. N B Patel Dr Vipul R. Patel :	Concluded
15.	Metabolomic study of Gir cow urine	AGRESKO	PI – Dr. Sandhya S. Chaudhary  Co-PI – Dr Susheel Singh Dr V K Singh	Ongoing

			Dr S B Patel Dr Tanvi Mannat Dr Dhiren Bhoi	
16.	Study of changes in udder temperature, milk composition and somatic cell count of Surti buffalo during different stages of lactation.	AGRESKO	PI – Dr. V. K. Singh Co-PI – Dr. Sandhya S Chaudhary Dr. Tanvi D. Manat Dr. J. K. Raval	Ongoing
17.	Study of changes in udder temperature, milk composition and somatic cell count of Surti goats during different stages of lactation.	AGRESKO	PI – Dr Tanvi D Manat  Co-PI – Dr. Sandhya S Chaudhary Dr. Virendra Kuamr Singh Dr. Dr. Nikhil Dangar	Ongoing

**List of research papers published from Department of Veterinary Physiology and Biochemistry, Veterinary College, Navsari**

1. Gopal Puri, B G Mane and Sadhan Bag (2014).Growth factors and embryonic stem cells: a review. *Livestock Research International*.1 (2):8-12
2. Sandhya S. Chaudhary, Virendra Kumar Singh, Ramesh C. Upadhyay, Gopal Puri, Arjun B. Odedara and Pankaj A. Patel (2015) Evaluation of physiological and biochemical responses in different seasons in Surti buffaloes. *Veterinary world*, 8(6): 727-731.
3. Pankaj A. Patel, Sandhya S.Chaudhary, Gopal Puri, Virendra Kumar Singh and Arjun B. Odedara (2015). Effects of  $\beta$ -mercaptoethanol on in vitro maturation and glutathione level of buffalo oocytes. *Veterinary World*, 8 (2):213-216.
4. Gopal Puri, S. S. Chaudhary, V. K. Singh and A. K. Sharma. (2015). Effects of fetal bovine serum and estrus buffalo serum on maturation of buffalo (*Bubalus bubalis*) oocytes in vitro. *Veterinary World*, 8(2):143-146.
5. Manat T.D., Chaudhary S.S., Singh V.K., Patel S.B., Puri G. (2016) Hematobiochemical profile in Surti goats during post-partum period, *Veterinary World*, 9(1): 19-24.
6. Tanvi. D Manat, Sandhya S. Chaudhary, Virendra Singh and Sanjay B Patel (2016).Hormonal profile during postpartum period in Surti goat. *The Indian Journal of Veterinary science & Biotechnology*. 12(1):14-17.
7. Arun Sharma, Sandhya Chaudhary, Gopal Puri, Vishnu Kharadi and Shailesh Bhavsar. (2016). Retrieval and Recovery Rate of Buffalo (*Bubalus bubalis*) Oocytes Through Aspiration Technique. *Journal of Animal Research*, 6(3): 503-507.
8. Arjun B. Odedara, Sandhya S. Chaudhary, Virendra Kumar Singh, Pankaj A.

- Patel, Gopal Puri and V.B. Kharadi. (2016). Effect of different temperature humidity indices on antioxidant parameters in Surti buffaloes. *Indian Journal of Animal Research*, 52(1): 29-32.
9. Tanvi D. Manat, Sandhya S. Chaudhary, Virendra Kumar Singh, Sanjay B. Patel and Kuldeep Kumar Tyagi. (2017). Oxidative stress profile during postpartum period in Surti goats. *Indian Journal of Animal Research*, 51(5): 837-840.
  10. Sharma, A. K., Chaudhary, S. S., and Puri, G. (2017). Recovery of preantral follicles from goat ovarian cortex through mechanical and enzymatic procedures. *Indian Journal of Small Ruminants*, 23(1): 104-107.
  11. A.K. Sharma, S.S. Chaudhary and G. Puri (2017). In-vitro maturation of buffalo oocytes in TC-199 media supplemented with follicular fluid, hormones and antioxidants. *Ruminant Science*. 6 (1):13-18
  12. Gopal Puri and R. Menaka (2017) Molecular Characteristics of Embryonic Stem Cells: A Mini Review. *Biomedical Research International* 02: 14-16
  13. Singh, V. K., Chaudhary, S. S., Manat, T. D., Singh, R. R., (2018). Effect of Yeast (*saccharomyces cerevisiae*) Supplementation on Haematological Parameters in Surti Buffalo Calves. *The Indian Journal of Veterinary Sciences and Biotechnology*, 14(1), 34-37.
  14. A.K. Sharma, Gopal Puri, V. B. Kharadi and S. K. Bhavsar. (2018). In vitro production of early stage buffalo embryos in modified synthetic oviductal fluid (mSOF) medium. *Indian Journal of Animal Sciences*. 88 (2):176–180.
  15. Virendra Kumar Singh, Sandhya S Chaudhary, Tanvi D Manat and Rana Ranjeet Singh (2019). Effect of supplementation of different yeast forms on rumen fermentation characteristics and microbial profile in postpartum Surti buffaloes. *International Journal of Chemical Studies*,7(5): 189-193
  16. Virendra Kumar Singh, Sandhya S Chaudhary and Tanvi D Manat (2019). Nutrigenomic effects of different yeast derivatives supplemented in Surti buffaloes during early lactation. *International Journal of Chemical Studies*, 7(6): 1926-1930
  17. Virendra Kumar Singh, Sandhya S Chaudhary and Tanvi D Manat (2019). Comparative analysis of quantitative gene expression of prolactin, leptin and glutathione peroxidase in buffalo calves supplemented with different yeast derivatives. *International Journal of Chemical Studies*, 7(6): 1898-1901.
  18. Jasmin A Malviya, Sandhya S Chaudhary, Virendra Kumar Singh and Tanvi D Manat (2019). Comparative study on hemato-biochemical profiling in primiparous and multiparous Surti buffaloes during early lactation. *International Journal of Chemical Studies*, 7(6): 773-776
  19. Virendra Kumar Singh, Sandhya S Chaudhary, Tanvi D Manat and Rana Ranjeet Singh (2019). Comparative rumen fermentation and microbial characteristics of Surti buffalo calves supplemented with different yeast derivatives. *International Journal of Chemical Studies*, 7(5): 477-481
  20. Chaudhary, S. S., Singh, R. R., Singh, V. K., Manat, T. D., Kharadi, V. B., & Sorathiya, L. M. (2019). Effect of heat ameliorative measures on microclimate, physiological, blood biochemical parameters and milk production in lactating Surti buffaloes. *Indian Journal of Animal Sciences*, 89(1): 97-104.
  21. Sandhya S. Chaudhary, Virendra Kumar Singh and Tanvi D. Manat (2020). Effect of Mitigating Heat Stress in Dry Period of Surti Buffaloes on Erythrogram, Leukogram and Neutrophil to Lymphocyte Ratio during

- Subsequent Lactation. *International Journal of Current Microbiology and Applied Sciences*, 9(11): 3244-3251
22. S.D. Rathwa, S.S. Chaudhary, V.K. Singh, S.B. Patel, T.D. Manat. (2021). Physiological, Hematological, Biochemical and Thermographic Changes on Supplementation of Rumen Protected Methionine and Choline in Transition Surti Buffaloes. *Indian Journal of Animal Research*, DOI: 10.18805/IJAR.B-4741
  23. S.D. Rathwa, S.S. Chaudhary, V.K. Singh, S.B. Patel, T.D. Manat. (2021). Effect of Rumen Protected Methionine and Choline on Blood Biochemical Metabolites, Milk Yield and its Composition during Transition Period in Surti Buffaloes. *Indian Journal of Animal Research*, DOI: 10.18805/IJAR.B-4681

#### **Lead papers published in proceedings of conference/seminars/symposia**

1. Sandhya S Chaudhary and Virendra Kumar Singh Oxidant/antioxidant balance: Role in livestock health. (2012). XXI Annual Conference of Society of Animal Physiologists of India and National Symposium on Physiological Research in Changing Environmental Scenario for Sustainable Livestock and Poultry Production held at Department of Veterinary Physiology and Biochemistry, Vanbandhu College of Veterinary Science & A.H., Navsari Agricultural University, Navsari-396 450 pp: 178-180. (2012).
2. Chaudhary Sandhya S. Strategies for effective teaching and learning veterinary physiology. (2013). XXII annual conference of SAPI and national symposium on physiological and nutrigenomic intervention food security and animal welfare held at Department of veterinary Physiology, College of veterinary Science and A.H. DUVASU, Mathura (UP) pp: 225-227. (2013).
3. Sandhya S. Chaudhary and Virendra Kumar Singh. Dynamic responses of buffaloes to thermal heat load specifically for small holder production units. (2014). Silver Jubilee Convection of Indian Society of Animal Production and Management and National Seminar on Revising Management Policies and Practices for Indigenous Livestock and Poultry Breeds as Eco-Friendly and Economic Producers held at Vanbandhu College of Veterinary Science & Animal Husbandry, NAU, Navsari-396450. (2014).
4. Sandhya S. Chaudhary and Virendra Kumar Singh Physiological and antioxidant responses to heat stress in buffaloes. (2014). XXIII Annual Conference cum National Symposium on Physiological Determinants of Climate Resilient and Sustainable Animal Production held at CIRB, Hisar - 125001 Haryana, November 27-28. (2014).
5. Sandhya S. Chaudhary.. Impact of climate change on dairy cattle with special reference to heat stress (2014) One day seminar on 'role of biotechnology in developing climate resilient and sustainable agriculture' at Anand. (2014)
6. Sandhya S Chaudhary and Virendra Kumar Singh Cardiac Biomarkers: An overview. (2016). XXV Annual Conference of Society of Animal Physiologists of India (SAPI) and National Symposium on Physiological Challenges in the Changing Global Scenario for the Sustainable Production and Reproduction of Livestock and Poultry held at Department of Veterinary Physiology, College of Veterinary Science & Animal Husbandry, NDVSU, Mhow (MP) from 21st -23rd December. (2016).
7. Sandhya S. Chaudhary and Rana Ranjeet Singh Application of infrared thermography for the assessment of production health and welfare issues in dairy cattle. (2017). XXVI Annual Conference of Society of Animal

Physiologists of India (SAPI) and National Symposium held at College of Veterinary Science and Animal Husbandry, Bidar, Karnataka, 21-22 December. (2017).

8. Sandhya S. Chaudhary, Virendra Kumar Singh and Rana Ranjeet Singh Infrared thermography as a potential tool for precision dairy farming. (2018).XXVII Annual Conference of SAPI and National Symposium on Augmentation of Animal Productivity under changing Socio-Economic Scenario' ICAR-NDRI, Karnal, Haryana during 27th -28th Nov. (2018).
9. Sandhya S Chaudhary and Virendra Kumar Singh. Research advances in techniques in veterinary physiology and biochemistry. (2018).National seminar cum training on on Modern trends and Advances in Animal Sciences held at College of Veterinary Science & Animal Husbandry, Junagadh Agricultural University, Junagadh under the aegis of Institutional Development Plan, ICAR, New Delhi. 21-22 Dec.(2018).
10. Gopal Puri and S.B.PatelRecent advances in embryonic stem cells. (2018) Vith Annual Convention and National Symposium of SVSBT at College of Veterinary and Animal Science, Navania, Vallabhnagar, Udaipur (Rajasthan) 13th -14th December (2018).

**Achievements / Awards:**

No	Award	PaperTitle	<u>Author(s)</u>
1.	J N Pandey best poster award in XXI Annual Conference of Society of Animal Physiologists of India and National Symposium on Physiological Research in Changing Environmental Scenario for Sustainable Livestock and Poultry Production (2012)	Study on diaphoretic pattern of selected body regions in Surti buffalo.	Virendra Kumar Singh, Sandhya Chaudhary and Gopal Puri
2.	Best Oral presentation in ISAPM silver jubilee convention & national seminar on "Revisiting management policies and practices for indigenous livestock & poultry breeds as eco-friendly economic producers" at College of Veterinary Science & A.H., NAU , Navsari (2014)	Effect of different temperature humidity indices on thermoregulatory responses of Surti buffalo	Virendra Kumar Singh, Sandhya S. Chaudhary, Gopal Puri, A.K. Sharma, M.D. Patel and Rana Ranjeet Singh
3.	Best Poster presentation in XVI Annual conference of Indian Veterinary Society of Veterinary Pharmacology and Toxicology (ISVPT-2016) and National Symposium on " Animal Health and Production: Challenges and Opportunities in Veterinary Pharmacology and Toxicology" at College of Veterinary Science & A.H., NAU ,Navsari (2016)	Effect of feeding of yeast ( <i>Saccharomyces cerevisiae</i> CNCM I-1077) during hot-humid season in Surti buffaloes on rumen liquor parameters and milk production.	Chaudhary Sandhya S., Singh V.K., Patel S.B., Puri, Gopal, Manat Tanvi D. and Sharma A.K.
4.	Best Oral presentation in XXVI Annual Conference of Society of Animal Physiologists of India (SAPI) and National	Effect of yeast ( <i>Saccharomyces cerevisiae</i> )	Virendra Kumar Singh, Sandhya S. Chaudhary,



	Symposium held at College of Veterinary Science and Animal Husbandry, Bidar, Karnataka (2017)	supplementation on rumen health parameters in Surti buffalo calves	Tanvi D. Manat and Rana Ranjeet Singh
5.	J N Pandey best poster award XXVII Annual Conference of SAPI and National Symposium on Augmentation of Animal Productivity under changing Socio-Economic Scenario' ICAR-NDRI, Karnal, Haryana during (2018)	Effect of yeast ( <i>saccharomyces cerevisiae</i> ) supplementation on rumen health and milk production parameters in Surti buffaloes	Virendra Kumar Singh, Sandhya S. Chaudhary, Tanvi D. Manat and Rana Ranjeet Singh
6.	Best Poster presentation in National conference of ISBD on Enhancing Rural Livelihood through Improved Buffalo Productivity and Health at College of Veterinary Science & A.H., NAU ,Navsari (2019)	Hemato-biochemical changes at parturition and during early lactation in multiparous Surti buffaloes	Malaviya J.A., Chaudhary S.S., Manat T.D., Singh V.K. and Singh R.R
7.	Best poster presentation award in VII Annual Convection of SVSBT and National Seminar at NAU, Navsari (2019)	Oxidative stress profiling in Surti buffalo calves supplemented with rumen specific yeast	Singh V.K., Chaudhary S.S. and Manat T.D.
8.	Best Oral presentation in National Seminar on Biochemical and Molecular Biology Intervention for Nutritional Security and Food Safety held at Dept of Soil Science and Agricultural Chemistry, NMCA,NAU,Navsari (2019)	Nutrigenomic effects of supplementation of different yeast derivatives in Surti buffaloes during early lactation.	Singh V.K., Chaudhary S.S. and Manat T.D
9.	Best Oral presentation in Annual Convection of Society for Veterinary Sciences and Biotechnology (SVSBT) and National Seminar on Biotechnological advances for improving animal health and productivity held at College of Veterinary Science and Animal Husbandry, NAU, Navsari, (2019)	Effect of microclimate modification on physiological, hemato-biochemical, oxidative stress parameters and thermographic changes during hot season in Surti buffaloes.	Chaudhary S.S., Singh V.K., Manat T.D., Singh R.R. and Sorathiya L. M
10.	Best Oral presentation in XXVIII Annual Conference of Society of Animal Physiologists of India & National Symposium on Physiological approaches to address environmental challenges for increasing animal productivity and farmer's	Metabolic and thermographic changes during transition in Surti buffaloes	Sandhya S Chaudhary, Virendra Kumar Singh, Tanvi D Manat, Ajay P Raval

	income at ICAR- Central Sheep and Wool Research Institute, Avikanagar (2020)		
11.	Best oral Presentation in XXIX Annual conference of SAPI on Recent approach to escalate livestock productivity under current socio-economic scenario organized by Bihar Veterinary College, Patna (2021)	Rumen protected niacin supplementation effects on sweating rate, biochemical analytes and milk production in Surti buffaloes during summer	Sandhya S Chaudhary, Virendra Kumar Singh, Tanvi Manat, S B Patel, N B Patel and V R Patel

### **Courses offered by the Department (Theory and Practical)**

## **VETERINARY PHYSIOLOGY**

### **Undergraduate Programme**

Sr. No.	Name of Course	Credit
1	UNIT: 1 BLOOD, CARDIOVASCULAR, NERVOUS AND MUSCULAR SYSTEMS	4+1
2	UNIT-2 DIGESTIVE AND RESPIRATORY SYSTEMS	
3	UNIT-3 EXCRETORY AND ENDOCRINE SYSTEMS	
4	UNIT-4 REPRODUCTION, LACTATION, GROWTH AND ENVIRONMENTAL PHYSIOLOGY	

### **Master Degree Programme**

Sr. No.	Code	Course Title	Credits
1	VPY 601	PHYSIOLOGY OF DIGESTION	2+1
2	VPY 602	CARDIOVASCULAR AND RESPIRATORY PHYSIOLOGY	2+1
3	VPY 603	RENAL PHYSIOLOGY AND BODY FLUID DYNAMICS	2+1
4	VPY 604	HAEMATOLOGY	2+1
5	VPY 605	VITAMINS AND MINERALS IN ANIMAL PHYSIOLOGY	2+0
6	VPY 606	PHYSIOLOGY OF ANIMAL REPRODUCTION	2+1
7	VPY 607	CLINICAL PHYSIOLOGY	2+1
8	VPY 608	NEUROMUSCULAR PHYSIOLOGY	2+1
9	VPY 609	CHEMICAL BIOREGULATION IN PHYSIOLOGICAL	0+3
10	VPY 610	RESEARCH TECHNIQUES IN VETERINARY PHYSIOLOGY	0+2
11	VPY 691	MASTER' S SEMINAR	1+0
12	VPY 699	MASTER' S RESEARCH	20

### **Ph.D. Programme**

Sr. No.	Code	Course Title	Credits
1	VPY 701	APPLIED PHYSIOLOGY OF BODY FLUIDS AND	2+1

		ELECTROLYTES	
2	VPY 702	PHYSIOLOGY OF ANIMAL BEHAVIOUR	2+0
3	VPY 703	COMPARATIVE PHYSIOLOGY OF RUMINANT DIGESTION	2+1
4	VPY 704	ADVANCES IN NEURO ENDOCRINOLOGY	2+1
5	VPY 705	MYOPHYSIOLOGY AND KINESIOLOGY	2+1
6	VPY 706	AVIAN PHYSIOLOGY	2+1
7	VPY 707	PHYSIOLOGY OF LACTATION	2+1
8	VPY 708	ADVANCES IN ENVIRONMENTAL PHYSIOLOGY AND GROWTH	2+1
9	VPY 709	ADVANCES IN RUMEN MICROBIOLOGY AND METABOLISM	2+1
10	VPY 710	ADVANCES IN IMMUNOPHYSIOLOGY	2+1
11	VPY 711	PHYSIOLOGY OF STRESS	2+1
12	VPY 790	SPECIAL PROBLEM	0+2
13	VPY 791	DOCTORAL RESEARCH I	1+0
14	VPY 792	DOCTORAL RESEARCH II	1+0
15	VPY 799	DOCTORAL RESEARCH	45

## **VETERINARY BIOCHEMISTRY**

### **Undergraduate Programme**

Sr. No.	Name of Course	Credit
1	UNIT: 1 GENERAL VETERINARY BIOCHEMISTRY	2+1
2	UNIT-2 INTERMEDIARY METABOLISM	
3	UNIT-3 VETERINARY ANALYTICAL BIOCHEMISTRY	

### **Master Degree Programme**

Sr. No.	CODE	COURSE TITLE	REDITS
1.	VBC 601	CHEMISTRY OF ANIMAL CELL	2+0
2.	VBC 602	TECHNIQUES IN BIOCHEMISTRY	0+2
3.	VBC 603	APPLICATIONS OF GENOMICS AND PROTEOMICS IN MOLECULAR BIOLOGY	2+0
4.	VBC 604	BIOCHEMISTRY OF BIOMOLECULES: CARBOHYDRATES, LIPIDS AND MEMBRANE'S STRUCTURE	2+0
5.	VBC 605	ENZYME CATALYSIS, KINETICS, INHIBITION AND REGULATION	2+0
6.	VBC 606	METABOLISM I: CARBOHYDRATES AND LIPIDS	2+0
7.	VBC 607	METABOLISM II: NUCLEIC ACIDS AND AMINO ACIDS	2+0
8.	VBC 608	METABOLISM III: INTEGRATION AND REGULATION	2+0

9.	VBC 609	CENTRAL DOGMA AND PROTEIN FUNCTION	2+0
10.	VBC 610	CLINICAL BIOCHEMISTRY OF ANIMALS	2+1
11.	VBC 611	BIOCHEMICAL BASIS OF DISEASES OF DOMESTIC ANIMALS	2+0
12.	VBC 612	ENDOCRINOLOGY AND REPRODUCTIVE BIOCHEMISTRY	2+0
13.	VBC 613	BIOCHEMICAL BASIS OF ANIMAL PRODUCTION	2+1
14.	VBC 691	MASTER'S SEMINAR	1+0
15.	VBC 699	MASTER'S RESEARCH	20

### **Ph.D. Programme**

<b>Sr. No.</b>	<b>CODE</b>	<b>COURSE TITLE</b>	<b>REDITS</b>
1.	VBC 701	ADVANCES IN BIOCHEMISTRY OF RUMINANT DISORDERS	2+0
2.	VBC 702	ADVANCES IN ENZYMOLOGY	2+0
3.	VBC 703	ADVANCES IN CLINICAL BIOCHEMISTRY	0+2
4.	VBC 704	MEMBRANE DYNAMICS AND SIGNAL TRANSDUCTION IN ANIMAL CELL	2+0
5.	VBC 705	METHODS IN PROTEIN ANALYSIS	2+1
6.	VBC 706	NUTRITIONAL BIOCHEMISTRY	2+0
7.	VBC 707	ADVANCES IN INTERMEDIARY METABOLISM	2+0
8.	VBC 708	ENDOCRINE CONTROL OF FUEL METABOLISM	2+0
9.	VBC 709	DIAGNOSTIC ENZYMOLOGY I	2+0
10.	VBC 710	DIAGNOSTIC ENZYMOLOGY II	2+0
11.	VBC 711	BIOCHEMISTRY OF DEVELOPMENT AND DIFFERENTIATION	2+0
12.	VBC 712	ADVANCES IN TECHNIQUES IN BIOCHEMISTRY	1+1
13.	VBC 713	ADVANCES IN MINERAL AND VITAMIN METABOLISM AND RELATED DISEASES	2+0
14.	VBC 790	SPECIAL PROBLEM	0+2
15.	VBC 791	DOCTORAL SEMINAR- I	1+0
16.	VBC 792	DOCTORAL SEMINAR- II	1+0
17.	VBC 799	DOCTORAL RESEARCH	45

### **:: CONTACT US ::**

#### **Professor & Head**

Department of Veterinary Physiology & Biochemistry

College of Veterinary Science & A.H.

Navsari Centre (Kamdhenu University),

Eru Cross Road, Vijalpore, Ta: Jalalpore

Dist. Navsari – 396450.

**Email: sandhyachaudhary@kamdhenuuni.edu.in**