DEPARTMENT OF VETERINARY PHYSIOLOGY & BIOCHEMISTRY

LIST OF COURSES OFFERED BY THE DEPARTMENT

UNDER GRADUATE LEVEL COURSES:

Course code	Course Title	credits	Semester
VPB-111	Veterinary Physiology-I (Blood, Cardiovascular & Excretory Systems, Body Fluids)	2+1	First
VPB-112	General Veterinary Biochemistry	1+1	First
VPB-121	Veterinary Physiology-II(Neuromuscular, Digestive & Respiratory Systems)	2+1	Second
VPB-122	Veterinary Intermediary Metabolism	2+1	Second
VPB-221	Veterinary Physiology-III (Endocrinology, Reproduction Growth Environmental Physiology)	3+1	Fourth
VPB-321	Animal Biotechnology	2+1	Sixth
VLD-411	Veterinary Clinical Biochemistry and Laboratory Diagnosis-I	0+1	Seventh
VLD-421	Veterinary Clinical Biochemistry and Laboratory Diagnosis-II	0+1	Eighth
VPHY	Veterinary Physiology (as per MSVE, 2016)	4+1	Ist Year
VBIO	Veterinary Biochemistry (as per MSVE, 2016)	2+1	IInd Year

POST-GRADUATE (M.V.Sc) LEVEL COURSES:

SUBJECT: VETERINARY PHYSIOLOGY

Course code	Title	Total credits
VPY-601	Physiology of Digestion	2+1
VPY-602	Cardiovascular and Respiratory Physiology	2+1
VPY-603	Renal Physiology and Body Fluid Dynamics	2+1
VPY-604	Hematology	2+1
VPY-605	Vitamins and Minerals in Animal Physiology	2+0
VPY-606	Physiology of Animal Reproduction	2+1
VPY-607	Clinical Physiology	2+1
VPY-608	Neuromuscular Physiology	2+1
VPY-609	Chemical Bio regulation in Physiological Functions	3+0
VPY-610	Research Techniques in Veterinary Physiology	0+2
VPY-691	Master's Seminar	1+0
VPY-699	Master's Research	20

SUBJECT: VETERINARY BIOCHEMISTRY

Course code	Title	credits
VBC-601	Chemistry of Animal Cell	2+0
VBC -602	Techniques in Biochemistry	0+2
VBC -603	Applications of Genomics and Proteomics in Molecular Biology	2+0
VBC -604	Biochemistry of Biomolecules: Carbohydrates, Lipids and Membrane's Structure	2+0
VBC -605	Enzyme Catalysis, Kinetics, Inhibition and Regulation	2+0
VBC -606	Metabolism-I: Carbohydrates and Lipids	2+0
VBC -607	Metabolism-II: Nucleic acids and Amino acids	2+0
VBC -608	Metabolism-III: Integration and Regulation.	2+0
VBC -609	Central Dogma and Protein Function	2+0
VBC -610	Clinical Biochemistry of Animals	2+1
VBC -611	Biochemical Basis of Diseases of Domestic Animals	2+0
VBC -612	Endocrinology and Reproductive Biochemistry	2+0
VBC -613	Biochemical Basis of Animal Production	2+1
VBC -691	Master's Seminar	1+0
VBC -699	Master's Research	20

DOCTRATE (Ph.D.) LEVEL COURSES

SUBJECT: VETERINARY PHYSIOLOGY

Course code	Title	credits
VPY-701	Applied Physiology of Body Fluids and Electrolytes	2+1
VPY-702	Physiology of Animal Behavior	2+0
VPY-703	Comparative Physiology of Ruminant Digestion	2+1
VPY-704	Advances in Neuro-Endocrinology	2+1
VPY-705	Myophysiology and Kinesiology	2+1
VPY-706	Avian Physiology	2+1
VPY-707	Physiology of Lactation	2+1
VPY-708	Advances in Environmental Physiology and Growth	2+1
VPY-709	Advances in Rumen Microbiology and Metabolism	2+1
VPY-710	Advances in Immuno-physiology	2+1
VPY-711	Physiology of Stress	2+1
VPY-790	Special Problem	0+2
VPY-791	Doctoral Research I	1+0
VPY-792	Doctoral Research II	1+0
VPY-799	Doctoral Research	45

SUBJECT: VETERINARY BIOCHEMISTRY

Course code	Title	Total credits
VBC-701	Advances in Biochemistry of Ruminant Disorders	2+0
VBC -702	Advances in Enzymology	2+0
VBC -703	Advances in Clinical Biochemistry	0+2
VBC -704	Membrane Dynamics and Signal Transduction in Animal Cell	2+0
VBC -705	Methods in Protein Analysis	2+1
VBC -706	Nutritional Biochemistry	2+0
VBC -707	Advances in Intermediary Metabolism	2+0
VBC -708	Endocrine Control of Fuel Metabolism	2+0
VBC -709	Diagnostic Enzymology-I	2+0
VBC -710	Diagnostic Enzymology-II	2+0
VBC -711	Biochemistry of Development and Differentiation	2+0
VBC -712	Advances in Techniques in Biochemistry	0+2
VBC -713	Advances in Mineral and Vitamin Metabolism and Related Diseases	2+0
VBC -790	Special Problem	0+2
VBC -791	Doctoral Research I	1+0
VBC -792	Doctoral Research II	1+0
VBC -799	Doctoral Research	45

EXTENSION ACTIVITIES:

1. Awareness among farmers and livestock owners through mass communications (Television and Radio talks) about proper care and management of livestock and pet animals.
2. Advanced training in frontier areas of Veterinary Physiology & Biochemistry for field veterinarians and paravets.
3. Imparting knowledge to farmers through participation in 'KRISHI MAHOSTAV' under Gujarat Govt.
4. To impart education to field Veterinarians through ASCAD training.

RESEARCH:

ONGOING PROJECTS:

1. ICAR Network project on National Initiative on Climate Resilient Agriculture (NICRA)
2. *In vitro* embryo development from goat ovaries with supplementation of epidermal growth factor and α- tocopherol in maturation media

COMPLETED PROJECTS:

1. Standardization for Primordial Follicles Retrieval and Screening Protocol from Goat Ovaries
2. To Establish Normal Physiological Norms of Hemogram and Biochemical Profile on Goats of Surti Breed
3. To study Diaphoretic pattern of Surti buffalo
4. Comparative study of FBS and EBS on in vitro maturation of oocytes in buffalo
5. Establishment of fibroblast culture

PUBLICATIONS

2014-2015:

1. 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.
2. 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
3. Pankaj A. Patel, Sandhya S.Chaudhary, Gopal Puri, Virendra Kumar Singh and Arjun B. Odedara. (2015). Effects of β-mercaptoethanol on in vitro maturation and glutathione level of buffalo oocytes. Veterinary World 8(2):213-216.

2015-2016

4. Manat T.D., Chaudhary SS, Singh VK, Patel SB, Puri G. (2016) Hematobiochemical profile in Surti goats during post-partum period, Veterinary World 9(1): 19-24 5.71
5. Tanvi D. Manat, Sandhya S. Chaudhary, Virendra Kumar Singh, Sanjay B. Patel and Kuldeep Kumar Tyagi. (2016). Oxidative stress profile during postpartum period in Surti goats. Indian Journal of Animal Research. DOI:10.18805/ijar.10270
6. 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. DOI:10.18805/ijar.11419

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. 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.

2016-2017

9. Arjun B. Odedara, Sandhya S. Chaudhary, Virendra Kumar Singh, Pankaj A. Patel and Mehul H. Dahima. (2016). Effect of Different Temperature Humidity Indices on Biochemical and Hormonal Parameters in Surti Buffaloes.
10. Tanvi D. Manat, Sandhya S. Chaudhary, Virendra Kumar Singh and Sanjay B. Patel. (2017). Blood Profile of Vitamin A and β-Carotene during Post-Partum Period in Surti Goats. The Indian Journal of Veterinary Sciences & Biotechnology. 12(3): 16-18
11. 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.

LEAD PAPERS

1. Sandhya Chaudhary and Virendra Kumar Singh (2012). *'Oxidant/antioxidant balance: Role in livestock health'.* Compendium of lead paper and abstracts of XXI Annual Conference and National symposium of Society of Animal Physiologists of India held at Navsari, Gujarat. 178-180

2. Sandhya S. Chaudhary. (2013). *'Strategies for 'Effective Teaching and Learning Veterinary Physiology'* - XXII Annual Conference of Society of Animal Physiologists of India and National Symposium on "Physiological and Nutri-genomic interventions to Augment Food Security and Animal Welfare" held at College of Veterinary Science & Animal Husbandry, U.P. Pt. Dean Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya, Evam Go-Anusandhan Sansathan, Mathura – 2810001 November, 19 - 21, 2013

3. Sandhya S. Chaudhary (2014). *'Dynamic responses of buffaloes to thermal heat load specifically for small holder production units'* - National Seminar on "Revising management policies and practices for indigenous livestock and poultry breeds as eco-

friendly and economic producers" & organized from October 9-11, 2014 at Department of LPM, Vanbandhu College of Veterinary Sciences& A.H., Navsari Gujarat, Pp:76

4. Sandhya Chaudhary and Virendra Kumar Singh (2014). *'Physiological and antioxidant responses to heat stress in buffaloes'* Compendium of lead paper and abstracts of XXIII Annual Conference and National symposium of Society of Animal Physiologists of India held at Hisar, Haryana.

CHAPTER IN TRAINING MANUAL

1. Sandhya S. Chaudhary (2014). *'Impact of Climate change on the productive performance of dairy cattle and strategies for its mitigation'* Model training course on "Precision Nutrition: a tool for sustainable dairy production" organized from September 4-11, 2014 at department of Animal Nutrition, CVS & AH, NAU, Navsari. Pg 66-67
2. Gopal Puri (2014). *'Estimation of trace minerals and vitamins in biological samples'* Model training course on "Precision Nutrition: A tool for sustainable dairy production" organized from September 4-11, 2014 at Department of Animal Nutrition, CVS & AH, NAU, Navsari. Pg 120-122
3. Virendra Kumar Singh, Sandhya S. Chaudhary, Gopal Puri, A.K. Sharma and S. B. patel (2015). *'Calculating Heat Stress in Animals'*. Basic and applied concepts in livestock production and management Training programme lectures' compendium (ASCAD 2014) from September 29, 2014 to January 3rd, 2015 at Department of Livestock production and Management, Vanbandhu College of Veterinary Science & AH, Navsari Agricultural University, Navsari. Pg 97-105

POPULAR ARTICLE

1. સંધ્યા એસ ચૌધરી અને સંજય બી પટેલ (કૃષિ મહોત્સવ, ૨૦૧૫). ગરમીના ભારણથી દુધાળા પશુઓ પર થતી અસરો તથા વ્યવસ્થાપન. આદર્શ પશુપાલન અને મત્સ્યપાલન. વિસ્તરણ શિક્ષણ નિયામકની કચેરી, નવસારી કૃષિ યુનિવર્સિટી, નવસારી પાના ન. ૪૮-૫૩

PREPARED BOOKLET

1. Sandhya. S. Chaudhary, R. C. Upadhyay, V. K. Singh, A. K. Sharma**,** R. A. Siddique**,** V. B. Kharadi and A. B. Fulsounder. (2012). Breed and general characteristics of Surti buffaloes and its hematological and biochemical parameters. Prepared under ICAR network project on National Initiative on Climate Resilient Agriculture.

ACHIEVEMENTS

AWARD:

1. **Best Teacher Award-2016** to Dr. Sandhya S. Chaudhary, Professor & Head, Dept. of Vet. Physiology & Biochemistry, Vanbandhu Veterinary College, NAU, Navsari To enhance the educational environment in the SAUs of India.
2. **Best Oral Presentation Award II** to Virendra Kumar Singh, Sandhya S. Chaudhary, Gopal Puri, A. K. Sharma, M.D. patel and Rana Ranjeet Singh Effect of different temperature humidity indices on thermoregulatory responses of Surti buffaloes ISAPM silver jubilee convention & national seminar, October 9-11, 2014 at NAU, Navsari.
3. **Best Poster Presentation Award** to Chaudhary Sandhya S., Singh V. K., Patel S. B., Gopal Puri, Manat Tanvi and Sharma A.K. Effect of feeding of yeast (*Saccharomyces cerevisiae* CNCM I-1077) during hot-humid season in Surti buffaloes on rumen liquor parameters and milk production during XVI Annual conference of ISVPT and National symposium on "Animal Health and Production: Challenges & Opportunities in Veterinary Pharmacology & Toxicology" organized by ISVPT and Dept of Veterinary Pharmacology & Toxicology, College of Veterinary Science and Animal Husbandry, NAU, Navsari during 23-25 November 2016
4. **J.N. Pandey Memorial Best Poster Presentation Award** to Virendra Kumar Singh, Sandhya Chaudhary and Gopal Puri. (2012). *'Study on diaphoretic pattern of selected body regions in surti buffalo'* - 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 Vanbandhu College of Veterinary Science & Animal Husbandry, NAU, Navsari-396 450, November, 6 - 8, 2012.

MANUAL PREPARED BY THE DEPARTMENT OF VETERINARY PHYSIOLOGY AND BIOCHEMISTRY:

1. Blood, Cardiovascular, Excretory system and Body fluids (VPB-111)
2. Neuromuscular, Digestive and Respiratory system (VPB-121)
3. Endocrinology, Reproduction, Growth and Environmental Physiology (VPB-221)
4. General Veterinary Biochemistry (VPB-112)
5. Veterinary Intermediary Metabolism (VPB-122)

SEMINAR / WORKSHOP / CONFERENCE ORGANIZED:

1. XXI Conference of Society of Animal Physiologists of India (SAPI) and National Symposium-2012 on "Physiological Research in Changing Environmental Scenario on Sustainable Livestock and Poultry Production" organized at Department of Veterinary Physiology and Biochemistry, Vanbandhu College of Veterinary Science & A.H. from 6^{th} – 8^{th} Nov, 2012

RESEARCH RECOMMENDATION TO FARMER COMMUNITY:

1. From one of completed research project entitled "Strategies to mitigate the impact of climate change effect of 75% green agro-net on production, reproduction and stress parameters in Surti buffaloes as "Farmers of South Gujarat region are recommended to use 75% green agro-net to reduce 10-150C floor temperature of the open paddock between 2-5 PM in hot-dry season (April end to first week of June) and it also reduces heat stress by lowering THI in hot-humid season (mid June to July end) for the welfare of Surti buffaloes".