

SRI VENKATESWARA UNIVRRSITY:TIRUPATI
B.Voc. in DAIRYING AND ANIMAL HUSBANDRY
Under CBCS W.E.F.2021-2022
COURSE STRUCTURE
SEMESTER - IV

S. N O	Skill / general educati on	Courses	Title of the paper/course and code	Cre dits per cour se	Hours /week	Total hours/ course	Marks		
							Internal	Extern al	Total
1	Domain Skill Compo nent	CORE-I	Dairy microbiology	04	04	60	25	75	100
2		PRACTICAL -1	Dairy microbiology	02	03	30	---	50	50
3		CORE-II	Laboratory diagnostic techniques	04	04	60	25	75	100
4		PRACTICAL -II	Laboratory diagnostic techniques	02	03	30	--	50	50
5		CORE-III	Dairy Plant Management	04	04	60	25	75	100
6		PRACTICAL -III	Dairy Plant Management	02	03	30	---	50	50
7		CORE-IV	Veterinary Physiology	04	04	60	25	75	100
8		PRACTICAL -IV	Veterinary Physiology	02	03	30	---	50	50
9		CORE-V	Veterinary immunology&Vaccine	04	04	60	25	75	100
10		PRACTICAL -V	Veterinary immunology&Vaccine	02	03	30	---	50	50
11		CORE-VI	Meat production and Abattoir Management	04	04	60	25	75	100
12		PRACTICAL -VI	Meat production and Abattoir Management	02	03	30	---	50	50
TOTAL				36			900		

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SKILL COMPONENT

Core Paper-I: DIARY MICROBIOLOGY

(Credits:4+2=6)

UNIT – I

Types of microorganisms present in milk: acid producing, gas producing, protein splitting, fat splitting, pathogenic and inert organisms. Types of microorganisms based on temperature requirement: Psychrophilic, mesophilic, thermophilic and thermoduric microorganisms.

UNIT – II

Chemical changes observed during storage of milk and abnormal fermentations observed in milk: Souring, gassy fermentation, proteolysis, lipolysis, ropiness and flavor fermentations.

Sources of contamination of milk and their control: Exterior of the animal, interior of the udder, utensils, water, milker, flies and insects, soil and manure, milking barn, cattle shed and surroundings.

Methods of clean milk production

UNIT – III

Microbiological examination of milk: Direct microscopic count, Standard platecount, Methylene blue reduction test, Resazurin reduction test and Coliform test. Milk borne diseases: bacterial, viral and other diseases

UNIT - IV

Pursuits for microbial analysis and equipment: Sampling, serial Dilution, Preparation of culture media, Inoculation, Incubation, Sterilization, Disposal common apparatus for microbial analysis.

UNIT – V

Cleaning and sanitization of dairy equipment: Desirable properties of detergents and sanitizers; commonly used detergents and sanitizers.

Methods of cleaning and sanitization: (i) Hand washing (ii) Mechanical washing (iii) Cleaning in place.

PRACTICALS:

- 1. MBRT test of milk.**
- 2. RRT test of milk.**
- 3. Direct microscopic count of milk**
- 4. Serial dilution of milk sample**
- 5. SPC of milk.**
- 6. Coliform count of milk.**
- 7. Thermoduric count of milk.**
- 8. Thermophilic count of milk.**
- 9. Psychrophilic count of milk.**
- 10. Mesophilic count of milk.**
- 11. Preparation of culture media**
- 12. Inoculation of Diluted sample**

Reference books:

- 1. Dairy Microbiology – R.K. Robinson.**
- 2. Milk products preparation and quality control – C.P. Ananthakrishnan.**
- 3. Food microbiology – W.C. Frazier.**

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SKILL COMPONENT
Core Paper-I: DIARY MICROBIOLOGY
MODEL QUESTION PAPER

Time:3 hours

Max.Marks:75

SECTION-A

Answer ALL of the following

5×2=10Marks

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION-B

Answer any Three of the following

3×5=15Marks

- 6.
- 7.
- 8.
- 9.
- 10.

SECTION-C

Answer ALL of the following

5×10=50Mark

11.A

(Or)

B

P.T.O

12. A

(Or)

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13. A

(Or)

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14. A

(Or)

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15. A

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Core Paper-II: LABORATORY DIAGNOSTIC TECHNIQUES

(Credits:4+2=6)

UNIT – I

Microscope and usage of different microscopes. Sterilization and methods of sterilization.

UNIT - II

Media – various ingredients used for preparation of culture media. Different media for bacterial and fungal cultures. Tissue cultures Various stains and dyes used for diagnostic work. Different staining methods.

UNIT - III

Antigens and antibodies. Sero diagnostic techniques used for identification of antigen/antibody.

UNIT – IV

Methods of preparation of permanent slides. Collection, preservation and dispatch of various materials for parasitological examinations.

UNIT – V

Examination of parasitic specimens. Examination of pathological specimens. Hematological examinations. Biochemical analysis.

PRACTICALS

- 1. Identification of glass ware chemicals and laboratory equipment.**
- 2. Preparation of normal and standard solutions.**
- 3. Samples preparation for chemical analysis.**
- 4. Preparation of slides for parasitic and pathological examinations.**
- 5. Staining procedures for different specimens.**
- 6. Collection and processing of specimens for clinical examination.**
- 7. Clinical hematology**
- 8. Preparation of permanent slides and museum specimens.**

Reference books:

- 1. Veterinary Laboratory Diagnosis Chauhan RS**
- 2. Veterinary Laboratory Diagnosis Sriraman**
- 3. Veterinary Technician's Handbook of Laboratory Procedures
Brienne Bellwood and. Melissa Andrasik Catton, John Wiley**
- 4. Veterinary Laboratory Medicine Clinical Biochemistry and
Hematology Morag G. Kerr, John Wiley**
- 5. Veterinary clinical diagnostic technology Prasad B**

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Core Paper-III: DIARY PLANT MANAGEMENT

(Credits:4+2=6)

UNIT - I

Dairy equipment for fluid milk processing – Introduction - The Dairy Plant - Milk Collection or Chilling Centre - Milk Reception and Storage - Pasteurizer and Sterilizer - Homogenizer and Centrifuges - Packaging and Filling - Clean-in-place (CIP) - Cleaning System.

UNIT – II

Dairy equipment for products processing - Objectives – Introduction - Butter and Cheese Making Equipment - Ice-Cream Making Equipment - Evaporators and Dryers.

UNIT – III

Ghee Making Equipment - Khoa Making Equipment - Dahi and Lassi Making Equipment - Paneer, Chana & Casein Making Equipment

UNIT - IV

Materials their characteristics and selection of equipment – Objectives – Introduction - Types of Materials - Properties of Materials - Corrosion and its Prevention - Choice of Materials - Milk Handling and Processing Equipment - Selection of Utilities

UNIT - V

Preventive maintenance of dairy plants and machineries - Principles of Preventive Maintenance Development of Plant Maintenance Programme - Guidelines for Effective Lubrication - Care and Cleaning of SS Surface - Care of Pipes and Fittings - Maintenance of Rubber and Gaskets Dairy Building Sanitation Dairy effluent management.

PRACTICALS

- 1. Visit to milk collection centre**
- 2. Visit to milk chilling centre.**
- 3. Visit to various units of dairy plant.**
- 4. Hands on training in preparation of various milk products.**
- 5. Handling of different dairy equipment**

Reference books:

- 1. Ahmad Tufail. (1990). Dairy Plant Systems Engineering. Kitab Mahal Publisher, Allahabad. Anantakrishnan.**
- 2. C.P. and Simha N.N. (1987). Dairy Engineering Technology and Engineering of Dairy Plant operation. Laxmi Publications, Delhi**
- 3. Kessler H.G. (1981). Food Engineering and Dairy Technology.**
- 4. Verlag A. Kessler, P.O. Box 1721, Dairy Engineering Division-8050, Freising (Germany) Warner James. (1976).**
- 5. Principles of Dairy Processing. Wiley Eastern Ltd. Publisher, New Delhi. Warner James N. (1976).**
- 6. Principle of Dairy Processing. Wiley Eastern Limited Publisher, New Delhi Newcomer, J.L. (1981).**
- 7. Preventive Maintenance Manual for Dairy Industry. Venus Trading Co., P.O. Box 17. ANAND 388 001.**

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Core Paper-IV: VETERINARY PHYSIOLOGY

(Credits:4+2=6)

UNIT – I

**Introduction to Blood; Properties of blood as a body fluid, plasma, its functions, serum, erythropoiesis, factors influencing erythropoiesis; Hemoglobin-structure, physiological functions; Leucocytes, differential leucocyte count. Thrombocytes, Hemorrhage, haemostasis.
Blood groups.**

UNIT - II

Physiology of the gastrointestinal tracts of ruminants and monogastric animals prehension, defecation; vomition; function of saliva, stomach, intestine, pancreas; bile secretion; hunger, appetite control, developmental aspects of digestion. Oesophageal groove, rumination, fermentation.

UNIT – III

Physiology of respiration and mechanics of breathing. Transport of blood gases, foetal and neonatal oxygen transport. Physiology of excretory system, nephron structure, urine formation.

UNIT - IV

Introduction and basics of endocrinology. Major endocrine glands and their hormones. Hormones and their action on different systems of the body.

UNIT - V

Physiology of Puberty. Physiology of reproduction in male, spermatogenesis. Physiology of reproduction in female, folliculogenesis, ovulation, estrus cycles. Mating behaviour, fertilization, parturition. Lactation.

PRACTICALS

- 1. Collection of blood samples - Separation of serum and plasma.**
- 2. Enumeration of erythrocytes.**
- 3. Enumeration of leucocytes.**
- 4. Differential leucocytic count .**
- 5. Platelet count.**
- 6. Estimation of haemoglobin.**
- 7. Haematocrit - erythrocyte sedimentation rate - packed cell volume - coagulation time -bleeding time .**
- 8. Counting of rumen motility**
- 9. Urine analysis-physiological constituents and pathological determinates**
- 10. Behavioural signs of oestrus.**
- 11. Sperm motility.**
- 12. Sperm concentration -live and dead - abnormal sperm count.**
- 13. Health parameters of animals - body temperature, pulse, respiration and heart rate.**

Reference books:

- 1. Textbook of Veterinary Physiology Bradley Klein, Elsevier**
- 2. Animal physiology M. Armugam, A. Mariakuttukam**
- 3. Physiology of domestic animals Dukes**
- 4. Text book of Veterinary physiology B. Bhattacharya**

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Core Paper-V:VETERINARY IMMUNOLOGY AND VACCINE

(Credits:4+2=6)

UNIT – I

History of Immunology - Lymphoid organs, tissues and Cells - Types of Immunity

UNIT – II

Hypersensitivity: classification and mechanism of induction

UNIT - III

Autoimmunity; Immunotolerance

UNIT - IV

Concept of Immunity to Microbes

UNIT - V

Vaccines-preparation, storage, safety and maintenance Vaccination schedules of different livestock, poultry and pet animals.

PRACTICALS

- 1. Practicals Visit and appraisal of Veterinary biological institute.**
- 2. Demonstration of various livestock and pet vaccines.**
- 3. To attend vaccination programmes in field and commercial poultry farms.**

Reference books:

- 1. Veterinary Immunology, Ian R Tizard, Elsevier Science**
- 2. Immunology: Basic Concepts and Applications Y. Hari babu**
- 3. Veterinary Immunology: Principles & Practice Day, Manson Pub**
- 4. Vaccines for Veterinarians Ian R Tizard**
- 5. Vaccine Science And Immunization Guideline ROCKWELL P G, SPRINGER**

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SKILL COMPONENT
Core Paper-VI:MEAT PRODUCTION AND ABBATTOIR MANAGEMENT
(Credits:4+2=6)

UNIT – I

Prospect of meat industry in India. Nutritive value of meat.

UNIT – II

Preservation of meat and poultry; drying, salting, curing, smoking, chilling, freezing, canning, irradiation and chemicals. Ageing of meat.

UNIT – III

Modern processing technologies of meat and meat products. Packaging of meat and meat products. Formulation and development of meat; kabab, sausages, meat balls or patties, tandoori chicken, soup, pickles

UNIT – IV

Layout and management of rural, urban and modern abattoirs. HACCP concepts in abattoir management. FSSA standards on organization and layout of abattoirs. Animal welfare and pre-slaughter care, handling and transport of meat animals including poultry.

UNIT – V

Procedures of Ante-mortem and post mortem examination of meat animals. Slaughtering and dressing of meat animals and birds. Evaluation, grading and fabrication of dressed carcasses

PRACTICALS

- 1. Visit to slaughter houses or meat plants.**
- 2. Packaging of meat, poultry and shell eggs and their products.**
- 3. Estimation of deteriorative changes in meat and meat products.**
- 4. Preparation of comminuted and non comminuted meat and poultry products.**
- 5. Evaluation of external and internal egg quality and preservation technique of eggs**
- 6. Methods of ritual and humane slaughter, flaying and dressing of food animals including poultry.**
- 7. Carcass evaluation.**
- 8. Determination of meat yield, dressing percentage, meat bone ratio and cut up parts.**
- 9. Preparation of different abattoir byproducts.**

Reference books:

- 1. Text book On Abattoir Practices & Animal By products Technology J Sahoo, M K Chatli**
- 2. Modern Abattoir Practices & Animal Byproducts Technology Sharma**
- 3. Text Book on Abattoir Practices and Animal By Products Technology Jhari Sahoo and Manish Kumar Chatli**
- 4. Abattoir Practices By-Products And Wool Technology V P Singh and Neelam Sachan**

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