**SRI VENKATESWARA UNIVRRSITY:TIRUPATI**

**B.VOC ,in DAIRYING AND ANIMAL HUSBANDRY**

**Under CBCS W.E.F.2020-2021**

**COURSE STRUCTURE**

**SEMESTER-IV**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| S..NO | **Skill / general education** | **Courses** | **Title of the paper/course and code** | **Credits per course** | **Hours/week** | **Total hours/ course** |  **Marks** |
| **Internal** | **External** | **Total** |
| 1 | **Domain Skill Component** | **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 Abbattoir Management** | **04** | **04** |  **60** |  **25** |  **75** | **100** |
| 12 | **PRACTICAL-VI** | **Meat production and Abbattoir Management** | **02** | **03** |  **30** |  **-----** |  **50** | **50** |
|  |  **TOTAL** | **36** |  |  |  **900** |

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**B.VOC. DEGREE COURSE IN DAIRYING AND ANIMAL HUSBANDRY**

**SECOND YEAR – FOURTH SEMESTER**

**Under CBCS W.E.F. 2020-21**

**SKILL COMPONENT**

**Core Paper-I**: **DIARY MICROBIOLOGY**

**(Credits:4+2=6)**

**UNIT – 1**

 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 – 2**

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 – 3**

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

**UNIT - 4**

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

**UNIT – 5**

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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**SECOND YEAR – FORTH SEMESTER**

**Under CBCS W.E.F. 2020-21**

**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.

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**SECTION-B**

Answer any Three of the following 3×5=15Marks

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**SECTION-C**

Answer ALL of the following 5×10=50Mark

11.A

 ( Or)

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12. A

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**SECOND YEAR –FORTH SEMESTER**

**Under CBCS W.E.F. 2020-21**

**SKILL COMPONENT**

**Core Paper-II**: **LABORATORY DIAGNOSTIC TECHNIQUES**

**( Credits:4+2=6)**

**UNIT – 1**

 Microscope and usage of different microscopes.

Sterilization and methods of sterilization.

 **UNIT - 2**

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 - 3**

Antigens and antibodies. Serodiagnostic technics used for identification of

antigen/antibody.

**UNIT – 4**

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

**UNIT – 5**

 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 specimans.
6. Collection and processing of specimans for clinical examination.
7. Clinical haematology
8. Preparation of permanent slides and museum specimans.

**Reference books:**

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

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**B.VOC. DEGREE COURSE IN DAIRYING AND ANIMAL HUSBANDRY**

**SECOND YEAR – THIRD SEMESTER**

**Under CBCS W.E.F. 2020-21**

**SKILL COMPONENT**

 **Core Paper-II**: : **LABORATORY DIAGNOSTIC TECHNIQUES**

**MODEL QUESTION PAPER**

**Time:3 hours Max.Marks:75**

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**B.VOC. DEGREE COURSE IN DAIRYING AND ANIMAL HUSBANDRY**

**SECOND YEAR – FOURTH SEMESTER**

**Under CBCS W.E.F. 2020-21**

**SKILL COMPONENT**

**Core Paper-III:** **DIARY PLANT MANAGEMENT**

**( Credits:4+2=6)**

**UNIT - 1**

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 – 2**

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

 **UNIT – 3**

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

**UNIT - 4**

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 - 5**

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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**SECOND YEAR – FOURTH SEMESTER**

**Under CBCS W.E.F. 2020-21**

**SKILL COMPONENT**

**Core Paper-III**: **DIARY PLANT MANAGEMENT**

**MODEL QUESTION PAPER**

**Time:3 hours Max.Marks:75**

**SECTION-A**

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**SECOND YEAR – FOURTH SEMESTER**

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**SKILL COMPONENT**

**Core Paper-IV: VETERINARY PHYSIOLOGY**

**( Credits:4+2=6)**

**UNIT – 1**

 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, Haemorrhage , haemostasis.

Blood groups.

**UNIT - 2**

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 – 3**

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 - 4**

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

**UNIT-5**

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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**SKILL COMPONENT**

**Core Paper-IV**: **VETERINARY PHYSIOLOGY**

**MODEL QUESTION PAPER**

**Time:3 hours Max.Marks:75**

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**SKILL COMPONENT**

**Core Paper-V: VETERINARY IMMUNOLOGY AND VACCINE**

**( Credits:4+2=6)**

**UNIT – 1**

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

 **UNIT – 2**

 Hypersensitivity: classification and mechanism of induction;

**UNIT - 3**

Autoimmunity; Immunotolerance

**UNIT - 4**

Concept of Immunity to Microbes

**UNIT - 5**

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. Haribabu

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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**SECOND YEAR – FOURTH SEMESTER**

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**SKILL COMPONENT**

**Core Paper-V**: **VETERINARY IMMUNOLOGY AND VACCINE**

**MODEL QUESTION PAPER**

**Time:3 hours Max.Marks:75**

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**SECOND YEAR – FOURTH SEMESTER**

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**SKILL COMPONENT**

**Core Paper-VI:** **MEAT PRODUCTION AND ABBATTOIR MANAGEMENT**

**( Credits:4+2=6)**

**UNIT – 1**

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

**UNIT – 2**

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

**UNIT – 3**

 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 – 4**

 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 – 5**

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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**SKILL COMPONENT**

**Core Paper-VI**: **MEAT PRODUCTION AND ABBATTOIR MANAGEMENT**

**MODEL QUESTION PAPER**

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