

# Sri Venkateswara University, Tirupati

Model syllabus for 4- Year UG Honours in B.vocational (Dairy and Animal Husbandry) as Major in consonance with curriculum framework w.e.f.AY2025-26

## COURSE STRUCTURE (FOR SEMESTER I to VIII)

| Year | Semester | Course | Title of the course                                                                    | No. of hrs/ week | No. of credits |
|------|----------|--------|----------------------------------------------------------------------------------------|------------------|----------------|
| I    | I        | 1      | Dairy Husbandry management production and dairy design & dairy development (Theory)    | 3                | 3              |
|      |          |        | Dairy Husbandry management production and dairy design & dairy development (Practical) | 2                | 1              |
|      |          | 2      | Indian milk dairy products (Theory )                                                   | 3                | 3              |
|      |          |        | Indian milk dairy products (practical)                                                 | 2                | 1              |
|      | II       | 3      | Bio-chemistry and physical chemistry of milk (theory)                                  | 3                | 3              |
|      |          |        | Bio-chemistry and physical chemistry of milk (Practical)                               | 2                | 1              |
|      |          | 4      | Dairy plant management (theory)                                                        | 3                | 3              |
|      |          |        | Dairy plant management (Practical)                                                     | 2                | 1              |
| II   | III      | 5      | Milk and milk products Technology (theory)                                             | 3                | 3              |
|      |          |        | Milk and milk products Technology (practical)                                          | 2                | 1              |
|      |          | 6      | Basic of animal nutrition(theory)                                                      | 3                | 3              |
|      |          |        | Basic of animal nutrition (practical)                                                  | 2                | 1              |
|      |          | 7      | Fodder production and conservation(theory)                                             | 3                | 3              |
|      |          |        | Fodder production and conservation (practical)                                         | 2                | 1              |
|      | IV       | 8      | Veterinary physiology (theory)                                                         | 3                | 3              |
|      |          |        | Veterinary physiology (practical)                                                      | 2                | 1              |
|      |          | 9      | Laboratory Diagnostic & Techniques (theory)                                            | 3                | 3              |
|      |          |        | Laboratory Diagnostic & Techniques (practical)                                         | 2                | 1              |
|      |          | 10     | Veterinary Gynacology & AI( Artificial insimulation)(theory )                          | 3                | 3              |
|      |          |        | Veterinary Gynacology & AI (Artificial insimulation) (practical)                       | 2                | 1              |

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|-----|------|----|----------------------------------------------------------------------------------|---|---|
| III | V    | II | Veterinary pharmacology (theory )                                                | 3 | 3 |
|     |      |    | Veterinary pharmacology (practical)                                              | 2 | 1 |
|     |      | 12 | Meat production and meat abattoir management(theory )                            | 3 | 3 |
|     |      |    | Meat production and meat abattoir management (practical)                         | 2 | 1 |
|     |      | 13 | Veterinary immunology & Vaccinations (Theory)                                    | 3 | 3 |
|     |      |    | Veterinary immunology & Vaccinations ( practical )                               | 2 | 1 |
|     | VI   | 14 | Basics of Veterinary surgery (Theory)                                            | 3 | 3 |
|     |      |    | Basics of Veterinary surgery (Practical)                                         | 2 | 1 |
|     |      | 15 | Poultry farm management and production (theory)                                  | 3 | 3 |
|     |      |    | Poultry farm management and production (practical)                               | 2 | 1 |
| IV  | VII  | 16 | Basics of veterinary anatomy(theory )                                            | 3 | 3 |
|     |      |    | Basics of veterinary anatomy ( practical)                                        | 2 | 1 |
|     |      | 17 | Dairy farm general management (theory )                                          | 3 | 3 |
|     |      |    | Dairy farm general management (practical)                                        | 2 | 1 |
|     |      | 18 | Cattle feed mixing plant (theory)                                                | 3 | 3 |
|     |      |    | Cattle feed mixing plant (practical )                                            | 2 | 1 |
|     |      | 19 | Animal genetics and breeding (theory )                                           | 3 | 3 |
|     |      |    | Animal genetics and breeding (practical )                                        | 2 | 1 |
|     |      | 20 | Fundamental of veterinary medicine (theory )                                     | 3 | 3 |
|     |      |    | Fundamental of veterinary medicine (practical)                                   | 2 | 1 |
|     | VIII | 21 | Milk production management Dairy plant Design and Dairy development (theory )    | 3 | 3 |
|     |      |    | Milk production management Dairy plant design and Dairy development (practical ) | 2 | 1 |
|     |      | 22 | Animal birth control programme (theory )                                         | 3 | 3 |
|     |      |    | Animal birth control programme (practical )                                      | 2 | 1 |
|     |      | 23 | Principles of Dairy chemistry and Dairy microbiology (theory )                   | 3 | 3 |
|     |      |    | Principles of Dairy chemistry and Dairy microbiology(practical )                 | 2 | 1 |
|     |      | 24 | Livestock production and management (theory )                                    | 3 | 3 |
|     |      |    | Live stock production and management (practical )                                | 2 | 1 |
|     |      | 25 | Dairy economic and marketing (theory )                                           | 3 | 3 |
|     |      |    | Dairy economic and marketing (practical )                                        | 2 | 1 |

**SEMESTER-II**  
**COURSE 3: BIO CHEMISTRY AND PHYSICAL CHEMISTRY OF MILK**

|               |                  |                  |
|---------------|------------------|------------------|
| <u>Theory</u> | <u>credits-3</u> | <u>3hrs/week</u> |
|---------------|------------------|------------------|

Learning out comes :

After completion the course student is able to

- Understand Bio molecules , Enzymes activity
- Understand about composition of milk and learn about physical chemistry of milk, also improve the theoretical and practical knowledge.

**Unit 1 :** 9 hrs

- General structure and classification of proteins , carbohydrates , fats , General proteins and classification of enzymes mechanism of enzyme action .

**UNIT :II** 9hrs

- Definition and structure of milk , composition of milk , Nomenclature and classification of milk protein and chemical composition physical – chemical properties of milk protein namely casein .Estimation of milk protein using different physical and chemical methods and significance of genetic polymorphism of milk protein .

**UNIT : III** 9hrs

General composition , Nomenclature and classification of milk lipids ., Milk phospholipids and their role in milk products ., Importance and status of Milk carbohydrates ,Fat soluble vitamin , milk salts such as major minerals and trace elements , milk Enzymes namely proteases , lipases, Lacto peroxidase, Xanthine oxidase , phosphatase .

**UNIT :IV** 9hrs

General composition of milk of different species and breeds of milch animals ., Colloidal and liquid states : Defanation and properties of colloidal system . defanation of density and specific gravity , pyknometer method , hydrometer , lactometer, effect of various processing variables on the density and specific gravity of milk .

**UNIT :V** 9 hrs

Viscosity of milk , evaporated milk , condensed milk and refractive index., colligative properties of dilute solution; vapour pressure, Raoult's law, depression of freezing point, elevation of boiling point ,freezing point and boiling point milk. Definition of Electrolytes and non electrolytes, ionic mobility .

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## SEMESTER-II

### COURSE – 3: BIO CHEMISTRY AND PHYSICAL CHEMISTRY OF MILK

|                  |                   |                   |
|------------------|-------------------|-------------------|
| <b>Practical</b> | <b>credits -1</b> | <b>2hrs /week</b> |
|------------------|-------------------|-------------------|

Preparation of buffer solution s

1. Sampling of milk – principle – sampling methods from different sources – composite sample.
2. Determination of density and specific gravity of milk by using pyknometer, hydrometer and lactometer
3. Determination of viscosity of milk using ostwald's viscometer .
4. Determination of surface tension of milk using stalagmometer .
5. Determination of freezing point of milk
6. Electrometric method for determination of Ph of buffers and milk
7. Coagulation of milk by using electrolytes .
8. Titration of amino acids in the presence and absence of formalin .
9. Verification of Beer- Lambert's law.

#### References Book

- The comprehensive multi – volume
- Advanced Dairy chemistry
- Series , the "Dairy chemistry
- Bio chemistry

## MODEL QUESTION PAPER

Course :Dairy &animal husbandry

BIO CHEMISTRY AND PHYSICAL CHEMISTRY OF MILK

Time: 3 hours

Marks: 75

### SECTION – A

Answer the any five following question .Each question carries equal marks .(5x3=15)

1. Carbohydrates classification
2. Essential amion acids
3. Milk protein isolation
4. Milk composition
5. Whey protein
6. Enzymes classification
7. Chemical properties of milk
8. Surface tension of the milk
9. Ostwald dilution
10. Redox system of milk

### SECTION –B

Answers the following question .Each question carries equal marks (5x12=60)

- 11 a) write about the classification of amino acid .  
(or)  
b) explain about the enzyme action and factors affecting its function .
- 12 a) Explain about physicochemical properties of milk .  
(or)  
b) write about the estimation of milk proteins .
13. a) Discuss the milk lipids and their role in milk production.  
(or)  
b) Explain about the milk enzyme
- 14 . a) write about the formation of gels from milk and their properties  
(or)  
b) Explain the various density and specific gravity measuring methods of milk
- 15 a)Explain the vapour pressure, roults law and depression freezing point .  
(or)  
b)Discuss the elevation of boiling point of milk osmosis and osmotic pressure .