ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

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 insimination)(theory)	3	3
			Veterinary Gynacology & AI (Artificial insimination) (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

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

SEMESTER-II

COURSE 3: BIO CHEMISTRY AND PHYSICAL CHEMISTRY OF MILK

Theory **credits-3** **3hrs/week**

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 , phosphatise .

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, Raoults 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

Practical **credits -1** **2hrs /week**

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'sviscometer .
4. Determination of surface tension of milk using stalagmometer .
5. Determination offreezing 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 .

SEMESTE II

COURSE 4 : DAIRY PLANT MANAGEMENT

Theory **credit -3** **3hrs/week**

LEARNIING OUTCOMES

After completion of course, student is able to

1.Ensuring animal health and productivity.

2.Implementing clean milk production and quality control.

3.Processing and preserving milk and dairy products, and managing plant operations and sanitation.

4.Involve marketing dairy products, managing feed and resources, and developing entrepreneurial and communication skills.

UNIT – 1. 9hrs

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. 9hrs

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

UNIT – 3 9hrs

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

UNIT – 4. 9hrs

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. 9hrs

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 - Dairy Building Sanitation Dairy effluent management

SEMESTE II

COURSE 4 : DAIRY PLANT MANAGEMENT

Practical **credits-1** **2hrs/week**

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. KitabMahal 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.

MODEL QUESTION PAPER

Course B .voc Dairy &Animal Husbandry

DAIRY PLANT MANAGEMENT

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

SECTION -A

Answers any five of the following question .Each question carries equal marks (5X3=15)

1. Chilling center
2. Pasteurizer
3. Dryers
4. Evaporators
5. Dahai
6. 6.paneer
7. Milk handling
8. Corrosion
9. Care and cleaning
10. Lubrication

SECTION –B

Answer all the question .Each question carries equal marks. (5X12=60)

11. A)Discuss the dairy equipment for fluid milk processing

(or)

b)write about milk reception and storage

12.a)write a detailed note on butter making equipment

(or)

b)Explain the ice cream making equipment

13.a)describe the Ghee making equipment

(or)

b)write a detailed note on khoa making equipment

14.a) Discuss the characteristics and selection of equipment of materials

(or)

b) Describe the types of materials .

15. a)Describe the principle of preventive maintenance development

(or)

b) Explain about sanitation in dairy management .