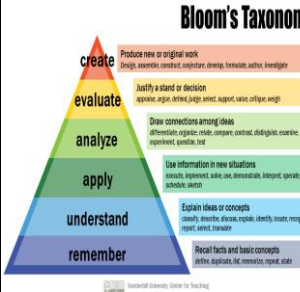


CO-PO MAPPING							
Dairy Science							
S.No.	Semester	Course Code	Course Title	Course Outcomes (COs)		Program Specific Outcomes (PSOs)	
1	I	Core Course -I	Dairy Farming in India	CO1	Students will learn about traditional systems of cattle, animals housing etc., Role of Dairy Cooperative , NDDB and OFP	PSO1	1,2,3,6
				CO2	Understand concept of types and system of Farming	PSO2	
				CO3	One can prepare themselves for future prospectus in dairy farming	PSO5	
				CO4	Establishment of dairy farm.	PSO5	
2	I	Core Course - II	Milk and Physiology of Lactation	CO1	Learn about Basic Knowledge about the milk and its Preservation. Understand the Production and Utilization trends of milk in India	PSO1	1,2,3,4,5
				CO2	Adopt the concept of clean milk production, factors affecting quality and quantity of milk	PSO3	
				CO3	Learn the concept of milk secretion theory	PSO1	
				CO4	Explain the various Morphology and anatomy of Udder	PSO1	
				CO5	Familiarize the various types of Endocrine glands and Hormones in milk	PSO1,PSO3	
				CO6	Gain knowledge of Classification of Bacteria and Fermentation of Milk.	PSO4	
				CO7	Judging of physico - chemical properties and Composition of milk.	PSO3, POS6	

3	II	Core Course - III	Processing Technology of Milk	CO1	Explain basic concepts, Cooling of milk .Milk Processing, Straining, Filtration, Clarification, Pasteurization LTLT, HTST, Homogenization	PSO4	1,2,3,4,6
				CO2	Describe different types Pricing policy	PSO1	
				CO3	Understanding concept of Legal standards and Standardization of milk.	PSO1, PSO2	
				CO4	Solve problems related to procurement of milk.	PSO7	
				CO5	Good overview of laws and understand – HACCP, FSSAI, Judging & Grading of milk.	PSO8	
				CO6	One can work as Dairy technologist. One can work as milk Procurement officer and dairy chemist	PSO5	
4	II	Core Course - IV	Farm Animal Health Management	CO1	Learn about Economics importance of diseases, Basic knowledge about diseases of farm animals	PSO3	1,2,3,5
				CO2	Understand Bacterial , viral, protozoan, Lactating Cows, Parasitic and Protozoan diseases, dystokia, poultry, sheep and goat diseases	PSO3	
				CO3	Development of competency in animal disease control.	PSO1, PSO2	
5	Annual	Core Course - V	Practical paper	CO1	Learn Morphology of cattle and buffalos, Study of Udder, Recording Temperature, pulse rate, respiration, Heart rate and Auscultation, Drenching, Injections and Vaccinations, Record keeping.	PSO1. PSO3	1,2,3,4,5,6
				CO2	Visit to – Dairy farm, Dairy plant, Agricultural and Veterinary College, Veterinary Hospital, Pathological tests – Blood tests, Urine tests, Test for mastitis., Preparation of drugs like, ointment/liniment/bolus	PSO7	
				CO3	Demonstration and Determination of Fat.	PSO6, PSO8	
				CO4	Organoleptic evaluation of milk / platform tests.	PSO6, PSO7 PSO8	

6	III	Core Course - VI	Dairy Animal Management	CO1	Learn Study of general management practices: Grooming, Drying off, Control of bad habits, Castration, Dehorning, Deworming, and Trimming.	PSO1 , PSO7	1,2,3
				CO2	Demonstration of Casting, restraining and handling of animals, Determination of age and dentation, Identifications marks.	PSO7, PSO8	
				CO3	Understanding Principles of general management	PSO6	
				CO4	Cattle and buffalo management	PSO3	
7	III	Core Course - VII	Technology of Indigenous Dairy Products	CO1	Learn Method of preparation of Indigenous milk products by application of Dairy technology	PSO1, PSO7, PSO5, PSO6, PSO9	1,2,3,4,5,6
				CO2	Entrepreneurial opportunities, After completing one can work as supervisor	PSO5	
				CO3	Classification of milk products, scope and limitation of marketing of milk and milk product	PSO1	
				CO4	Dairy consultant manufacturer of one or more Indigenous dairy products	PSO5	
8	IV	Core Course - VIII	Sheep, Goat, Pig and Poultry Farming	CO1	Discuss basic knowledge of skill related to Sheep ,Goat and Poultry farming	PSO1	1,2,3,4,5,6
				CO2	Understand the basic concepts of domestication Taxonomic classification Common terminologies used in goat, sheep, poultry	PSO1	
				CO3	One can establish Sheep, Goat and Poultry farming.	PSO5	
				CO4	Learn pig management, Housing systems, Routine operations in goat, sheep, poultry and pig management	PSO1 PSO7	

9	IV	Core Course - IX	Technology of Western Dairy Products	CO1	Gaining knowledge of Recent trends in dairy technology, Membrane technology Food preservation, and Water activity.	PSO2	1,2,3,5,6
				CO2	Learn of different western dairy products such as Cheese, Condensed, Evaporated ,Cream & Butter etc	PSO4	
				CO3	In-depth theoretical and practical understanding of manufacturing of western dairy products.	PSO6	
				CO4	After completing one can work as supervisor, Dairy consultant and manufacturer of one or more western dairy products	PSO5	
10	Annual	Lab Course -X	Practical paper- X	CO1	Learn the Morphological and economical characters of breeds of Cattle, Buffalo, Sheep, Goat, pig, poultry	PSO1	1,2,3,4
				CO2	Familiarize the different tools of Dairy animal Management	PSO7	
				CO3	Understanding and Demonstration of Grading of Egg.	PSO6, PSO8	
				CO4	Develop skill in Shearing of Wool	PSO1, PSO2, PSO3	
11	Annual	Lab Course XI	Practical Paper – XI	CO1	Learn methods for the preparation of various Preparation of dairy products such as Curd, Lassi, Shrikhand, Kulfi, Ice icream, Khoa, Ghee etc.	PSO1	1,2,3,4,5,6
				CO2	In-depth theoretical and practical understanding of manufacturing of western and Indigenous dairy products.	PSO4	
				CO3	After completing one can work as supervisor, Dairy consultant Manufacturer of one or more dairy products	PSO5, PSO8	
12	Skill III	SEC I	Poultry Farming	CO1	Learn poultry breeds morphology and economic Importance	PSO3	1,2,3,4,5
				CO2	Understand Poultry housing, Hatchery & Management of diseases.	PSO5	
				CO3	Visits- Poultry farms, Vet. Hospitals, Hatcheries and Poultry feed factories.	PSO6	

13	Skill IV	SEC II	Dairy by-products	CO1	Learn definition, classification of by-products of Indian Dairy Industry, Composition of by-products.	PSO3	1,2,3,4,5
				CO2	Understand Various principles of utilization of food products. Methods of utilization of skim milk, whey-whey beverage, ghee residue	PSO5	
				CO3	Visits to Ghee manufacturing units,	PSO6	
				CO4	Visits to Beverage industry, lactose manufacturing units, casein manufacturing units, candy and chocolate manufacturing unit	PSO6	
14	V	Core Course -XII	Animal Nutrition	CO1	Learn Role of Various nutrition in animal's nutrition.	PSO2	1,2,3,4,5
				CO2	Understand Basic knowledge of Digestive system of animals and Ruminant digestion	PSO6, PSO7	
				CO3	Given the knowledge of Evaluation and Estimation of Energy Value of Feed	PSO6	
15	V	Core Course -XIII	Reproduction in Farm Animals	CO1	Learn basic knowledge of Reproduction in animals ,	PSO1	1,2,3,4,
				CO2	Given knowledge of modern tools Bio techniques in animals reproduction,E.T.T. Cloning	PSO6	
				CO3	Provide information and training in A.I	PSO4, PSO7	
16	VI	Core Course -XIV	Fodder production, Feeds and Feeding	CO1	Introduce learners to key concept of feeds and feeding of livestock	PSO1	1,2,3,4,5,6
				CO2	Providing information of processing and preservation technology of feeds and fodder	PSO3, PSO4	
				CO3	Another outcome of the programme is to develop a strong subject foundation in dairy farm owner, Fodder producer	PSO5	

17	VI	Core e - XV	Animal Genetic and Breeding	CO1	Given the knowledge of basic laws of Mendels Law, Sex linked inheritance. Hardy Weinberg equilibrium	PSO1	1,2,3,4,
				CO2	Providing information of The basic genetic principles applied in breeding of animals to increase their productivity	PSO3, PSO4	
				CO3	Another outcome of the programme is to develop a strong subject foundation in dairying	PSO7	
18	Annual XVI	LAB COU RSE XVI	Practical Paper No. XVI	CO1	Learn samples and preparation of samples for chemical analysis..	PSO1	1,2,3,4,5
				CO2	Providing information of Determination of DM and Moisture, ether extract ,crude fiber ,Nitrogen and crude Protein content in feeds	PSO3, PSO4	
				CO3	Practical demonstration of Silage Making & Hay Making.	PSO8	
				CO4	To understand Feeding standards and nutrient requirement to different categories of livestock, Prepare feed formulations	PSO6	
19	Annual XVII	LAB COU RSE - XVII	Practical Paper No. XVII	CO1	Given the knowledge of Study of reproductive organs of cattle on Charts / Models /Specimens. Estimation of gene frequency, genotype frequency, breeding efficiency of the cow	PSO1	1,2,3,4,5
				CO2	Given the technical and practical knowledge of preparation of artificial vagina, collection of Semen by AV method Preparation of heat expectancy chart. Assembling of AV Use of tools Macroscopic, Microscopic Bacteriological examination of semen.	PSO3, PSO7	
				CO3	To understand insemination of cow in oestrus	PSO8	
20	Skill V	SEC III	SEC III. Conservation of Greens	CO1	Learn Principles of conservation, Suitable crops for conservation and stage of harvesting.	PSO1	1,2,3,4,5
				CO2	Given the technical and practical knowledge of preparation of Silage making & Hay Making	PSO6, PSO7	
				CO3	SE Course will provide additional opportunity for a student to develop skills of interest in this field of study Visits to-silage and hay making units	PSO8	

21	Skill VI	SEC III	SEC IV. Artificial Insemination	CO1	Learn male and female reproductive system, oestrus cycle Heat detection Technique of AI, Pregnancy diagnosis.	PSO1	1,2,3,4,5
				CO2	Given the technical and practical knowledge of preparation of Silage making & Hay Making	PSO6, PSO7	
				CO3	SE Course will provide additional opportunity for a student to develop skills of interest in this field of study Visits to- Visits to VET Hospitals and AI centre	PSO8	

HEAD

Department of Dairy Science

❖ Programme Specific Outcomes of Dairy Science PSO)

1. The aim of the undergraduate degree in Dairy Science is to make students knowledgeable about the various basic concepts in livestock farming, anatomy and physiology of digestive system.
2. Role of nutrients in animals, concepts of feeds and cultivation practices of various fodders. which involve the use of knowledge and skills of Dairy Science and acquire knowledge.
3. Provide information regarding dairy animals of different Species.
4. Providing information about milk processing and Training.
5. Creating entrepreneurs in different dairy activities and business Programmes
6. Given the knowledge of Dairy Science through theory and practical.
7. Use modern Dairy tools, models, charts, and Equipment.
8. To understand good laboratory practical and safety. To develop research-oriented skills.

❖ Programme Outcomes (PO) in Dairy Science

1. After the completion of this programme the student will be in a position to work as livestock supervisor in a various well established dairy farm and animals breeding farm.
2. It involves understanding concepts of cattle and buffalo breeding, conservation of animals genetic resources etc.
3. As as supervisor in dairy palnt either in equipments and plant design .
4. Dairy Consultant or take up entrepreneurial ventures in milk plants or ice cream,cheese, butter units.
5. One can also work as a Dairy Farm Manager.
6. Additionally, they will be able to get job opportunities as employment in Veterinary Assistant/ Livestock assistant /Dairy farm assistant, artificial insemination assistant /farm supervisor etc.
7. Another outcome of the programme is to develop a strong subject foundation in dairy farm owner, Fodder producer, Cattle feed AI centre Owners and information science.
8. SE Course will provide additional opportunity for a student to develop skills of interest in this field of study.

Department of Dairy Science

❖ Course Outcome (CO) in Dairy Science.

Paper No	Title of paper & CO
I	Dairy Farming in India Domestication and History of Dairy Animals, Animal Husbandry region, Animal's adaptation, Study of Dairy Farming, animals housing etc, Role of Dairy Cooperative, NDDB and OFP. Dairy Farm Consultants.
II	Milk and Physiology of Lactation Production and Utilization trends of milk in India, Lactation, Lactation Period, Morphology and anatomy of Udder Endocrine glands and Hormones in milk secretion, Milk : Definition, Composition, Study of major milk constituents Classification of Bacteria and Fermentation of Milk.
III	Processing Technology of Milk Procurement of milk : Collection and Transportation, Cooling of milk .Milk Processing, Straining, Filtration, Clarification, Pasteurization LTLT, HTST, Homogenization ,Sterilization Legal standards – HACCP, FSSAI, Judging & Grading of milk. Pricing policy Standardizing
IV	Farm Animal Health Management Economics importance of diseases such Bacterial, viral, protozoan, Lactating Cows, Parasitic and Protozoan diseases, dystokia, poultry, sheep and goat diseases.
V	Practical Paper V Morphology of cattle and buffalos, Study of Udder, Recording Temperature, pulse rate, respiration, Heart rate and Auscultation, Drenching, Injections and Vaccinations. Pathological tests – Blood tests, Urine tests, Test for mastitis., Preparation of drugs like, ointment/liniment/bolus Organoleptic evaluation of milk / platform tests. Determination of Fat. Record keeping. Visit to – Dairy farm, Dairy plant, Agricultural and Veterinary College, Veterinary Hospital.
VI	Dairy Animal Management Principles of general management. Study of general management practices: Grooming, Drying off, Control of bad habits, Castration, Dehorning, Deworming, Trimming. Casting, restraining and handling of animals, Determination of age and dentation, Identification marks. Cattle and buffalo management.
VII	Technology of Indigenous Dairy Products Introduction to milk products technology, Indigenous dairy products and entrepreneurial opportunities. Classification of milk products. Market milk products-scope and limitations.
VIII	Sheep, Goat, Pig and Poultry Farming History of domestication Taxonomic classification Common terminologies used in goat, sheep, poultry and pig management Role, Housing systems, Routine operations in goat, sheep, poultry and pig management
IX	Technology of Western Dairy Products Recent trends in dairy technology, Membrane technology Food preservation. Water activity. Study of different western dairy products such as Cheese, Condensed, Evaporated, Cream & Butter etc

Department of Dairy Science

X	Practical Paper – X Study of Cattle, Buffalo, Sheep, Goat, pig, poultry breeds Grading of Egg & Wool, Shearing of Wool
XI	Practical Paper – XI Preparation of dairy products such as Curd, Lassi, Shrikhand, Kulfi, Ice icream, Khoa, Ghee etc
SEC I	Poultry Farming History and domestication of poultry farming. Study of poultry breeds,Poultry housing,Hatchery & Management of diseases. Visits- Poultry farms, Vet. Hospitals, Hatcheries and Poultry feed factories.
SEC II	Dairy by-products Introduction, definition, classification of by-products of Indian Dairy Industry,Composition of by-products.Various principles of utilization of food products.Methods of utilization of skim milk, whey-whey beverage, ghee residue Visits to-Ghee manufacturing units, Beverage industry, lactose manufacturing units, casein manufacturing units, candy and chocolate manufacturing unit
XII	Animal Nutrition Role of Various nutrition in animals nutrition. Basic knowledge of Digestive system of animals, animal nutrition. Evaluation and Estimation of Energy Value of Feed
XIII	Reproduction in Farm Animals The basic knowledge of Reproduction in animals ,Study of Bio techniques in animals reproduction,E.T.T. Cloning, A.I Etc.
XIV	Fodder production, Feeds and Feeding Introduce learners to key concept of feeds an cultivation practices of various Fodder. Enlighten the student about processing and preservation technology of feeds and fodder.
XV	Animal Genetic and Breeding Mendals Law, Sex linked inheritance. Hardy Weinberg equilibrium The basic genetic principles applied in breeding of animals to increase their productivity.
XVI	Practical Paper No. XVI General precautions in Nutrition laboratory., Collection of fodder samples and preparation of samples for chemical analysis.Determination of DM and Moisture, ether extract ,crude fiber ,Nitrogen and crude Protein content in feeds. Silage Making & Hay Making.Feeding standards and nutrient requirement to different categories of livestock,feed formulations
XVII	Practical Paper No. XVII Study of reproductive organs of cattle on Charts / Models /Specimens.Estimation of gene frequency, genotype frequency,breeding efficiency of the cow. Preparation of heat expectancy chart. Assembling and preparation of artificial vagina, collection of Semen by AV method .Macroscopic, Microscopic Bacteriological examination of semen. Study of AI equipments and insemination of cow in oestrus.

Department of Dairy Science

SEC III	Conservation of Greens Principles of conservation, Suitable crops for conservation and stage of harvesting, Silage making & Hay Making
SEC IV	Artificial Insemination Study of male and female reproductive system, oestrus cycle Heat detection Study of AI Equipments Time and Technique of AI Pregnancy diagnosis. Visits to VET Hospitals and AI centre.

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