

Government Degree College (Autonomous), Baramulla

1st SEMESTER

SKILL ENHANCEMENT COURSE (SEC)

VETERINARY TECHNOLOGY

DAIRY TECHNOLOGY-I (DAIRY FARM MANAGEMENT & MILK PRODUCTION)

Course Code:

CREDITS: THEORY: 2,
PRACTICAL: 2

Learning objective: To provide the students with a comprehensive understanding of the principles and practices of dairy management and milk hygiene.

Learning Outcome: Upon completion of this course, the students will be proficient in managing dairy farming operations, ensuring animal health, optimal nutrition, effective disease control, and hygienic milk production.

THEORY (2 Credits)

Unit 1: Dairying Management

(16 hours)

Overview of the dairy industry and its importance in agricultural economy; Dairy farming systems; Dairy breeds and their characteristics; Nutritional management of dairy animals; Feed formulation and ration planning; Animal housing management; Dairy equipments; Record-keeping and farm data management; Common diseases of dairy animals; Vaccination and de-worming schedules; Mastitis control and management; Bio-security; Breeding techniques; Physiology of reproduction in dairy animals; Estrus detection and synchronization; Lactation cycle and milk secretion process; Dry period management; Calf management.

Unit 2: Milk and Milk Hygiene

(16 hours)

Milk composition and properties, Common milk adulterants and their detection; Role of milk in human nutrition; Factors affecting milk composition; Milking procedure; Clean milk production; Milk borne diseases and their control; Dairy development Schemes, Dairy Cooperatives and Operation Flood.

PRACTICAL (2 Credits)

(64 hours)

Study of external body parts of cow; Layout of housing of dairy animals; Ration formulation; Hay making; Silage making; Vermicomposting. Determination of fat, SNF, specific gravity, and pH of milk; Bacteriological quality of milk –MBRT, SPC, Resazurin test, DMC; Determination of common adulterants; Visit to a modern dairy farm/feed mill. Short visits to local dairy farm.

BOOKS RECOMMENDED

1. Jagdish Prasad. Animal Husbandry and Dairy Science, Kalyani Publications
2. SuKumar De. 2019. *Outlines of Dairy Technology*, 46th Edition. Oxford University Press.
3. Walstra P, Wouters JTM & Geurts TJ. 2006. *Dairy Science and Technology*. 2nd Ed. Taylor & Francis group.
4. Jennes R & Patton S. 1969. *Principles of Dairy Chemistry*. Wiley Eastern publication.
5. Sherikar A.T, Bachhil, V.N and Thapliyal, D.C. *Elements of Veterinary Public Health by ICAR*. Indian Council of Agricultural Research (ICAR)
6. Directorate General of Health Services, MoHFW, Gol, New Delhi. 2005. *Manual Methods of Analysis of Foods (Milk and Milk Products)*.
7. Milk India Foundation. *Analysis of Milk and Milk Products — A lab Manual*. 2nd. Biotech Books, Delhi — 110035.

**2nd SEMESTER
COURSE (SEC)**

SKILL ENHANCEMENT

VETERINARY TECHNOLOGY

**DAIRY TECHNOLOGY-II (VALUE ADDITION, PACKAGING, & QUALITY
CONTROL IN DAIRY)**

**Course Code:
PRACTICAL: 2**

CREDITS: THEORY: 2,

Learning Objective: To equip the students with comprehensive knowledge and practical skills in milk processing, value addition, packaging, and quality control.

Learning Outcome: Upon completion of this course, the students will gain proficiency in milk processing techniques, creation of value-added dairy products, and by-product utilization. Further, students shall be able master modern packaging methods and quality control standards to ensure safe and high-quality dairy products.

THEORY (2 Credits)

Unit 1: Dairy Processing and Value Addition

(16 hours)

Milk preservation; Milk procurement methods; Milk reception—Platform tests; Milk processing—Filtration/clarification, standardisation, Homogenisation, pasteurisation, sterilisation, packaging & storage; Milk Products—Khoa, Panir, Cheese, Butter, Ghee, Milk powder, and frozen desserts; Starter cultures & fermented milk products; Special milks; Milk by-products—Whey, butter milk and ghee residue, casein, casein hydrolysates & Lactose; Nutritional characteristics of byproducts.

Unit 2: Dairy Product Packaging and Quality Control

(16 hours)

Packaging of Milk and Milk products; Types of packaging materials; Modern Packaging Techniques—Vacuum Packaging, Modified atmosphere packaging (MAP), Eco-friendly packaging, Aseptic Packaging (AP); Nutritional labelling of milk products. Dairy plant hygiene and sanitation; disposal of dairy waste; Quality (ISO 9001:2000) and food safety (HACCP) systems; Chemical and microbial tests for grading raw milk; Microbiological standards for milk and milk products.

PRACTICAL (2 Credits)

(64 hours)

Layout of milk processing milk; Platform tests; Determination of efficiency of pasteurisation; Analysis of milk in reference to FSSAI standards; Grading of milk; Cleaning and sanitation techniques of dairy plant; Preparation of various milk products and by-products; Visit to a modern dairy processing plant.

BOOKS

RECOMMENDED

1. Modern Technology Of Milk Processing & Dairy Products (4th Edition)
2. SuKumar De. 2019. *Outlines of Dairy Technology*, 46th Edition. Oxford University Press.
3. Walstra P, Wouters JTM & Geurts TJ. 2006. *Dairy Science and Technology*, 2nd Ed. Taylor & Francis group.
4. Marth and Steele. 2001. *Applied Dairy Microbiology*. Second Edition. Marcel Dekker.
5. Mattila Sandholm and Saarela Maria. 2003. *Functional Dairy Products*. Woodhead Publishing Limited.
6. Kumar Vijay, *Byproduct Technology*. NDRI Kamal Publication.
7. Directorate General of Health Services, MoHFW, GoL New Delhi. 2005. *Manual Methods of Analysis of Foods (Milk and Milk Products)*.
8. A. Y. Tamime. 2009. *Milk Processing and Quality Management*. Blackwell Publishing Ltd. ISBN: 978-1-405-14530-5.
9. Milk India Foundation. *Analysis of Milk and Milk Products - A lab Manual*. 2nd ed. Biotech Books, Delhi – 110035.
10. Sherikar A.T, Bachhil, V.N and Thapliyal, D.C. *Elements of Veterinary Public Health by ICAR*. Indian Council of Agricultural Research (ICAR)

3rd SEMESTER

**SKILL ENHANCEMENT COURSE (SEC)
VETERINARY TECHNOLOGY**

**DAIRY TECHNOLOGY-III (DAIRY MARKETING, ECONOMICS, &
ENTREPRENEURSHIP)** **Course code:**

CREDITS: THEORY: 2, PRACTICAL: 2

Learning Objective: To equip the students with the knowledge and necessary skills required for economic analysis, financial management, sustainable practices, dairy entrepreneurship and innovation.

Learning Outcome: Upon completion of this course, the students shall conveniently be able to set up economically viable dairy enterprises proficient in setting up economically viable dairy enterprise, while obtaining maximum benefits from the government schemes and locally available resources.

THEORY (2 CREDITS)

Unit 1: Dairy Marketing

(16 hours)

Importance of marketing in the dairy industry; Market structure and supply chain; Consumer behaviour; Factors influencing dairy product consumption; Methods of market research; Branding strategies for dairy products; Packaging and labelling requirements; Pricing models and strategies; Distribution channels; Cold chain management for dairy products; Promotional and advertising strategies; Sales techniques and skills; Managing sales teams and distribution networks; Customer relationship management (CRM); Sales forecasting and performance evaluation; Negotiation and conflict resolution in sales.

Unit 2: Dairy Economics and Entrepreneurship

(16 hours)

Economic characteristics of dairy farming; Input-output relationships; Economies of scale and scope; Cost-benefit analysis and profitability; Budgeting and financial forecasting; Capital investment and financing options; Cash flow management and financial statement. Risk mitigation strategies and insurance options in a dairy enterprises; Business development plan for dairy enterprise; Characteristics of successful entrepreneurs; Feasibility studies and market analysis; Financial planning and resource allocation; Government schemes and subsidies for dairy entrepreneurship; Legal and regulatory requirements; Public-private partnerships in the dairy sector; Trends and innovations in sustainable dairy farming.

PRACTICALS (2 Credits) (64 hours)

Preparation of various bankable projects for dairy enterprise; SWOT analysis; Cost-benefit analysis; Preparation of balance sheet; Use of Data management tools; Interaction with dairy entrepreneurs and industry experts.

BOOKS RECOMMENDED

1. R. M. Acharya & Puneet Kumar. 2013. Dairy Production and Business Management. Satish Serial Publishing House (SSPH).

2. Gangadhar K.S, Satyanarayan,K, Veeranna,K.C, Jagadeeswary, V, Shilpa shree,J. 2023. Livestock economics marketing entrepreneurship business management & accountancy. New India Publishing Agency.
3. Pranav Kumar, Amandeep Singh & Devesh Thakur. 2019. A Handbook for dairy Entrepreneurs. New India Publishing.
4. Shoji Lal Bairwa, Rakesh Singh & Kushwaha Saket. 2013. Economics of Milk Marketing. Lap Lambert Academic Publishing GmbH.
5. Ramesh Singh. 2023. Indian Economy. McGraw Hill Education.