

HOW TO APPLY

- Take a printout of the application (PDF), fill it and take the approval of the competent authority.
- The application may then be scanned and sent to richasingh.ndri@gmail.com on or before **20.11.2025** selected participants will be informed via email.
- The participants are also required to fill out the Google form as an advance copy Google form: [Click here](#)

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REGISTRATION FEES

The participants are required to pay the sum of Rs 50/- as registration fee (non-refundable) in the form of Indian Postal Order/ Demand Draft in favor of “ICAR UNIT, NDRI” payable at Karnal.

IMPORTANT DATES

Last date of application	November 20, 2025 (Thursday)
Communication to participants	November 22, 2025 (Saturday)

VENUE

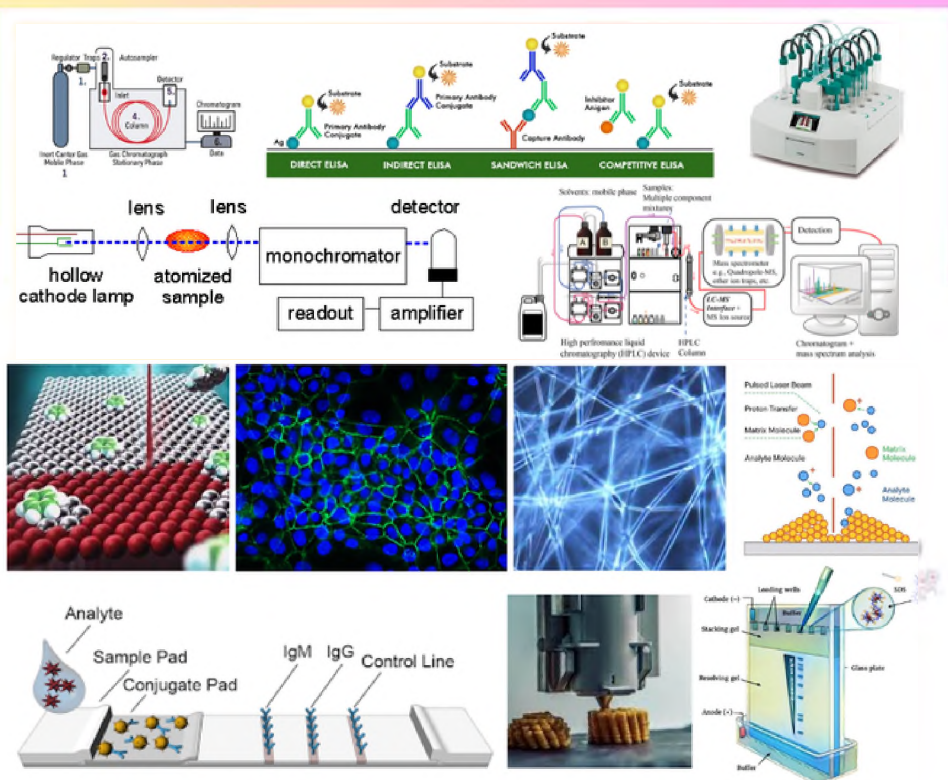
Dairy Chemistry Division , ICAR-National Dairy Research Institute
Karnal (Haryana) – 132001

Winter School

on

Application of Foodomics and Advanced Analytical Techniques for Ensuring Quality, Safety and Functional Properties of Dairy Foods

December 6th to 26th, 2025



Sponsored by

Agricultural Education Division
Indian Council of Agricultural Research

Organized by

ICAR-National Dairy Research Institute
Karnal - 132001 (Haryana)



ABOUT THE COURSE

In recent years, consumers have shown a growing demand for innovative and safe dairy foods. However, dairy products are often associated with potential risks such as contamination and adulteration, which can lead to food-borne illnesses. Ensuring the safety and quality of these products requires the use of precise, instrument-based analytical tools. The course focuses on applying advanced analytical tools and emerging foodomics approaches to improve the quality, safety, and functionality of dairy foods. It introduces participants to omics-based research areas including metabolomics, proteomics, nutrigenomics, and bioinformatics. Through lectures, demonstrations, and hands-on sessions, participants will gain practical experience in advanced testing, rapid detection methods, biosensors, and molecular-level investigations. The course also emphasizes the regulatory and quality assurance framework necessary for accurate data generation and compliance with global standards. The participants will be better equipped to integrate analytical precision with modern research practices by the end of the program, contributing to innovation and safety in dairy science.

COURSE CONTENTS

Course curriculum has been designed to offer an extensive overview of various technologies having potential for assuring chemical and microbiological quality of dairy foods. Emphasis will be devoted to analytical techniques using various instrument based methods. It comprises of theory lectures as well as practical demonstration by resource persons from NDRI and invited personals from dairy and food industry.

SELECTED TOPICS TO BE COVERED

1. Exploring Foodomics- Analytical Prospects and Challenges in Ensuring the Quality and Safety of Food
2. Applications of Gas chromatography-Flame ionization detector (GC-FID) and Gas chromatography-Mass spectrometry (GC-MS/MS)- in dairy foods analysis
3. LC-MS/MS - principle, instrumentation and its application in proteomic analysis
4. Applications of High pressure liquid chromatography (HPLC) in dairy foods analysis
5. Applications of Atomic Absorption Spectroscopy (AAS) in dairy foods analysis
6. Applications of Lateral Flow assay (LFA) in detection of chemical contaminants in milk
7. Application of microfluidics for detection of adulterants in milk
8. Animal cell based biosensors for detection of toxins
9. Biosensors for detection of microbiological contaminants
10. Applications of Rancimat in predicting oxidative stability of fat rich milk products
11. Molecular imprinting technique- principle and application in extraction of biomolecules

12. Applications of Mastersizer in monitoring functional characteristics of dairy foods
13. Zetasizer- principle, instrumentation and application in characterization of nanoemulsion
14. Membrane filtration - principle, instrumentation and applications in preparation of low lactose milk
15. 3D printer - principle, instrumentation and application in printing of burfi
16. Electrospinning - principle , instrumentation and application in designing of smart nano sensors for predicting shelf life of dairy foods
17. Confocal microscopy- principle, instrumentation and application in analyzing the microstructure of food products
18. Rheometer – principle, instrumentation and application in rheological properties of dairy foods
19. FSSAI regulations and guidelines for Rapid Analytical Food Testing (RAFT) methods
20. Nutrigenomics: Exploring the distinctive relationship between genomics, nutrition and health
21. Bioinformatic tools and strategies for analyzing data generated by omics techniques

Apart from this, lectures have been planned on allied subjects such as statistical techniques, Intellectual property rights, commercialization of technologies etc. alongwith visit to different facilities at NDRI & to a Food/ Dairy establishment nearby Kamal.

ELIGIBILITY

Applications are invited from those working in the cadre of Assistant Professor and above or equivalent in the National Agricultural Research System (NARS) including State Agricultural Universities (SAUs), Deemed to be Universities (DUs), and Central Agricultural Universities (CAUs) in the area of Dairy/ Food Science/ Livestock Products Technology or the other allied disciplines and engaged in teaching or research or extension. The selection of the participants will be based on likely benefits of their participation to the sponsoring Institute/ organization.

Maximum number of participants: 25

TRAVEL AND ACCOMMODATION

- Selected lodging and boarding will be provided to the participants by the organizers.
- TA to the participants from SAU's and other ICAR institutions will be paid as per their entitlement for the class of travel restricted to the maximum of AC II Tier fare by the shortest route.
- The reimbursement will be made as per ICAR guidelines. Participants are required to produce original tickets in support of their claim. Air route is not permissible.
- Participants are requested not to bring their family members with them, as the institute has limited guest house facilities.
- No DA will be paid to the participants.

**Winter School on: Application of Foodomics and Advanced Analytical Techniques for Ensuring
Quality, Safety and Functional Properties of Dairy Foods
6 December to 26 December 2025
Application format for participation in training**

1. Name (in block letters) :
2. Designation :
3. Present employer address :

4. Address to which reply should be sent (in block letters) :
5. Permanent address :

6. Date of birth :
7. Sex :
8. Marital Status :
9. Teaching/research/professional experience (mention post held) during last five years and numbers of publications.

10. Mention if you have participated in any research seminar, Summer/Winter/Short Course etc. during last five (5) years under I.C.A.R./ Other organizations.

11. Online Payment/Transaction :
Details (attach copy of payment receipt)

12. Academic Record

Degree	Discipline	Year	Class	University
Ph.D				
Master				
Bachelor				
Others				

Signature of the Applicant:

Date:

Place :

13. Recommendations of forwarding Institute

Signature:

Designation:

Address:

Date:

Certificate

It is certified that the information was furnished by the office record and was found corrected.