

**Cornell Dairy Foods Extension**  
**Program Syllabus - Basic Dairy Science & Sanitation Course**

**Instructors:**

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Additional instructors and contributors to this course include representatives of NY State Agriculture & Markets and guest instructors from industry.

**Course Contact:**

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**Overview:**

This course is a required Prerequisite Course for the Dairy Foods Extension Certificate Programs (see attached flyer for details), but can also be used as a stand-alone training program. It is a 2.5 day course, offered at least once a year on the Cornell campus. The course may be offered at other locations; interested parties should contact Janene Lucia for further information on course dates, locations and registration fees.

**Learning Outcomes:**

This course will provide attendees with information in 4 key program areas that are listed below, along with the key learning outcomes in each area:

**Basic Dairy Microbiology/Food Safety Overview**

- Know key foodborne pathogens that can be transmitted through dairy foods and describe likely entry points of these pathogens in the dairy foods continuum.
- Identify dairy processing practices that prevent or reduce the likelihood of biological, chemical and physical hazards in dairy foods.
- Know classes of dairy spoilage organisms and describe likely entry points in the dairy foods continuum.
- Be able to describe key characteristics of microorganisms relevant to dairy production and food safety, including factors affecting microbial growth and survival (e.g., temperature, water activity, pH).

**Good Manufacturing Practices / Dairy Sanitation**

- Know key components of GMPs that need to be observed and practiced in dairy processing facilities.
- Identify cleaning agents and sanitizers commonly used in dairy processing and their application.
- Understand key components of cleaning/sanitation programs such that they can be assessed in a dairy processing facility.

**Milk Composition & Unit Processing Operations**

- Know the key components of milk and their respective roles in dairy products and how key attributes of dairy products (e.g., pH, water activity) influence microbial growth and survival.
- Identify primary dairy unit processing operations and their effects on dairy product composition, quality and properties and on microbial populations.

**Dairy Regulations/Food Safety Modernization Act**

- Identify regulatory agencies responsible for dairy products in the US and name key regulations and policies relevant to dairy food production, processing and safety (e.g., NY State, Pasteurized Milk Ordinance, Code of Federal Regulations, and the Food Safety Modernization Act).

**Evaluation:**

In order to receive a certificate for successful completion, attendees must pass a test administered at the end of the course. This is an open book test, but is timed such that there is only limited time to search for information. Test questions will include multiple choice, short answer, and true/false questions. A Certificate of Completion for this course is required for all those enrolled in a Cornell Dairy Foods Certificate Program as it is a prerequisite requirement. This course also includes a pre-course test to determine the knowledge of all attendees before the start of the course.

# Cornell Dairy Foods Extension Certificate Program

## Core Competencies & Learning Objectives

### Fluid Milk Processing for Quality & Safety Certificate

### Yogurt and Fermented Dairy Products (Basic/Advanced Certificate)

### Cheese and Cheese Products (Basic/Advanced Certificate)

#### Core Competencies:

- Regulations for Grade “A” Milk
- Milk Microbiology from Farm to Table
- Factors Influencing Raw Milk Quality
- Unit Operations for Processing & Packaging Fluid Milk
- Quality & Shelf-life of Fluid Milk
- Evaluating Milk Shelf-life & Quality; Trouble Shooting Defects
- Procedures to Improve & Maintain Optimum Shelf-life
- Ensuring Product Safety through HACCP & GMP Principles

#### Core Competencies (Basic):

- Milk Quality & Basic Chemistry
- Basic Dairy Microbiology
- Starter Cultures for Fermented Products
- Product Processing & Formulation
- Product Evaluation & Defects
- Product Safety & Protection
- Record Keeping/Observations
- Dairy Sanitation

#### Core Competencies (Advanced\*):

- Advanced Applications in Fermented Milk Processing Technology
- Product Development
- Product Evaluation & Quality Assurance
- Ensuring Product Safety through HACCP & GMP Principles

#### Core Competencies (Basic):

- Milk Quality & Basic Chemistry
- Basic Dairy Microbiology
- Starter Cultures for Cheese Varieties
- Standardization & Processing Options
- Curd Handling Techniques
- Molding, Brining & Curing
- Record Keeping/Observations
- Dairy Sanitation

#### Core Competencies (Advanced\*):

- Advanced Concepts in Cheese Manufacture
- Cheese Grading & Quality Assurance
- Microbiology & Biochemistry of Cheese Manufacture & Aging
- Ensuring Product Safety through HACCP & GMP Principles

\* in development

### Basic Dairy Sanitation & Safety Workshop (2.5-day course):

Basic Dairy Microbiology/Food Safety Overview

Good Manufacturing Practices / Dairy Sanitation

Milk Composition & Unit Processing Operations

Dairy Regulations/Food Safety Modernization Act

*\*Required Prerequisite Course for Dairy Foods Extension Certificate Programs. Offered as a stand-alone GMP training program.*

# Cornell Dairy Foods Extension Certificate Program

## Curriculum & Requirements

### Fluid Milk Processing for Quality & Safety Certificate

#### Curriculum & Requirements:

- Required Prerequisite - Basic Dairy Science & Sanitation Course (3 days)
- HTST Pasteurization (2.5 days) or Vat Pasteurization Course (1.5 days)
- HACCP for Dairy (2.5 days)
- Fluid Milk Processing for Quality & Safety (2 days)
- Written Test

### Yogurt and Fermented Dairy Products Certificates

#### Basic Curriculum & Requirements:

- Required Prerequisite - Basic Dairy Science & Sanitation Course (3 days)
- HTST Pasteurization (2.5 days) or Vat Pasteurization Course (1.5 days)
- Cornell's Basic Cultured Products Workshop (2.5 days)

#### Advanced Curriculum & Requirements\*:

- Must Complete the Basic Certificate Requirements
- Proven Experience with Fermented Milk Products (2+ years)
- HACCP for Dairy (2.5 days)
- Cornell's Advanced Cultured Products Workshop (3 days)
- Written Test & Oral Review

\* in development

### Cheese and Cheese Products Certificates

#### Basic Curriculum & Requirements:

- Required Prerequisite - Basic Dairy Science & Sanitation Course (3 days)
- HTST Pasteurization (2.5 days) or Vat Pasteurization Course (1.5 days)
- Cornell's Basic Cheese Making Workshop (2 days)

#### Advanced Curriculum & Requirements\*:

- Must Complete the Basic Certificate Requirements
- Proven Experience with Cheese Products (2+ years)
- HACCP for Dairy (2.5 days)
- Cornell's Advanced Cheese Products Workshop (3 days)
- Written Test & Oral Review

\* in development

*To obtain a Dairy Foods Extension Certificate, candidates must successfully complete all curriculum requirements and tests.  
All training courses offered by the CU Dairy Foods Extension Program may be taken as stand-alone programs.*

## Cornell University Dairy Foods Extension Certificate Program

*For more detailed information or to enroll in the program contact:*

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607-255-2892

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This Certificate Program is offered by the Cornell University Department of Food Science Dairy Foods Extension Team. The program is designed to provide trained personnel for the dairy industry and is open to all interested parties.