



National FFA Career Development Events

*A Special Project of the
National FFA Foundation*

National FFA Career Development Events

General Information

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These are the official rules and regulations for National FFA Career Development Events for 2012-2016. Refer to the CDE webpage on ffa.org for the most up-to-date edition of the career development event handbook.

Prepared and published by the National FFA Organization. The National FFA Organization is a resource and support organization that does not select, control or supervise state association, local chapter or individual member activities except as expressly provided for in the National FFA Organization Constitution and Bylaws. The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff.

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education. National FFA Online, www.ffa.org, FFA's Internet web site, can provide information about the National FFA Organization.

Philosophy of National FFA Career Development Events

The National FFA Organization is dedicated to organizing experiences that will meet the future needs of students while accomplishing the current purposes of agricultural education. The primary goal of career development events is to develop individual responsibilities, foster teamwork and promote communication while recognizing the value of ethical competition and individual achievement.

The activities in each career development event:

- include problem solving, critical thinking and teamwork skills, where appropriate.
- encourage appreciation for diversity by reducing barriers to participation among members.
- develop general leadership and recognize individual and team achievement.
- promote concentrated focus on future needs of members and society.

The National FFA Organization assumes the leadership role in developing and continuously improving relevant FFA career development events. National career development events should reflect instruction that currently takes place in the entire agricultural education program, including classroom instruction, laboratory instruction, individualized instruction and/or supervised agricultural experience. Career development events and awards are intended to be an outgrowth of instruction. Also, it is appropriate for the national organization to develop career development events and awards that stimulate instruction in emerging areas that reflect both current and future community, national and global work force needs. National FFA Career Development Events should be developed with significant input from FFA members, teachers, partners, respective industry sponsors and others involved in agricultural education. The National FFA Organization continues to encourage accessibility and provide opportunities for achievement and recognition for students with diverse backgrounds.

Career development events that include team activities should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. Where appropriate, team activities will be included that require two or more members from one chapter working cooperatively.

Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards

Agriculture is a highly technical and ever-changing industry upon which everyone is dependent. In order to maintain agriculture as the nation's number one industry, it is crucial to understand the importance of agrisciences, marketing strategies, safe food production and continuous research. Strong, relevant agriscience programs are one way to can maintain the nation's agricultural edge.

The National AFNR Career Cluster Content Standards were developed as part of the National FFA 10 x 15 project to provide state agricultural education leaders and teachers with a forward-thinking guide for what students should know and be able to do through the study of agriculture. The National AFNR Career Cluster Content Standards should be used as a guide to develop well-planned curriculum in agriscience education to be delivered to students throughout the country. For a complete copy of the AFNR Career Cluster Content Standards please visit www.agedlearning.org.

National FFA Organization has adopted the AFNR Career Cluster Content Standards and integrated them into all national award and recognition programs for the benefit of the members, school administration and agriculture as a whole. Details outlining the incorporation of the standards in career development events can be found at the end of each event chapter in the CDE handbook.

Official CDE Rules and Policies – 2012-2016

General Rules

Violations of any of the following rules may be grounds for the event superintendent to disqualify the participants. National FFA staff and event superintendents will use the published rules and procedures to organize and implement the National FFA Career Development Events. Event activities may not be conducted due to lack of necessary materials, expertise or extreme impact to event budgets. Teams that are certified to compete will receive the current event format in a team orientation packet prior to the convention.

Official Dress Recommendations, Number of Participants and Number of Scores for Team Total

Event	Official Dress Appropriate	Number of Participants Allowed (per team)	Number of Scores Counted for Team Score
Agricultural Communications	Yes	3	3
Agricultural Issues Forum	Optional	3-7	Team Score Event
Agricultural Technology and Mechanical Systems	No	4	Top 3 Scores
Agricultural Sales	Yes	4	4
Agronomy	Yes	4	4
Creed Speaking	Yes	1	N/A
Dairy Cattle Management and Evaluation	Yes	4	4
Dairy Cattle Handlers	Yes	1	N/A
Environmental and Natural Resources	No	4	4
Extemporaneous Public Speaking	Yes	1	N/A
Farm Business Management	Yes	4	Top 3 Scores
Floriculture	Yes	4	4
Food Science and Technology	Yes	4	4
Forestry	No	4	4
Horse Evaluation	Yes	4	Top 3 Scores
Job Interview	Yes	1	N/A
Livestock Evaluation	Yes	4	4
Marketing Plan	Yes	3	Team Score Event
Meats Evaluation and Technology	No	4	Top 3 Scores
Milk Quality and Products	Yes	4	4
Nursery/Landscape	Yes	4	Top 3 Scores
Parliamentary Procedure	Yes	6	Team Score Event
Poultry Evaluation	Yes	4	Top 3 Scores
Prepared Public Speaking	Yes	1	N/A
Veterinary Science	No	4	4

Eligibility of Participants

- A. Each participant must be a current, bona fide, dues paying FFA member in good standing with the local chapter, state FFA association and the National FFA Organization during the school year which the participant qualified to participate at the national level.
 - 1. In the event a participant's name is not on the chapter's official roster for the years in which the dues were payable to the National FFA Organization, a past due membership processing fee, in addition to the dues, must be paid prior to the national event.
 - 2. National FFA membership staff will set the processing fee amount annually.
- B. The participant, at the national event, must:
 - 1. Be a high school FFA member; high school refers to grades 9-12. (A graduating senior is considered eligible to compete in state and national career development events up to and including his/her first national convention following graduation.)
 - 2. Have qualified as a 7th, 8th or 9th grade member to participate in the Creed speaking event.
 - 3. While in high school, be enrolled in at least one agricultural education course during the school year and/or follow a planned course of study; either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career.
 - 4. If a student moves to a different chapter or a different state once a he/she has qualified as a state representative in a career development event, that student may be allowed to compete in the national event with the school he/she qualified with during the qualifying year.
- C. A student may not participate more than once in the same official National FFA Career Development Event.
- D. No student may participate in more than one National FFA Career Development Event each year.
- E. Each member participating in a National FFA Career Development Event must submit the proper *Waiver, Release of Liability and Consent to Medical Treatment Form* prior to start of event.

Selection and Certification of State Teams

- A. Each state will submit a team declaration form by **June 1** prior to the national FFA convention. An entry processing fee will be charged for participation in each declared event with the exception of the dairy cattle handlers activity.
- B. Each team will be composed of the number of members determined by the specific event rules and formats. The members of a state team must be from the same chapter. Members must qualify in the career development event in which they are to participate at the national level. Teams must be selected at a state or interstate career development event held between the immediate previous national FFA convention and prior to the national FFA convention in which they are participating. States that qualify more than one year out must request and submit a written waiver for approval by the certification deadline.
 - 1. Online certification deadline: **September 15**.
 - 2. Online add/delete deadline: **Tuesday before convention at noon (Eastern)**.
- C. With extenuating circumstances a teacher may substitute another student from the chapter who may not have participated at a state qualifying event, with the exception of Creed speaking, dairy handlers activity, extemporaneous public speaking, job interview and prepared public speaking, which must be submitted and approved by state staff.

- D. The state supervisor of agricultural education or the executive secretary must certify that participants are eligible. If an ineligible student participates in any career development event, the member will be disqualified and may result in the disqualification of the team as well.
- E. All students must be certified online by the designated deadline. Once original certification has been completed, no member may be added without first deleting a member.
- F. The national organization will certify National FFA Career Development Event winners for international competition when states request, with the understanding that the state team will provide their own travel expenses.

Emergency Conditions

Under emergency conditions a state team participating in a National FFA Career Development Event may be made up of less than the required members. States must still certify teams prior to the national FFA convention, but fewer than the required members could compete if an emergency condition such as illness, death in the family or an act of God would occur. Those individuals competing would still be eligible to qualify for individual awards, if applicable.

Disqualification

- A. Any communication, verbal or non-verbal, between participants during a career development event will be sufficient cause to eliminate the team member involved from the career development event. The only exception to this would be communications between team members during the team activity portion of a given career development event.
- B. Teams or participants arriving after the career development event has begun may be disqualified or penalized.
- C. Any assistance given to a team member from any source other than the career development event officials or assistants will be sufficient cause to eliminate the team from the career development event.
- D. Event superintendents may stop any participant if they deem their manner to be hazardous either to themselves or others. Such action shall deem the individuals disqualified for that section of the career development event.
- E. Participants who start an event and do not complete the event without notifying event officials at the time of departure will be disqualified. This can affect the overall team rank and position. In some events this will also disqualify the entire team.
- F. Participants will not be allowed to utilize personal electronic communication devices, other than those approved by the event officials, during the entire course of the event. Participants who access personal electronic communication devices without prior approval of the event officials will be disqualified.
- G. No participant shall gain access to real materials that will be utilized by the event committee during competition. Any team, participant, advisor or coach reported and proven to do so will be disqualified from the national event.

Additions/Deletions of National Events

- A. National FFA staff is expected to be proactive in developing new or initiating changes within existing career development events to ensure that they meet the needs of FFA members.
- B. If fifteen (15) state supervisors/executive secretaries develop a proposal for a new career development event, the national FFA staff will conduct a study for the validity of the career development event and make a recommendation to the chief executive officer. Representatives of these states must be from each of the FFA regions. The same process may be used to eliminate a national career development event.
- C. Three years following the initiation of a new career development event, at least fifteen (15) states should be participating. After the next three-year period, at least twenty-six (26) states should be participating in order to retain the event at the national level.

Rules Committee/Scoring Appeals Process

- A. If a written appeal is filed within the seven (7) calendar days after results announcement, national CDE staff will review the appeal. Upon receiving input from team leader and division director, national CDE staff will accept or deny the appeal. The national CDE staff's recommendation will be shared with appeals committee and National FFA Chief Executive Officer for further input, if necessary.
 1. The written appeal must be filed with the Education Division staff responsible for scoring career development events within seven (7) calendar days of the results announcement and accompanied by a \$50 filing fee. The fee will be returned if the appeal is justified.
- B. The appeals committee will be chaired by the National FFA Awards, Recognition and Career Development Events Advisory Committee chairperson who will in turn appoint a representative of each of the following organizations: National Association of Supervisors of Agricultural Education (NASAE), National Association of Agricultural Educators (NAAE) and the American Association for Agricultural Education (AAAE). The National FFA staff responsible for career development events will also serve on the committee.

Waiver of FFA Rules

Any local chapter seeking a waiver of a National FFA policy or procedure must submit in writing to the chapter's state FFA association office. If the request is approved at the state level, it must be forwarded, under the signature of the state advisor or executive secretary, to the career development events education specialist. After study by the appropriate FFA staff, a recommendation to grant or deny the appeal will be forward to the chief executive officer for his/her approval. The request must be submitted to the national FFA staff at least 30 days prior to the scheduled event or due date for which the waiver is requested. This policy does not supersede any current FFA policy for appeals already established for a particular FFA program.

Selection of CDE Superintendents and CDE Committee Members

- A. Nominations for CDE superintendents may come to National FFA staff from the following sources:
 - 1. standing CDE superintendent
 - 2. current CDE committee members
 - 3. state leadership
 - 4. Team Ag Ed partners
- B. CDE superintendents will be selected by national CDE staff and approved by the National FFA Chief Executive Officer.
- C. Each CDE superintendent will serve a three to five year term. At the end of the superintendent's term, a qualified replacement will assume the duties of superintendent.
- D. National FFA staff and CDE superintendents will select qualified individuals to serve on CDE committees. Selection of committee members will be based on:
 - 1. individual qualifications.
 - 2. recommendations from state leaders, current CDE committee members, CDE superintendents or National FFA staff.
 - 3. recommendations from Team Ag Ed partners.
 - 4. current rotational procedures developed by each CDE committee.
 - 5. provide diversity for the committee.
 - 6. commitment to serve a minimum of three years on the committee.
- E. Final approval of new committee members is the responsibility of the National FFA CDE staff with input and recommendations from CDE event superintendent and committee.

Sanctioning Events

Sanctioning of non-national FFA competitive events (those competitive events conducted by organizations other than the National FFA Organization) as National FFA Career Development Events should occur when:

- 1. The highest quality event possible is conducted.
- 2. Organization conducting event and National FFA Organization agree that event can and should be sanctioned.
- 3. Event is recommended by the National FFA Staff responsible for CDEs with input and agreement from the Award and Recognition Advisory Committee and approved by the National FFA Chief Executive Officer.
- 4. National FFA is represented by staff responsible for career development events on the planning and implementation committee for each event.
- 5. Winners of the national sanctioned event will be recognized in the same manner as national career development events winners are currently recognized.

Official Dress

Participants are expected to observe the National FFA Code of Ethics and the proper use of the FFA jacket during career development events. (Please reference the latest edition of the Official FFA Manual.) Official FFA dress is highly recommended for all participants where appropriate and is required for the awards presentation and recognition.

Accessibility for All Students

All special needs requests and appropriate documentation as outlined in the special needs request policy must be submitted at time of certification.

- 1. Special needs policy is posted on the CDE program page at www.ffa.org/cde
- 2. Special needs request due: **August 15**

Written Document Penalties

A penalty of 10% of the total points allotted will be assessed for the written documents received after the postmarked deadline. If the document is still not received seven days after the postmarked deadline, the team/individual may be subject to disqualification.

1. National staff will mark late entries as such.
2. Event officials will be notified of late entries at the time written documents are provided for judging.
3. Event superintendent will ensure that penalty is applied.

National FFA Milk Quality and Products Career Development Event

A Special Project of the National FFA Foundation

Important Note

Please thoroughly read the Introduction Section at the beginning of this handbook for complete rules and procedures that are relevant to all National FFA Career Development Events.

I. Purpose

The purpose of the National FFA Milk Quality and Products Career Development Event is to promote practical learning activities in milk quality and dairy products, as well as assisting students in developing team decision-making skills.

The focus of the National FFA Milk Quality and Products Career Development Event is raw milk quality, federal milk marketing orders and attributes of selected milk products. The four general areas that contribute to milk quality and consumer demand are:

- Milk production.
- Milk quality and safety.
- Milk processing or manufacturing.
- Raw milk marketing.

For information about milk production and related careers, see the reference section at the end of this chapter.

II. Objectives

A. Utilize knowledge of milk quality

1. Producing quality milk
 - A. Regulations
 - B. Grades and classes of milk
 - C. Factors necessary to produce quality milk
2. Cleaning and sanitizing
 - A. General types of cleaners and sanitizers
 - B. Water hardness
 - C. Milkstone
 - D. Equipment, teats and udders
3. Cooling milk
4. Identifying diseases transmitted to consumers via milk
5. Recognizing causes of off flavors in milk

B. Utilize knowledge of milk pricing

1. Marketing and marketing concepts
 - A. Pricing trends
 - B. Economics
 - C. Supply and demand
2. Federal milk marketing orders, economics and distribution
 - A. Transportation costs
 - B. Cooperatives
 - C. Pricing

- C. **Utilize knowledge of the composition and quality characteristics of raw and pasteurized milk and milk products**
 - 1. Nonfat solids portion
 - 2. Milkfat
 - 3. Adulterants, including water
 - 4. Bacterial standards and usual methods of estimating their numbers
- D. **Understand the causes and control of mastitis, its influences on milk quality and cheese yield and the use of mastitis detection methods in controlling the disease**
 - 1. Causes
 - 2. Prevention
 - 3. Detection (California Mastitis Test and Direct Microscopic Somatic Cell Count)
 - 4. Treatment
 - 5. Regulatory programs
- E. **Identify cheese varieties and characterize properties**
- F. **Identify flavor defects and evaluate milk quality**

III. Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards

With the recommendation of the National FFA Board of Directors, all national FFA programs have incorporated these standards to guide the direction and content of program materials and activities. Refer to Appendix A in this chapter of the handbook for a complete list of the measurable activities that participants will carry out in this event. For details about the incorporation of AFNR standards, refer to the Introduction chapter of the CDE handbook.

IV. Event Rules

- A. **Team make-up-** Teams will consist of four members. Team ranking is determined by combining the scores of all team participants. Teams that have fewer than four members are not eligible for team awards, but students may receive individual awards.
- B. It is highly recommended that all participants be in official FFA dress for this event.
- C. Participants will report for instructions to the event superintendent at the time and place shown in the current year's team orientation packet.
- D. Participants are not to use strong deodorant, perfume, chewing gum or other detractors to the taste and smell senses.
- E. Any participant in possession of an electronic device in the event area is subject to disqualification.

V. Event Format

A. Equipment

- 1. Materials to be provided by the student: two no. 2 pencils.
- 2. *Optional - students may wish to bring a non-programmable calculator, bottled water and/or palette cleanser.*
- 3. Materials Provided: All paper and other supplies will be provided. Participants are not to bring clipboards, paper, etc., to the event. Participants are not to bring glass of any kind to the event.

B. Flow of Event

- 1. Milk Flavor Identification and Evaluation - 20 minutes
- 2. Fat Content Identification - 20 minutes
- 3. California Mastitis Test - 20 minutes
- 4. Cheese Identification - 20 minutes
- 5. Written Exam - 40 minutes
- 6. Problem Solving - 40 minutes
- 7. Team Activity - varied based on activities

VI. Team Activity

Teams members will work together to determine producer milk acceptability based on some or all of the following tests. Teams may have to perform the acceptability tests or analyze test results given. Teamwork will be assessed during the completion of the acceptability tests.

Examples of acceptability tests include:

- A. Recent producer history
- B. Percent TA (acidity)
- C. DMC (Direct Microscopic Somatic Cell Count)
- D. SPC (Standard Plate Count)
- E. PI count (Preliminary Incubation Count)
- F. Antibiotic screening test
- G. Sample temperature
- H. Sample freezing point

Teams will present their test findings, acceptability solution and improvement recommendations to a panel of judges.

Team Activity Scoring

- Accuracy of report results - 200 points
- Content of comments - 100 points
- Presentation (written/oral) - 50 points
- Teamwork - 50 points

VII. Individual Activities

A. Milk Flavor Identification and Evaluation (20 minutes) - 110 points

1. Ten milk samples will be scored on flavor (taste and odor) using the computerized scorecard. All samples of milk are prepared from pasteurized milk intended for table use and will score 1 to 10 (See Scoring Guide). Milk samples will be tempered to 60°F. *Only those cups provided* at the event may be used.
2. Participants are to use whole numbers when scoring “Flavor” of milk and to check only the most serious defect in a sample even if more than one flavor is detected. If no defect is noted, participants should check, “No defect” and score as a ten (See Scoring Guide).
3. Palette cleansers (e.g. apples or soda crackers) will be allowed for refreshing.

Scoring Guide – Refer to the current scorecard being used at the national level.

Scores may range from 1 to 10. On a quality basis:

- | | |
|--------|--------------------------------|
| 10 | excellent (<i>no defect</i>) |
| 8 to 9 | good |
| 5 to 7 | fair |
| 2 to 4 | poor |
| 1 | unacceptable/un-salable |

Example: Milk Flavor

DEFECTS	SCORES*		
	<i>Slight</i>	<i>Definite</i>	<i>Pronounced</i>
Acid	3	2	1
Bitter	5	3	1
Feed	9	8	5
Flat/Watery	9	8	7
Foreign	5	3	1
Garlic/Onion	5	3	1
Malty	5	3	1
Oxidized	6	4	1
Rancid	4	2	1
Salty	8	6	4

*Suggested scores are given for three intensities of flavor. All numbers within the range may be used. Intermediate numbers may also be used; for example, a bitter sample of milk may score 4.

B. Milk Fat Content of Fresh Milk Products (20 minutes) - 15 points

- Five samples of fresh fluid milk products will be identified according to their content of milk fat.
- The following products may be included among the samples: nonfat (skim) milk, reduced fat milk (2%), milk (3.3%), half and half (10.5%), coffee cream (18%) and whipping cream (30%).

C. California Mastitis Test (20 minutes) - 64 points

- The California Mastitis Test will be scored using even numbers from 0 to 8 inclusive. (See below for the Scoring Guide for the California Mastitis Test.)
- Eight samples of milk will be evaluated for abnormality, using the California Mastitis Test method.

Scoring Guide

CMT Test Score	Appearance	Participant Score
Negative	Mixture liquid, no precipitate	0
T	Slight precipitate tends to disappear with paddle movement	2
1	Distinct precipitate but does not gel	4
2	Distinct gel formation	6
3	Strong gel formation, which tends to adhere to paddle. Forms distinct central peak	8

D. Cheese Identification (20 Minutes) - 50 points

- Five cheese samples for identification will be selected from those listed below. Cubes of the cheeses will be available for tasting. Note: More than one sample of a given cheese may be used. A score of 3 points is given for each variety correctly identified. Uncolored cheeses may be used.
- In addition to identifying cheese samples, participants will classify characteristics of identified cheeses using the following matrix. Participants will have seven characteristics to select based on the five identified cheese samples (35 points possible). An example cheese characteristic problem can be found in the reference section of this handbook.

CHEESE CHARACTERISTICS MATRIX: A description of major varieties of cheeses popular among American consumers.

Variety	Moisture (%) (Maximum) ¹	Fat (%) (Minimum) ²	Gas Holes (Expected)	Pasta Filata ³	Brine/surface Salted	Ripened by	Origin
Bleu	46	50	no	no	yes	mold	France
Brick	44	50	no	no	no	bacteria	US
Brie	52.5	20	no	no	no	bacteria & mold	France
Cheddar	39	50	no	no	no	bacteria	England
Edam	45	40	no	no	yes	bacteria	Netherlands
Cream	55	33	no	no	no	unripened	US
Monterey, Jack	44	50	no	no	no	bacteria	US
Mozzarella	60	45	no	yes	yes	bacteria	Italy
Neufchatel	65	20	no	no	no	unripened	France
Parmesan	32	32	no	no	yes	bacteria	Italy
Processed							
American	40	50	no	no	no	bacteria	US
Provolone	45	45	no	yes	yes	bacteria	Italy
Swiss	41	43	yes	no	yes	bacteria	Switzerland

¹Some cheeses have a range in moisture permitted, but these are the highest permitted amounts.

²Some cheese standards use percentage by weight of total solids (e.g., Cheddar) while others use percentage by weight of the cheese (e.g., Cream).

³Curd is stretched in hot water to align the protein molecules and provide stretch to the curd.

E. Problem Solving (40 Minutes) - 100 Points

The problem solving test will consist of critical-thinking, multiple choice questions.

Topics may include, but are not limited to:

1. Decisions about the quality and acceptability of milk.
2. Calculations of the value of milk and components of milk.
3. Decisions about components of milk and milk products (including processing procedures).
4. Decisions about the use of chemicals in cleaning and sanitizing operations.

F. Written Test (40 Minutes) - 120 points

The written test will be comprised of a total of 60 multiple choice items. The test will be given in two parts with one part consisting of thirty (30) questions on quality milk production and a second part of thirty (30) questions on milk marketing.

VIII. Tiebreakers

If ties occur, the following events will be used in order to determine award recipients:

Team

1. Team activity
2. Exam score totals
3. Problem solving totals

Individual

1. Exam
2. Problem solving
3. Sum of milk flavors, fat ID, CMT and cheese ID

IX. Scoring

The event will be worth 2,240 total points based on positive-type scoring.

Activity	Points/Sample	Samples	Points
Milk Flavor Identification and Evaluation	11 points/sample	10 samples	110
Fat identification	3 points/sample	5 samples	15
California Mastitis Test (*Includes one free point)	8 points/sample	8 samples	65*
Cheese type identification	3 points/sample	5 samples	15
Cheese characteristic identification	7 point/sample	5 samples	35
Problem Solving			100
Written Exam		60 questions	120
Total Possible Individual Points			460
Team Activity			400
Total Points per team			2,240

X. Awards

Awards will be presented at the awards ceremony. Awards are presented to teams as well as individuals based upon their rankings. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

XI. References

This list of references is not intended to be all-inclusive. Other sources may be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

1. National FFA Core Catalog; National Career Development Event Questions and Answers—<http://shop.ffa.org/cde-qas-c1413.aspx>
2. Hoard's Dairyman, PO Box 801, Fort Atkinson, Wisconsin 53538. Phone (414) 563-5551. Issues used are from September of previous year to August of current year.
3. *Using the California Mastitis Test* published by the University of Missouri-Columbia Extension Division, Columbia, Missouri 65211. (Single copy free, write for price quote for multiple copies).
4. California Mastitis Test can be ordered from NASCO. Toll free 1-800-558-9595 or toll call, 1-414-563-2446. NASCO, 901 Janesville Avenue, Fort Atkinson, WI 53538.
5. The Cheese Reporter (Publication Number: ISSN 0009-2142), published weekly by Cheese Reporter Publishing Co., Inc. 4210 Washington Ave., Madison, WI 53704. Phone (608) 246-8430, Fax (608) 246-8431.
6. *Dairy Facts* – International Dairy Foods Association, 1250 H Street, N.W. Suite 900, Washington, DC 20005. Phone – 202-732-4332– www.idfa.org
7. Agricultural Marketing Service – www.ams.USDA.gov
8. *Dairy Foods: Producing the Best*, Dr. Robert Marshall; Instructional Materials Laboratory, 1400 Rock Quarry Road, Q139, University of Missouri; Columbia, MO 65211
9. The Dairy Practices Council: Guidelines – www.dairypc.org
 1. #21 – Raw Milk Quality Tests (\$4)
 2. #24 – Troubleshooting High Bacteria Counts of Raw Milk (\$5)
 3. #38 – Preventing Off-Flavors and Rancid Flavors in Milk (\$6)
10. Pasteurized Milk Ordinance – <http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/MilkSafety/NationalConferenceonInterstateMilkShipmentsNCIMSMModelDocuments/default.htm>

11. Code of Federal Regulations Title 21, Part 133 – Cheeses and Related Cheese Products – <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?CFRPart=133>

Milk Production and Related Careers

The production of high quality raw milk requires the following:

- Clean and healthy cows.
- Equipment that is constructed appropriately from approved materials.
- Proper installation, cleaning, sanitizing and operation of the equipment.
- Rapid cooling of milk in compliance with regulatory requirements.
- Delivery of milk to the processor within 48 hours.
- Prevention of milk adulterants such as water, antibiotics, pesticides, cleaning and sanitizing chemicals, medicinal agents and any other extraneous materials.
- Application of tests for acceptability of milk.

Fresh raw milk should possess a sweet bland flavor, be free of feed flavors and contain low number of somatic cells and bacteria. Mixed milk from several cows (herd milk) is expected to contain approximately 3.5% milk fat, 3.1% protein and 4.8% lactose, the main characterizing constituents. Milk is the most important source of calcium in the diet of the average American, supplying approximately 70% of the dietary calcium.

Students considering a career related to the subject matter in this CDE may wish to consider that persons of the following groups contribute to the successful production of high quality milk and milk products:

- **Dairy farmers and herd managers** manage and milk cows and prepare milk for dealers.
- **Field representatives** of the buying and/or selling organizations provide advice to producers and promote milk quality for buyers.
- **Milk sanitarians** enforce public health regulations.
- **Food technologists** apply chemical, physical, microbiological and sensory tests to determine the quality and safety of milk and milk products.
- **Manufacturers and dealers** of dairy equipment supply and service equipment.
- **Suppliers of chemicals** used in cleaning and sanitizing provide chemicals and advice on proper use.
- **Veterinarians** treat diseased animals and advise producers on disease prevention.
- **Milk plant operators** process milk into finished product for consumers.
- **U. S. Food and Drug Administration** manages the regulation of grade A milk.
- **U. S. Department of Agriculture** manages the regulation of manufacturing grade milk and provides grading services to manufacturers of butter, cheese and nonfat dry milk.
- **Officials and technicians** of the USDA Federal Milk Marketing Orders sample, test and account for milk marketed under federal orders. They also apply regulations to marketing raw milk.
- **State departments of agriculture and/or public health** manage the public health regulations applied to milk at the state level.
- **State dairy extension agents** provide advice to dairymen regarding production and sale of milk.

CHEESE CHARACTERIZATION EXAMPLE PROBLEM

The seven items in the “characteristics” column are based on the information found in the Cheese Characterization Matrix on page 5 of this handbook. Cheese samples are from the cheese identification activity. Participants will select all characteristics that apply to each sample. Answers will be recorded on the event-specific scan form. Characteristics in the problem can change each year.

Characteristics	Sample Numbers				
	1 (Cheddar)	2 (Cream)	3 (Swiss)	4 (Mozzarella)	5 (Bleu)
A. Maximum moisture=39%	X				
B. Minimum fat in the solids= 33%		X			
C. Gas holes are expected=yes			X		
D. Receives “pasta filata treatment”				X	
E. Salted in brine				X	
F. Ripened by molds					X
G. Originated in England	X				

Milk Quality and Products Team Activity Rubric – Communications - 50 points

Oral Communication						
Indicators	Very strong evidence skill is present 5-4	Moderate evidence skill is present 3-2	Strong evidence skill is not present 1-0	Points Earned	Weight	Total Score
A. Examples	<i>Examples are vivid, precise and clearly explained.</i> · Examples are original, logical and relevant.	<i>Examples are usually concrete, sometimes needs clarification.</i> · Examples are effective but need more originality or thought.	<i>Examples are abstract or not clearly defined.</i> · Examples are sometimes confusing, leaving the listeners with questions.		X 1	
B. Speaking without hesitation	<i>Speaks very articulately without hesitation.</i> · Never has the need for unnecessary pauses or hesitation when speaking.	<i>Speaks articulately but sometimes hesitates.</i> · Occasionally has the need for a long pause or moderate hesitation when speaking.	<i>Speaks articulately but frequently hesitates.</i> · Frequently hesitates or has long, awkward pauses while speaking.		X 1	
C. Tone	<i>Appropriate tone is consistent.</i> · Speaks at the right pace to be clear. · Pronunciation of words is very clear and intent is apparent.	<i>Appropriate tone is usually consistent.</i> · Speaks at the right pace most of the time but shows some nervousness. · Pronunciation of words is usually clear, sometimes vague.	<i>Has difficulty using an appropriate tone.</i> · Pace is too fast; nervous. · Pronunciation of words is difficult to understand; unclear.		X 1	
D. Being detail oriented	<i>Is able to stay fully detail-oriented.</i> · Always provides details which support the issue; is well organized.	<i>Is mostly good at being detail-oriented.</i> · Usually provides details which are supportive of the issue; displays good organizational skills.	<i>Has difficulty being detail-oriented.</i> · Sometimes overlooks details that could be very beneficial to the issue; lacks organization.		X 1	
E. Speaking unrehearsed	<i>Speaks unrehearsed with comfort and ease.</i> · Is able to speak quickly with organized thoughts and concise answers.	<i>Speaks unrehearsed mostly with comfort and ease but sometimes seems nervous or unsure.</i> · Is able to speak effectively, has to stop and think and sometimes gets off focus.	<i>Shows nervousness or seems unprepared when speaking unrehearsed.</i> · Seems to ramble or speaks before thinking.		X 1	
F. Connecting and articulating facts and issues	<i>Exemplary in connecting facts and issues and articulating how they impact the issue locally and globally.</i> · Possesses a strong knowledge base and is able to effectively articulate information regarding related facts and current issues.	<i>Sufficient in connecting facts and issues and articulating how they impact the issue locally and globally.</i> · Possesses a good knowledge base and is able to, for the most part, articulate information regarding related facts and current issues.	<i>Has difficulty with connecting facts and issues and articulating how they impact the issue locally and globally.</i> · Possesses some knowledge base but is unable to articulate information regarding related facts and current issues.		X 1	
G. All team members participated	· All team members took an active role in the presentation.	· Three team members took an active role in the presentation.	· Two or less team members took an active role in the presentation.		X 1	
Non-Verbal Communication						
A. Attention (eye contact)	<i>Eye contact constantly used as an effective connection.</i> · Constantly looks at the entire audience (90-100% of the time).	<i>Eye contact is mostly effective and consistent.</i> · Mostly looks around the audience (60-80% of the time).	<i>Eye contact does not always allow connection with the speaker.</i> · Occasionally looks at someone or some groups (less than 50% of the time).		X 1	
B. Mannerisms	<i>Does not have distracting mannerisms that affect effectiveness.</i> · No nervous habits.	<i>Sometimes has distracting mannerisms that pull from the presentation.</i> · Sometimes exhibits nervous habits or ticks.	<i>Has mannerisms that pull from the effectiveness of the presentation.</i> · Displays some nervous habits; fidgets or anxious ticks.		X 0.5	
C. Gestures	<i>Gestures are purposeful and effective.</i> · Hand motions are expressive and used to emphasize talking points. · Great posture (confident) with positive body language.	<i>Usually uses purposeful gestures.</i> · Hands are sometimes used to express or emphasize. · Occasionally slumps; sometimes negative body language.	<i>Occasionally gestures are used effectively.</i> · Hands are not used to emphasize talking points; hand motions are sometimes distracting. · Lacks positive body language; slumps.		X 0.5	
D. Well poised	<i>Is extremely well poised.</i> · Poised and in control at all times.	<i>Usually is well poised.</i> · Poised and in control most of the time; rarely loses composure.	<i>Isn't always well poised.</i> · Sometimes seems to lose composure.		X 1	
Total Score						

**Milk Quality and Products
Team Activity Rubric – Teamwork - 50 points**

Teamwork						
Indicators	Very strong evidence skill is present 5-4	Moderate evidence skill is present 3-2	Strong evidence skill is not present 1-0	Points Earned	Weight	Total Score
A. Managing team dynamics	<p><i>Completely committed to team dynamics, maturity and professionalism is always present.</i></p> <ul style="list-style-type: none"> · In team conflicts, problem-solving and decision-making methods and skills are used to produce a positive compromise. 	<p><i>Somewhat committed to team dynamics, maturity and professionalism is seldom present.</i></p> <ul style="list-style-type: none"> · In team conflicts, problem-solving and decision-making methods and skills are sometimes used to produce a compromise. Sometimes involvement in this process is limited. 	<p><i>Lacking team dynamics, maturity and professionalism.</i></p> <ul style="list-style-type: none"> · When team conflict arises minimal or no attempt at a resolution is made by team members. 		X 3	
B. Awareness of personality styles of others	<p><i>Totally conscious and respectful of differing attitudes, personalities and behaviors.</i></p> <ul style="list-style-type: none"> · Language is free of bias, and completely shows an understanding and respect for others' differences in learning and personality. 	<p><i>Is, for the most part, respectful of others' differences in personality and behavior.</i></p> <ul style="list-style-type: none"> · For the most part, language conveys an understanding of others' differences in learning and personality. 	<p><i>Shows little tolerance for differing personalities and behaviors.</i></p> <ul style="list-style-type: none"> · Language used may be expressed as not understanding others' differences in personality and learning styles. 		X 1	
C. Uses positive and mature language and mannerisms	<p><i>Always uses mature language and mannerisms.</i></p> <ul style="list-style-type: none"> · Never uses immature verbal and/or nonverbal communication. · Always has positive communications. 	<p><i>Usually uses mature language and mannerisms.</i></p> <ul style="list-style-type: none"> · Rarely uses immature verbal and/or nonverbal communication. · Usually has positive communications. 	<p><i>Seldom or never uses mature language and mannerisms.</i></p> <ul style="list-style-type: none"> · Frequently uses immature verbal and/or nonverbal communication. · Seldom has positive communications. 		X 2	
D. Reacting to changes	<p><i>Has ability to react and transition effortlessly to change.</i></p> <ul style="list-style-type: none"> · Shows excellent ability to adapt with unexpected change; thinks quickly; shows no sign of stress. 	<p><i>Typically reacts well to changes.</i></p> <ul style="list-style-type: none"> · Seems able to adapt to unexpected change most of the time; occasionally stresses. 	<p><i>Has difficulty reacting well to changes.</i></p> <ul style="list-style-type: none"> · Seems stressed by change. 		X 1	
E. Handling tasks	<p><i>Handles tasks with ease, including task assignment.</i></p> <ul style="list-style-type: none"> · Efficient in planning, managing and completing all tasks in a timely and organized fashion. · All project parts are assigned equally. 	<p><i>Does a good job handling tasks with some ease, including task assignment.</i></p> <ul style="list-style-type: none"> · Is thoughtful about the planning and sequencing of tasks, but occasional priority mistakes are made. · Some project parts are assigned equally. 	<p><i>Has difficulty handling tasks, including task assignment.</i></p> <ul style="list-style-type: none"> · Seems to have trouble deciding the order to do several tasks and struggles with completion in a timely manner. · No project parts are assigned equally. 		X 3	
Total Points						

Appendix A: AFNR Career Cluster Content Standards

	Performance Measurement Levels	Event Activity Addressing Measurement	Related Academic Standards
AS.06.02. Performance Indicator: Implement procedures to ensure that animal products are safe.			Science: F1 and F5
	AS.06.02.01.b. Discuss consumer concerns with animal production practices relative to human health.	written exam	
BS.02.03. Performance Indicator: Demonstrate proper laboratory procedures using biological materials.			Science: A2, A3 and E1
	BS.02.03.02.a. Perform procedures with biological materials according to directions.	CMT, team activity	
FPP.01.01. Performance Indicator: Evaluate the significance and implications of changes and trends in the food products and processing industry.			Science: F1 Language Arts: 7 and 8 Social Studies: 1g and 8c
	FPP.01.01.01.b. Evaluate changes and trends in the food products and processing industry.	written exam	
	FPP.01.01.02.b. Discuss the issues of safety and environmental concerns about foods and food processing (e.g., Genetically Modified Organisms, microorganisms, contamination, irradiation).	written exam, team activity	
FPP.01.02. Performance Indicator: Work effectively with industry organizations, groups and regulatory agencies affecting the food products and processing industry.			Language Arts: 12 Social Studies: 6c and 8f
	FPP.01.02.02.b. Discuss the application of industry standards in the food products and processing industry.	cheese ID, team activity	
FPP.02.03. Performance Indicator: Apply safety and sanitation procedures in the handling, processing and storing of food products.			Science: A2 and F5
	FPP.02.03.01.b. Evaluate food product handling procedures.	problem solving	
	FPP.02.03.02.c. Interpret quality-assurance test results and apply corrective procedures.	team activity	
FPP.04.02. Performance Indicator: Evaluate, grade and classify processed food products.			Science: F1 Language Arts: 8
	FPP.04.02.01.c. Evaluate, grade and classify processed meat, egg, poultry, fish and dairy products.	milk flavors, cheese ID	

CS.01.01. Performance Indicator: Action: Exhibit the skills and competencies needed to achieve a desired result.		Social Studies: 4d and 4h
CS.01.01.01.c. Work independently and in group settings to accomplish a task.	team activity	
CS.01.01.03.a. Exhibit good planning skills for a specific task or situation.	team activity	
CS.01.01.06.b. Assign project parts equitably amongst team members to achieve a given task.	team activity	
CS.01.02. Performance Indicator: Relationships: Build a constituency through listening, coaching, understanding and appreciating others.		Language Arts: 12 Social Studies: 4h
CS.01.02.02.b. Utilize communication skills to collaborate in a group setting.	team activity	
CS.01.04. Performance Indicator: Character: Conduct professional and personal activities based on virtue.		Social Studies: 4c and 4f
CS.01.04.04.c. Demonstrate respect for others.	team activity	
CS.01.05. Performance Indicator: Awareness: Desire purposeful understanding related to professional and personal activities.		Language Arts: 1 Social Studies: 1e, 4e, 10b and 10j
CS.01.05.01.c. Articulate current issues that are important to the local, state, national and global communities.	team activity	
CS.02.02. Performance Indicator: Social Growth: Interact with others in a manner that respects the differences of a diverse and changing society.		Language Arts: 12 Social Studies: 1e
CS.02.02.02.c. Present oneself appropriately in various settings.	team activity	
CS.02.02.03.b. Exhibit the behaviors needed for developing and maintaining a professional relationship.	team activity	
CS.02.04. Performance Indicator: Mental Growth: Demonstrate the effective application of reasoning, thinking and coping skills.		Math: 6C Science: A4 Language Arts: 4 and 8
CS.02.04.01.c. Demonstrate critical and creative thinking skills while completing a task.	team activity	
CS.02.05. Performance Indicator: Emotional Growth: Demonstrate healthy responses to one's feelings.		Social Studies: 4a
CS.02.05.03.c. Exhibit self confidence while in the workplace.	team activity	

CS.03.01. Performance Indicator: Communication: Demonstrate oral, written and verbal skills.		Language Arts: 4, 5 and 12
CS.03.01.03.c. Make effective business presentations.	team activity	
CS.03.02. Performance Indicator: Decision Making: Analyze situations and execute and appropriate course of action.		Science: A1 and A5 Social Studies: 1c and 4h
CS.03.02.01.c. Make decisions for a given situation by applying the decision-making process.	team activity	
CS.03.02.02.c. Use problem-solving skills.	team activity	
CS.03.03. Performance Indicator: Flexibility/Adaptability: Describe traits that enable one to be capable and willing to accept change.		Science: A2, A6 and E2 Language Arts: 7 Social Studies: 8a
CS.03.03.02.c. Evaluate strategies that can be used to manage change within the workplace.	team activity	

Appendix B: Related Academic Standards

National academic standards for mathematics, science, English language arts and social studies related to this event are reported below. The statements are based on information in reports of the respective associations/organizations in the academic areas. Some adjustment of numbering was done to facilitate the process of alignment with the standards that have been developed in the pathways of the Agriculture, Food and Natural Resources (AFNR) Career Cluster.

The approach was to determine the presence of alignment between the content standards, expectations or thematic strands of the four academic areas and the performance indicators of the AFNR Standards. Supporting statements have been included to clarify content of the respective content standards, expectations or thematic strands. The statements were initially developed independently by the respective organizations and, therefore, are not parallel in wording and presentation. Occasionally minor editing was done to adjust the background or stem of a statement but not the statement itself.

Mathematics**6. Standard and Expectations: Problem Solving**

6C. Apply and adapt a variety of appropriate strategies to solve problems.

Science**A. Content Standard: Science as an Inquiry**

A1. Identify questions and concepts that guide scientific investigation.

A2. Design and conduct scientific investigations.

A3. Use technology and mathematics to improve investigations and communications.

A4. Formulate and revise scientific explanations and models using logic and evidence.

A5. Recognize and analyze alternative explanations and models.

A6. Communicate and defend a scientific argument.

E. Content Standard: Science and Technology

E1. Abilities of technological design.

E2. Understanding about science and technology.

F. Content Standard: Science in Personal and Social Perspectives

F1. Personal and community health.

F5. Natural and human-induced hazards.

English Language Arts

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.

4. Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

7. Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

12. Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).

Social Studies

1. Thematic Strand: Culture

1c. apply an understanding of culture and an integrated whole that explains the functions and interactions of language, literature, the arts, traditions, beliefs and values and behavior patterns;

1e. demonstrate the value of cultural diversity, as well as cohesion, within and across groups;

1g. construct reasoned judgments about specific cultural responses to persistent human issues;

4. Thematic Strand: Individual Development and Identity

4a. articulate personal connections to time, place and social/cultural systems;

4h. work independently and cooperatively within groups and institutions to accomplish goals;

4c. describe the ways family, religion, gender, ethnicity, nationality, socioeconomic status and other group and cultural influences contribute to the development of a sense of self;

4d. apply concepts, methods and theories about the study of human growth and development, such as physical endowment, learning, motivation, behavior, perception and personality;

4e. examine the interactions of ethnic, national or cultural influences in specific situations or events;

4f. analyze the role of perceptions, attitudes, values and beliefs in the development of personal identity;

6. Thematic Strand: Power, Authority and Governance

6c. analyze and explain ideas and mechanisms to meet needs and wants of citizens, regulate territory, manage conflict, establish order and security and balance competing conceptions of a just society;

8f. formulate strategies and develop policies for influencing public discussions associated with technology-society issues, such as the greenhouse effect.

8c. analyze how science and technology influence the core values, beliefs and attitudes of society, and how the core values, beliefs and attitudes of society shape scientific and technological change;

8. Thematic Strand: Science, Technology and Society

8a. identify and describe both current and historical examples of the interaction and interdependence of science, technology and society in a variety of cultural settings;

10. Thematic Strand: Civic Ideals and Practices

10b. identify, analyze, interpret and evaluate sources and examples of citizens' rights and responsibilities;

10j. participate in activities to strengthen the "common good," based upon careful evaluation of possible options for citizen action.