

# Illinois Association of Vocational Agriculture Teachers

## Food Science & Technology CDE

### Purpose of the Event

To stimulate learning activities in food science and technology related to the food industry and to assist students in developing a good working knowledge of sound principles used in a team decision-making process.

### Objectives

1. To encourage FFA members to gain an awareness of career and professional opportunities in the field of food science and technology, marketing and management occupations.
2. To give FFA members the opportunity to experience group participation and leadership responsibilities in a competitive food science and technology program.
3. To help FFA members develop technical competence and personal initiative in a food science and technology occupation.
4. To provide opportunities for FFA members to participate in activities where they gain an appreciation for cooperative effort in the food industry.

### **A. General Information**

1. **Team:** A team shall consist of four (4) members, with all four scores counting towards the team score.
2. **Awards:** All scores will be added to calculate the team score. Individual awards will be based upon the total of the objective test score, the team product development project, a practicum in food safety and quality and a practicum in sensory evaluation.
3. **Miscellaneous:** Each participant must have a clean, free of notes clipboard, two sharpened No. 2 pencils and an electronic calculator. Calculators used in this event should be battery operated and nonprogrammable. No other calculators are allowed to be used during the event. Teams and/or individuals will not be permitted to use electronic media during the event.
5. **Registration:** This event shall be open to any school desiring to participate. Pre-registration for this career development event is expected by a deadline to be announced through the *Ag Ed Listserve*. Entry fees are not refundable.
6. **Tiebreakers:** Should a tie occur in the overall team placing, the tie will be broken by the highest team product development project score. If this score does not break the tie, then the highest number of total points earned from the objective test (adding all four team member scores) will break the tie. To identify the high individual for this event in case of a tie, the highest examination score will be used as the first tiebreaker, followed by the highest Food Safety and Quality practicum score, as the second tiebreaker.
7. **Additional Information:** Refer to National FFA Career Development Events manual.

### **B. Career Development Event Format**

The career development event shall consist of three parts: Objective Test, Individual Practicums and the Team Marketing Scenario.

### **C. Career Development Events Divisions**

#### **1. Objective Test: (100 points)**

The objective test is designed to determine each team member's understanding of the basic principles of food science and technology. It will encompass the knowledge required of the team event and the two practicums, i.e., food safety and quality and sensory evaluation, as well as material in the list of references.

- a. Team members will work individually.
- b. The test will consist of fifty (50) multiple-choice questions.
- c. The test questions will be based on the attached list of required references.
- d. Fifty (50) minutes will be allotted to complete the Objective Test, with each question worth two (2) points for a total of 100 points.

**2. Practicums: (150 points each)**

Each team member will compete in both practicums. Each practicum will be worth 150 points per individual. The event host will furnish all materials used in the practicums.

**a. Food Safety and Quality Practicum**

**Part I - Customer Complaint Letter (50 points)**

Each participant will be given a representative consumer complaint letter received by a food processing company. The participant must determine if the complaint involves a food quality or food safety problem and respond accordingly. If the complaint involves a food quality problem, the participant should ascertain the cause of the quality defect and identify a possible solution. If the complaint letter describes a food safety problem, the participant should determine whether the problem is biological, chemical or physical in nature and its possible mitigation. The possible solutions include:

- Inform legal staff
- Recall product if needed
- Inform the packaging line of the problem
- Write a letter to a customer
- Offer a refund or replacement of the product

Regardless of the problem each participant will write out his or her answer using paper provided.

- Identification of Problem . . . . . 20 points
  - ◆ Cause of Quality Defect (10 of the 20 points)
  - ◆ Identify the Nature of the Problem (10 of the 20 points)
- Solution to Problem . . . . . 30 points

Fifteen (15) minutes will be allowed for this part of the practicum.

**Part II - Food Safety/Sanitation (100 points)**

Ten (10) photos of potential food safety and/or sanitation problems will be displayed, with each photo serving as a separate station. Each participant will be given a numbered list of potential food safety and/or sanitation problems at the beginning of this practicum segment. The list will contain such standards as good manufacturing practices (GMP) and hazard analysis critical control point (HACCP). The list will contain more than ten (10) potential problems.

The participant must identify the type of problem in the photo sheet by recording the number from the list on an answer card provided to each participant. Each participant will start at a station to view a photograph and record an answer.

After one minute, the participants will be told to move to the next station. This will continue until each participant returns to his or her original station.

Ten (10) minutes will be allowed for this part of the practicum.

**b. Sensory Evaluation**

Each participant will be given one minute at each station before being told to move to a new station. When each person returns to his or her original station this practicum is completed

**Part I - Triangle Tests (45 points)**

Three different triangle tests will be conducted. Participants are expected to identify the different sample through aroma, visual cues or textural differences.

Answers will be given on the sheet provided. No list will be provided for this segment of the practicum. Each test is worth 15 points.

**Part II - Difference Testing (45 points)**

Three samples will be tasted. Participants will be expected to discern the different taste of each sample when compared to a control or normal sample. Each station is worth 15 points.

**Part III - Aromas (60 points)**

Each participant will be asked to identify six (6) different aromas from vials provided at each station and record the answer on the sheet provided. A list of potential aromas will be provided to each person. Possible aromas include:

- |               |                      |                    |
|---------------|----------------------|--------------------|
| 01. Almond    | 12. Grape            | 23. Oregano        |
| 02. Banana    | 13. Lemon            | 24. Peanut Butter  |
| 03. Basil     | 14. Licorice (anise) | 25. Peppermint     |
| 04. Butter    | 15. Lime             | 26. Pine           |
| 05. Cherry    | 16. Lilac            | 27. Raspberry      |
| 06. Chocolate | 17. Maple            | 28. Smoke (liquid) |
| 07. Cinnamon  | 18. Menthol          | 29. Strawberry     |
| 08. Clove     | 19. Molasses         | 30. Vanilla        |
| 09. Coconut   | 20. Nutmeg           | 31. Wintergreen    |
| 10. Garlic    | 21. Onion            |                    |
| 11. Ginger    | 22. Orange           |                    |

Each station is worth 10 points.

**3. Team Event: (300 points)**

Each team will receive a marketing scenario describing a need for a new or redesigned product that would appeal to a potential market segment. This scenario will contain a description of the existing marketing situation, competition, economic considerations and potential target market segment to be served by the new product. It is the task of the team to design a new food product or reformulate an existing product.

The team will be responsible for understanding and using the following concepts:

- Formulation of product to meet specified market requirements.
- New package design to reflect the developed product.
- Nutritional label development and adjustments.
- Equipment used to produce and package the product.
- Provide quality control and safety programs, i.e., good manufacturing practices (GMP) and hazard analysis critical control points (HACCP).

<b><u>Sample Nutrition Label</u></b>	
<b>Nutrition Facts</b>	
Serving Size _____	
Servings Per Container _____	
<b>Amount Per Serving</b>	
<b>Calories</b> _____	Calories from Fat _____
<b>% Daily Value*</b>	
<b>Total Fat</b> _____	_____%
Saturated Fat _____	_____%
<b>Cholesterol</b> _____	_____%
<b>Sodium</b> _____	_____%
<b>Total Carbohydrate</b> _____	_____%
Dietary Fiber _____	_____%
Sugars _____	
<b>Protein</b> _____	
Vitamin A _____%	Vitamin C _____%
Calcium _____%	Iron _____%
*Percent Daily Values are based on a 2,000 calorie diet.	

Each team will be provided with packaging materials, ingredients and information necessary on each ingredient in order to develop a final product label. The team will respond to the marketing scenario and reformulate or develop a new product, calculate a nutritional label, develop the ingredient statement and educational panel and develop the front or principal display panel to reflect the new product and its market.

Possible products to include, but are not limited to:

Cereal	Dairy Products	Processed Fruit Snacks
Breakfast Bars	Desserts	Sandwich
Candy	Beverages	Convenience Meals
Snack Mixes	Pizza	Stir-Fried Vegetables

Total time involved for each team will be sixty (60) minutes. Total number of points possible for this activity will be 300 points.

#### D. Required References

Food Science and Safety, 1998, Seperich, Interstate Publishers, Inc.

Institute of Food Technology website, <http://www.ift.org>

#### Additional References

*Career Development Events Handbook 2006-2010*. National FFA Organization, P.O. Box 68960, 6060 FFA Drive, Indianapolis, IN.46268-6060.

Food Science: The Biochemistry of Food and Nutrition, 2002, Mehas & Rogers.  
This curriculum contains a student text, student lab manual, teacher's annotated lab manual, and teacher's resource binder. All materials are available through the Glencoe Secondary Catalog: Family & Consumer Sciences.

Principles of Food Sanitation, 1999, Marriott, Aspen Publishers, Inc.

USDA Food Safety and Inspection Service website, <http://www.fsis.usda.gov>

Penn State Food Entrepreneur Resources Website,  
[http://www.foodscience.psu.edu/Outreach/Fun\\_Food\\_Science.html](http://www.foodscience.psu.edu/Outreach/Fun_Food_Science.html)