IOWA

FOOD SCIENCE AND TECHNOLOGY

CAREER DEVELOPMENT EVENT

A SPECIAL PROJECT OF THE NATIONAL FFA FOUNDATION

IMPORTANT NOTE: *These rules are specific to the Iowa FFA Association career development event. While most rules mirror the national rules, there are some differences between these rules and the National event rules.*

I. PURPOSE

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.

II. OBJECTIVES

1. To encourage FFA members to gain an awareness of vocational 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.

III. EVENT RULES

1. **Team make-up**- - The team will consist of four team members with all four members scores being totaled..

2. All team members must be active, in-school FFA members. See"Eligibility Note" on page 4 for more details.

IV. EVENT FORMAT

The food science and technology career development event will consist of four activities, 1) an objective test, 2) a team product development project, 3) a practicum in food safety and quality, and 4) a practicum in sensory evaluation. This career development event will be a four-person team activity. All team members will participate in all of the activities. This career development event will involve 1,000 total points per team. The team product development project will be worth 400 points, the objective test will be worth 300 points and each practicum will be worth 150 points.

Each year this career development event will focus on one food product category as a theme, e.g. ready-to-eat cereal, convenience food, etc. Each activity in this event will use the theme food product category to achieve the project objectives.

A. EQUIPMENT

Materials student must provide-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, non-programmable, silent with large keys and large displays. Calculators should have only these functions- addition, subtraction, multiplication, division, equals, percent, square root, +/- key, and one

memory register. No other calculators will be allowed during the event.

B. TEAM ACTIVITY

Team Product Development Project

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 and potential target market segment to be served by the new product. It is the task of the team to design a new or reformulated 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 programs, i.e., good manufacturing practices (GMP) and hazard analysis critical control point (HACCP).

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 have sixty (60) minutes to 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. After this time period, each team member will contribute in a ten- (10) minute oral product development proposal. Thereafter, there will be a ten- (10) minute question period from the judges in which each team member will be expected to answer questions about the development of their particular product.

Total time involved for each team will be 80 minutes. Total number of points possible for this activity will be 400 points.

Possible Products - A rotational list is being developed. This list currently includes:

Ready-to-Eat Cereal
Breakfast Bars
Candy
Beverages (Sports Drinks)
Pizza
Processed Fruit Snacks
Stir-Fried Vegetables
Sandwich (RTE)

Evaluation Criteria for Product Development Presentation

Product Development.....200 points

How does the product meet target market needs?
The presentation should address the following product concerns:

Economics	Equipment
Nutrition	Distribution
Quality Control	Formulation
Product Safety	

Package Design.....100 points

Use, development and adaptation of nutritional label
Use and development of the ingredient statement on educational panel
Use of principle display panel to convey information

Response to judge's questions .....100 points

Total .....400 points

C. INDIVIDUAL ACTIVITIES

1. Test

The objective questions administered during the Food Science and Technology examination will be 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.

Team members will work individually to answer each of the 50 questions. Each person will have fifty minutes to complete the examination. Each question will be worth 6 points

for a correct answer. The test will be based on the list of references.

2. Practicums

Each team member will compete in both practicums. The practicums will each be worth 150 points.

a. Food Safety and Quality Practicum

1. Customer Complaint Letter

Each participant will be given a representative consumer complaint letter received by a food processing company. In fifteen (15) minutes the participant must determine if the complaint involves a food quality problem, then ascertain the cause of the quality defect and a possible solution. If the participant identifies that the letter describes a food safety problem, he or she must determine whether the problem is biological, chemical or physical in nature and its possible mitigation. Regardless of the problem each participant will write out his or her answer using paper provided.

2. Food Safety/Sanitation

Each participant will be given ten (10) photos of potential food safety and/or sanitation problems. A numbered list of problems will also be provided at the beginning of this practicum segment. The list will contain more potential problems than the number of photographs. The list will contain such standards as good manufacturing practices (GMP) and hazard analysis critical control point (HACCP). Identify the type of problem in the photo sheet by recording the number from the list on a scantron sheet 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.

Food Safety & Quality Practicum Scorecard

Identification of Problem.....25 points

Solution to Problem .....25 points

Food Safety & Sanitation Problem
Identification .....100 points

Total Points .....150 point

b. Sensory Evaluation

Each participant will be asked to identify four 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. Each station is worth 15 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.

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.

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.

Sensory Evaluation - Aromas

1. Cinnamon
2. Peanut Butter
3. Chocolate
4. Maple
5. Oregano
6. Basil
7. Lemon
8. Lime
9. Orange
10. Vanilla
11. Almond
12. Smoke (liquid)
13. Cherry
14. Pine
15. Onion
16. Butter
17. Menthol
18. Grape
19. Garlic
20. Peppermint
21. Clove
22. Nutmeg

23. Ginger
24. Molasses
25. Wintergreen
26. Banana
27. Coconut
28. Lilac
29. Raspberry
30. Strawberry
31. Licorice (anise)

Sensory Evaluation Scorecard

Aroma Identification .....60 points
Difference Testing .....45 points
Taste Testing .....45 points
Total Points .....150 points

V. 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. If a third tiebreaker is needed the judges response to the Team Question period from the Team Product Development project will be used. 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.

VI. AWARDS

Awards will be presented at an awards ceremony. Awards are presented to teams and 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.

VII. REFERENCES

This list of references is not intended to be 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.

Note: The reference list is unique to the Iowa event.
A different list is used for the National event.

See the website for the Iowa reference list and directions.

www.agiowa.org

Eligibility Note: Team members must have been enrolled in a high school agricultural education course during the current school year. (Seniors are eligible until the September following graduation.)

Food Science and Technology

Name: _____ Chapter: _____

State: _____ Team No.: _____

Product Development Presentation Scorecard

	Possible Points	Team Points
Package design	**100**	
• Use, development and adaptation of nutritional label • Use and development of the ingredient statement on educational panel • Use of principle display panel to convey information		
Sub Total (A)		
Oral Proposal	**200**	
• How does the product meet market needs? • How does the product address target audience? • The presentation should address the following product concerns: • Economics • Nutrition • Quality Control • Health • Equipment • Ethnicity • Formulation		
Sub Total (B)		
Response to Judges' Questions	**100**	
• Time management in question response • Organizational ability		
Sub Total (C)		
Total A+B+C	**100**	