

FOOD SCIENCE AND TECHNOLOGY

4 MEMBER TEAM

I. PURPOSE

The food science and technology career development event is designed to promote learning activities in food science and technology related to the food industry and to assist students in developing practical knowledge of principles used in a team decision-making process.

II. OBJECTIVES

1. To encourage FFA members to gain an awareness of career and professional opportunities in the field of food science and technology.
2. To provide FFA members with 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.

III. TEAM MAKEUP

1. The team will consist of four members with all four members' scores being totaled for the team score.
2. A school may enter more than one team in the Food Science CDE providing space is available. However, only one team from each school will be scored and be eligible for awards. The advisor of multiple teams must identify at registration at the contest site prior to the start of the contest which team will be scored and, therefore, be eligible for awards.
3. All participants must wear FFA Official Dress for this event.
4. Non-programmable and non-graphing calculators. No other calculators are allowed to be used during the event including cell phones.
5. **ALLERGY INFORMATION**: Food products used in this event may contain or come in contact with potential allergens (dairy, peanut, wheat, etc...). Advisors must notify the provider of a team member has a food allergy.

IV. EQUIPMENT

Each participant must provide:

- a. A transparent clipboard that is clean and free of notes.
- b. Two sharpened No. 2 pencils
- c. Non-programmable and non-graphing calculators. No other calculators are allowed to be used during the event.

A. TEAM PRODUCT DEVELOPMENT PROJECT

1. Each team will receive a product development scenario describing the need for a new or redesigned product that appeals to a potential market segment. The team's task will be to design a new food product or reformulate an existing product based on information contained within the product development scenario. The category, platform and market for the product

development will be posted on the Texas FFA website by **January 15th** each year.

2. The team will be responsible for understanding and using the following concepts:
 - a. Formulation of product to meet specified requirements.
 - b. Package design and labeling requirements to reflect the developed product.
 - c. Nutritional fact development.
 - d. Production and packaging equipment.
 - e. Quality control and safety programs, i.e., good manufacturing practices (GMP) and hazard analysis critical control points (HACCP).
 - f. Formulation and costing (ingredient, packaging, etc.).
 - g. Current food trends.
 - h. Market segments.
3. Each team will be provided with packaging materials, ingredients and necessary ingredient information in order to develop, label and package a product.
4. The team will have 60 minutes to respond to the product development scenario and reformulate or develop a product, calculate a nutritional label, develop the ingredient statement and information panel and develop the front or principle display panel to reflect the new product.
5. After this time period, each team member will contribute to a 10 minute oral presentation delivered to a panel of judges. No electronic media will be used in the presentation.
6. Following the presentation there will be a 10 minute question and answer period with the judges in which each team member is expected to contribute. All materials will be collected after the presentation.
7. Total time involved for each team will be 80 minutes. Total number of points possible for this activity will be 400 points.
8. Product development scenarios will describe a category, platform and market. These may include but are not limited to the following categories, platforms and markets listed below.
 - a. Categories
 - Cereal
 - Snacks
 - Meals
 - Side dishes
 - Beverages
 - Supplements
 - Condiments
 - Desserts
 - b. Platform
 - Frozen
 - Refrigerated
 - Shelf-stable
 - Convenience

- Ready to eat
 - Heat and serve
- c. Market (domestic and international)
- Retail
 - Wholesale
 - Food service
 - Convenience store
9. Example of scenario product from past events:
- Ready to eat breakfast cereal for retail
 - Refrigerated frozen cookie dough for wholesale
 - Yogurt parfait for convenience store
 - Refrigerated, heat and serve pizza for retail
 - Shelf stable, dried fruit snack mix for retail
10. Evaluation criteria and points for team activity can be found on the team product development project scorecard.

B. INDIVIDUAL ACTIVITIES

1. Objective Test
- a. 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. The reference for the test will be from:
Food Science and Safety by George Seperich, 2004 edition Chapters 12-20; or 1998 edition chapters 11-19
- i. 2012 Chapters 1-11 (omitting chapter 3)
 - ii. 2013 Chapters 12-20
 - iii. 2014 Chapters 1-11 (omitting chapter 3)
 - iv. 2015 Chapters 12-20
- b. Team members will work individually to answer each of the 50 questions. Each person will have 60 minutes to complete the examination. Each question will be worth two points, for a total of 100 points.
2. Practicums - Each team member will complete all parts of both practicums.
- d. *Food Safety and Quality Practicum- 75 points*
- i. Customer Inquiry- Each participant will be given five scenarios representing general consumer inquiries. Participants must determine if the consumer inquiry reflects a quality or safety issue and determine if it is a biological, chemical or physical concern or hazard. (25 points)
 - ii. Food Safety/Sanitation- Each participant will be given 10 scenarios. A numbered list of problems will be provided at the beginning of this practicum segment. The list will contain concepts such as good manufacturing practices (GMP), sanitation, food handling/storage and other pre-requisite programs. Participants will identify if there is a violation presented in the situation. If participants decide that there is a

violation, they will indicate the number of the violation from the list of problems provided. (50 points)

e. *Sensory Evaluation Practicum- 65 points*

- i. Triangle Tests- Three different triangle tests will be conducted. Participants are expected to identify the different samples through flavor, aroma, visual cues and/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 five points. (15 points)
- ii. Aromas- Each participant will be asked to identify 10 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 sample is worth five points. (50 points)

Aromas	Menthol
Cinnamon	Grape
Chocolate	Garlic
Maple	Peppermint
Oregano	Clove
Basil	Nutmeg
Lemon	Ginger
Lime	Molasses
Orange	Wintergreen
Vanilla	Banana
Smoke (liquid)	Coconut
Cherry	Lilac
Pine	Raspberry
Onion	Strawberry
Butter	Licorice (anise)

V. SCORING

Individual Activities

Objective Test (60 minutes).....	100
Food Safety and Quality Practicum.....	75
-Customer Inquiry	25
-Food Safety/Sanitation	50
Sensory Evaluation.....	65
Triangle Tests.....	15
Aromas	50
Total Individual Points	240

Team Product Development Project (80 minutes)

Package Design	100
Product Development	250
Response to Judges' Questions	50
Total Team Points.....	400

TOTAL INDIVIDUAL POINTS (240 pts x 4 members)	960
TOTAL TEAM POINTS	1360

VI. TIEBREAKERS

1. Team: 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 total points earned by the team in the food safety and quality practicum will be used.
2. Individual: To identify the high individual for this event in case of a tie, the highest objective test score will be used as the first tiebreaker, followed by the highest food safety and quality practicum score as the second tiebreaker.

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.

Food Science and Safety, 2nd Edition, 2004, George J. Seperich, Pearson Publishers. **Even years (starting with 2012) Chapters 1-11 and Odd years 12-20.**

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