LOUISIANA FFA

CAREER DEVELOPMENT EVENT

FOOD SCIENCE

Louisiana Food Science Career Development Event

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.

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.

TEAM MAKEUP

1. The team will consist of four members with all four members' scores being totaled for the team score.
2. A school, provided they have a blue and gold chapter, may enter a maximum of 2 teams in the Food Science CDE. During registration, the advisor must designate teams as either blue or gold.
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.

EQUIPMENT

Each participant must provide:

1. A transparent clipboard that is clean and free of notes.
2. Two sharpened No. 2 pencils
3. 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. Product development scenario information will be released to FFA Chapters via email and laffa.org regarding the category, platform, and marketing no later than May 1st preceding the CDE.

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. The superintendent of the Food Science CDE will decide whether to have the 10-minute presentation or the written response questions for the product development scenario. Decision must be made my May 1st preceding the State Food Science CDE.
    a. No fewer than 5 and not more than 10 questions will be included in the team product development scenario which team members must respond to in writing. The questions must be presented in a way to allow teams to fully elaborate. Responses to the questions will be turned in to the judges along with product development materials. Team members should collaboratively answer the questions. This portion will be included in the 60-minute time given for the product development activity.
6. Total time involved for each team will be 80 minutes. Total number of points possible for this activity will be 400 points.
7. 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

8. 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
9. 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 written exam will consist of 50 multiple choice questions based on material from "Principles of Food Science". 4th edition. 2015. Janet Ward and Larry Ward. The Goodheart-Willcox Company, INC. *(Adopted 2020)*
      i. Odd years (ex: 2021) Chapters 1-12 (Units 1-3)
      ii. Even years (ex: 2022) Chapters 13-25 (Units 4-7)

   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. Practicum - Each team member will complete all parts of both practicums.
    a. *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. Math Problem Solving Practicum (25 points) – Participants will answer a series of five mathematical calculations based on common food science themes. Questions may include nutrition calculations, ingredient quantity, cost-benefit estimation of cost/margin of goods sold, conversions, processing conditions, etc. Each question will be in multiple choice format and worth 5 points each. The practicum will utilize the USDA Food Safety Inspection Service Processing Inspectors' Calculations Handbook (revised 1995) as the resource for the development of problem-solving problems relating to the following sections: Conversions (e.g., metric, US equivalents, grams, ounces, percent, ppm, Celsius, Fahrenheit); Pearson's Square; Percent of an ingredient in a formula; Yield; Shrink loss; Volume of a container; Calorie calculations; Total energy calculations. The resource can be found at this link: htpps://fsis.usda.gov/sites/default/files/media_file/2020-07/7620.3.pdf
        iii. Product Specification Compliance Practicum (25 points) – Students will be given sample sets (actual products and/or data sets) and will be responsible for determining compliance with the provided specification requirements. This may include, but is not limited to: determining if the products are within the net weight standards, product sizing requirements, pH, color analysis, viscosity measurement, fill level tolerances, packaging specification compliance, etc. Five questions will be asked regarding potential compliance violations presented within the sample set. Each question will be in multiple choice format and worth 5 points each. *Adopted 2024*

3. *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. The National FFA list of aromas will be used for this event. Each sample is worth five points. (50 points)

Aromas

10.Apple
11.Banana
12.Basil
13.Butter
14.Cherry
15.Chocolate
16.Cinnamon
17.Clove
18.Coconut
19.Coffee
20.Garlic
21.Ginger
22.Grape
23.Lemon
24.Licorice (anise)
25.Lime
26.Maple
27.Molasses
28.Nutmeg
29.Onion
30.Orange
31.Oregano
32.Peach
33.Peppermint
34.Raspberry
35.Sage
36.Smoke (liquid)
37.Strawberry
38.Vanilla
39.Watermelon
40.Wintergreen

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.

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

Note: Judging is not limited to only the things listed on this page. These are general references and guides to help prepare the students for the tasks. The criteria may vary at each level of competition. All judge's decisions are final. Revised *(2005)*