

Food Science CDE

(February 2025)



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.

ELIGIBILITY

The participant must be an active member of a chartered West Virginia FFA Chapter and enrolled in middle or high school FFA chapters. Each chapter may enter one team.

EVENT PROCEDURE

The event will be a team event consisting of four students. All 4 team members' scores will be calculated in the team total. A team may compete with less than 4 members. FFA members will wear official dress or professional dress as it pertains to the profession. For example, Black pants white shirt and black apron.

Under no circumstances will any participants be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will result in team elimination from the event.

No FFA advisors/coaches will be allowed in the area of the contest, but arrangements will be made to view the specimens following the contest.

PRACTICUMS

A general knowledge exam, food safety and quality practicum, and sensory evaluation practicum will be used every year.

EVENT MATERIALS

MATERIALS STUDENTS MUST PROVIDE

- Pencils
- Electronic Calculator
- Clipboards

INDIVIDUAL PRACTICUMS

IDENTIFICATION PRACTICUM

GENERAL KNOWLEDGE EXAMINATION

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 test will be created using the textbooks and websites specified in the reference section. 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. Questions will come from the past 5 years of National Exams.

Middle School members will have 30 minutes to complete 25 questions.

SKILLS PRACTICUM

FOOD SAFETY AND QUALITY

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 (2 points) and determine if it is a biological, chemical or physical concern or hazard (3 points). (25 points total)

Food Safety/Sanitation-

Each participant will be given five situations (e.g., photos, videos, written scenarios, live demonstrations or a combination). 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 prerequisite programs. Each question will be worth 5pts (25 total points) **Note:** Answers will be put as 6-10 in the aroma section of the scantron.

SENSORY EVALUATION

Participants will be asked to complete both of the following activities, using the materials provided.

- 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 5 points.
- Aromas- Each participant will be asked to identify five 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 4 points.

PROBLEM SOLVING/MATH PRACTICUM

Participants will answer a series of five mathematical questions based on common food science themes. Questions may include nutrition calculations, ingredient quantity, cost benefit analysis, estimation of cost/margin of goods sold, conversions, processing conditions, etc. (25 points per contestant)

West Virginia FFA

SCORING

Practicum	Activity	Individual	Team
General Knowledge	Written Exam	100	400
Food Safety & Sanitation	Written Exam	25	100
Customer Inquiry	Written Exam	25	100
Sensory Evaluation	Hands-On	35	140
Problem Solving/ Math Practicum	Evaluation	25	100
Total		210	840

***Middle school exam will be 50 points, instead of 100

TIE BREAKERS

In the event of a tie in individual scores, the following events will be used in order to determine award recipients:

INDIVIDUAL

1. Written Exam
2. Food Safety and Quality Practicum

TEAM

1. Total Written Exam
2. Total score for Food Safety and Quality practice

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

Customer Inquiry Scoresheet

Contestant Name _____

Chapter _____

Member Number _____

Team Number _____

	Points Possible	Points Earned
Scenario #1 This issue is a: Check One Food Quality Issue <input type="checkbox"/> Food Safety Issue <input type="checkbox"/>	2	
Is the concern or hazard primarily: Check One Biological <input type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/>	3	
Scenario #2 This issue is a: Check One Food Quality Issue <input type="checkbox"/> Food Safety Issue <input type="checkbox"/>	2	
Is the concern or hazard primarily: Check One Biological <input type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/>	3	
Scenario #3 This issue is a: Check One Food Quality Issue <input type="checkbox"/> Food Safety Issue <input type="checkbox"/>	2	
Is the concern or hazard primarily: Check One Biological <input type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/>	3	
Scenario #4 This issue is a: Check One Food Quality Issue <input type="checkbox"/> Food Safety Issue <input type="checkbox"/>	2	
Is the concern or hazard primarily: Check One Biological <input type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/>	3	
Scenario #5 This issue is a: Check One Food Quality Issue <input type="checkbox"/> Food Safety Issue <input type="checkbox"/>	2	
Is the concern or hazard primarily: Check One Biological <input type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/>	3	
Total	25	

Safety and Sanitation Violation List



11. Facilities, ingredients and packaging supplies and processed foods shall be free of:
12. insects (such as flies, cockroaches, worms, etc.); insect parts (in excess of allowable limits), and insect eggs; rodents (such as rats and mice); birds; domestic animals (such as cats and dogs); fecal droppings or urinary discharges from any of the above.
13. Holes in walls are not permitted (as they may allow entry of insects or rodents).
14. Open outside doors or windows without screens or air curtains are not permitted. Including cracks or spacing around doors or windows.
15. Open top trash containers (inside or outside) are required to be covered.
16. Proper temperature control of processes throughout the facility is required, such as: cooler storage temperatures; freezer storage temperatures; frozen ingredients may be thawed prior to use, but containers cannot be dripping moisture or other liquids prior to usage.
17. Food supplies shall not be stored directly on the floor - skids, pallets, or racks are required.
18. Equipment, facilities, walls, floors and overhead utilities must be free of dirt, dust, mold, or otherwise contamination-free.
19. All parts of a disassembled processing equipment line shall be cleaned immediately after usage and stored on clean racks (off the floor) when not in use. (Any contact with the floor shall be considered re-contamination).
20. All food contact surfaces shall be constructed of heavy stainless steel or of food grade quality sanitary plastic or rubber.
21. All overhead lights shall be shielded to avoid glass breakage and contamination of foods.
22. All processing room walls shall be constructed of washable, waterproof materials.
23. Food-handling employees must wear hairnets and/or beard nets.
24. Food-handling employees must not touch ready-to-eat foods with their bare hands.
25. Food-handling employees shall wear clean, impact-resistant, sanitary gloves made of impermeable plastic or rubber whenever in direct contact with foods, ingredients, or containers for these foods and supplies.
26. All hand wash sinks in food operation and toilet areas shall be clean and sanitary, with cold and hot water and proper temperature controls and mixing valves accessible at all times.
27. Hand wash sinks and equipment wash sinks shall not be used to store soiled or clean equipment, supplies, or packaging containers.
28. Processed foods shall not contain any foreign materials (such as glass, metal, wood, insects or parts of insects, or toxic substances).
29. Only government approved and properly labeled chemicals may be used for cleaning the processing equipment and plant work areas.
30. Workers with open cuts, bruises, or wounds shall not handle foods or raw ingredients.
31. Uncooked foods and cooked foods shall be stored in separate areas with proper identification.
32. Food plant buildings shall not have any walls with peeling paint or other substances that could be exposed to any food ingredients or processing equipment.
33. All walls, ceilings, floors and equipment exposed to foods in the processing or storage areas shall be rust free.
34. No Violations

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

National FFA Core Catalog—CDE Questions and Answers <http://shop.ffa.org/cde/qasc1413.aspx>

Mehas and Rodgers, 5th Edition, 2006. Kay Yockey Mehas and Sharon Lesley Rodgers, Glen- coe/McGraw, New York.

Food Science and Safety, 2nd Edition, 2004, George J. Seperich, Pearson Publishers

Principles of Food Sanitation, 5th Edition, 2006, Norman G. Marriott and Robert B. Gravani, Springer Science + Business Media, Inc.

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

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

Penn State Kitchen Chemistry: Experiments, resources and materials for educators and students, <http://foodscience.psu.edu/public/kitchen-chemistry>

Food Safety Education,
http://www.fsis.usda.gov/food_safety_education/for_kids_&_teens/index.asp

Partnership for Food Safety Education, <http://www.fightbac.org>

FoodSafety.gov, <http://www.foodsafety.gov>