GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

CULINARY ARTS

PATHWAY: Culinary Arts

COURSE: Introduction to Culinary Arts

UNIT: 2.1 Food Safety

INTRODUCTION

Annotation:

Food safety is everyone's responsibility in minimizing the risk of food-borne illness. Keeping food safe involves education about how foods become unsafe.

Grade(s):

X	9th
X	10th
X	11th
X	12th

Time:

15 Hours

Author:

Jennifer Booker, Wes Goodman, Bill Hewett

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards: Please list the standard and elements covered.

CA-ICA-4. Students will analyze and examine fundamental safety skills and practices related to the commercial kitchen.

i. Identify the factors that affect the growth of food borne pathogens (i.e. FATTOM) and explain how time and temperature guidelines can reduce growth of microorganisms.

j. List and demonstrate food handling, preparation, and storage techniques that prevent cross-contamination between raw and ready-to-eat foods and between animal and seafood, including sources of other potentially hazardous food products.

GPS Academic Standards:

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

National / Local Standards / Industry / ISTE:

NFCS-8.2. Demonstrate food safety and sanitation procedures.

UNDERSTANDINGS & GOALS

Enduring Understandings:

From this session, students will identify and demonstrate proper preventive measures of biological, physical, chemical contaminants and to identify the factors that affect the growth of food born pathogens and explain how time and temperature controls can greatly reduce the risk of bacterial growth in our foods. Additionally, students will identify the principles of proper receiving, storage, and food handling techniques.

Essential Questions:

1. Why is it important to safeguard our food during the receiving, storage and preparation and service of our food?
2. Explain how preventing cross contamination and monitoring food temperatures are essential aspects of a food handler's diligent responsibilities.
3. What are the factors that affect the growth of food-borne pathogens?

Knowledge from this Unit:

1. Students will know the proper food safety techniques for receiving, storage and preparation.
2. Students will know FATTOM.
3. Students will know temperature danger zones.

Skills from this Unit:

1. Students will be able to implement safe food handling techniques.
2. Students will describe and demonstrate FATTOM.
3. Students will be able to demonstrate a safe food handling situation.

ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

- X Pre-test
- X Objective assessment - multiple-choice, true- false, etc.
  - _X_ Quizzes/Tests
  - _X_ Unit test
- ____ Group project
- X Individual project
- ____ Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
  - __ Self-check rubrics
  - __ Self-check during writing/planning process
  - __ Journal reflections on concepts, personal experiences and impact on one's life
  - __ Reflect on evaluations of work from teachers, business partners, and competition judges
  - __ Academic prompts
  - __ Practice quizzes/tests
- X Subjective assessment/Informal observations
  - __ Essay tests
  - __ Observe students working with partners
  - _X_ Observe students role playing
- ____ Peer-assessment
  - __ Peer editing & commentary of products/projects/presentations using rubrics
  - __ Peer editing and/or critiquing
- X Dialogue and Discussion
  - _X_ Student/teacher conferences
  - __ Partner and small group discussions
  - __ Whole group discussions
  - __ Interaction with/feedback from community members/speakers and business partners
- X Constructed Responses
  - __ Chart good reading/writing/listening/speaking habits
  - _X_ Application of skills to real-life situations/scenarios
- X Post-test

Assessment(s) Title:

Assessment(s) Description/Directions:

Attachments for Assessment(s): Please list.

LEARNING EXPERIENCES

Instructional planning: Include lessons, activities and other learning experiences in this section with a brief description of the activities to ensure student acquisition of the knowledge and skills addressed in the standards. Complete the sequence of instruction for each lesson/task in the unit.

Sequence of Instruction

1. Identify the Standards. Standards should be posted in the classroom for each lesson.

CA-ICA-2. Students will demonstrate and practice correct sanitation as it relates to healthy living and the modern commercial kitchen.

i. Identify the factors that affect the growth of food borne pathogens (i.e. FATTOM) and explain how time and temperature guidelines can reduce growth of microorganisms.

j. List and demonstrate food handling, preparation, and storage techniques that prevent cross-contamination between raw and ready-to-eat foods and between animal and seafood, including sources of other potentially hazardous food products.

2. Review Essential Questions.

1. Why is it important to safeguard our food during the receiving, storage and preparation and service of our food?
2. Explain how preventing cross contamination and monitoring food temperatures are essential aspects of a food handler's diligent responsibilities.
3. What are the factors that affect the growth of food-borne pathogens?

3. Identify and review the unit vocabulary.

4. Assessment Activity.

1. <u>Pretest</u>: "What do they Know?" - five to ten "true or false" questions concerning food contaminants, FATTOM, temperature danger zone, potentially hazardous foods.

**note pretests are available from your SERVSAFE coursebook www.servsafe.com*

2. <u>Lecture/presentation:</u> Prepare either verbal or power point presentation outlining the following information:

A. The importance of education to identify factors that cause and prevent Food-borne illness –

1. **Over 76 million cases of foodborne illness each year!**
2. **The FOOD CODE and local health department guidelines**
3. **Bacterial growth rate : from a single cell can multiply to over 1 million cells within 5 hours.**

Key Point:: Time in temperature danger zone is a cumulative four (4) hours

B. <u>*Contaminated Foods*</u> "something in food that should not be there"

1. **<u>*Physical Contaminants*</u> - visible objects in food i.e. hair, glass, dirt**
   a. **Must establish kitchen rules for personal hygiene, hair restraints, eating and drinking, jewelry, fingernails and nail polish, cleaning practices, and "clean as you go" practices**
2. **<u>*Chemical Contaminants*</u>**
   a. **Hand soap, pot and pan detergents, sanitizers, floor cleaning chemicals, bleach, oven cleaners**
   b. **Educate and train food handler's in proper use and storage practice**
      1. **Separate room away from foods**
      2. **Material Data Safety Sheets (MSDS)**
      3. **Bottles properly labeled and contents properly identified**
      4. **Proper rinsing and use of sanitizers**

3. ***Biologicial Contaminants***
    a. ***PATHOGENS*** **– bacteria, viruses, parasites, and fungi are micro-organisms, invisible without a microscope**
        1. **Danger since pathogens contaminate food but may not affect the way food look, taste, smell or touch**
    b. ***BACTERIA*****: single celled organisms that can be carried by food, humans, animals and insects.**
        1. **Different bacteria thrive in different temperature ranges from extreme cold to heat loving**
        2. **Different types of bacteria require different amounts of oxygen**
        3. **Even when destroyed bacteria can still remain in food as *SPORES* which produce new bacteria when conditions are right for growth**

Key Point: When chilled foods are left out or pass through the temperature danger to be warmed to service temperatures

    c. ***TOXINS*** **: Scrombroid Poisonings, Ciguatera Toxins**
        1. **Not affected by temperatures**
        2. **Cooking or freezing foods that are infected and contain toxins may cause foodborne illnesses.**
    d. ***FUNGI*****: Molds and Yeast**
        1. **Occur naturally in air, soil, plants and animals, water, human skin and on sweet, acidic, low moisture foods (jams and jellies)**
        2. **Freezing slows growth but does not destroy**
        3. **May produce toxins that cause allergic reactions**
    e. ***VIRUSES*** **(hepatis A)**
        1. **Does not reproduce in food but invades a living cell (HOST) and then reproduces**
        2. **Not affected by freezing or cooking**
        3. **Commonly found in seafood and fish**
    f. ***PARASITES***
        1. **Need a HOST to survive**
        2. **Microscopic to readily visible**
        3. **Can be destroyed by freezing or cooking**

C. ***FATTOM*** **is an acronym for the factors that affect bacteria growth**

1. **F = FOODS –** ***POTENTIALLY HAZARDOUS FOODS***
    a. **Protein foods such as meats, poultry, fish/seafoods, dairy products and some grains, cooked beans, cooked pasta, starchy vegetables and some fruits**

Note: 5th edition SERVSAFE coursebook identifies these foods as TCS foods which means food that is Time - Temperature Controlled for Safety

2. **A= ACIDITY**
    a. **Slightly acidic foods with Ph between 4.6 -7.5**
3. **T= TIME**
    a. **Maximum Four (4) hours in Temperature Danger Zone (TDZ)**
    b. **Time is cumulative – each period in TDZ must be counted**
4. **T= TEMPERATURE**
    a. **TEMPERATURE DANGER ZONE (TDZ)**
    b. **Between 41 degrees F to 135 degrees F (Avoid this zone!)**

5. **O=OXYGEN**
    a. **different types of bacteria require different amounts**
6. **M=MOISTURE**
    a. **Potentially Hazardous Foods have a WATER ACTIVITY level o .85 which indicates a very high amount of moisture in food.**

D. CONTROLLING TIME AND TEMPERATURE -
"the two conditions which you can control!"

1. **Receiving and Storing Foods**
    a. **Check foods to ensure they are received at the correct temperatures i.e frozen foods at or near "0" degrees F and refrigerated foods between 33 degrees F and 41 degrees F. Refuse if not at correct temperatures**
    b. **Check expiration dates**
    c. **Inspect shipments for damaged boxes and internal damaged cans**
    d. **Inspect frozen food containers for ice particles, water stains which indicate possible refreezing**
    e. **Store refrigerated and frozen foods immediately**

2. **Preparing Foods**
    a. **Check temperatures with accurate thermometers**
    b. **Hold Hot Foods above 135 degrees F**
    c. **Hold cold foods below 41 degrees F**
    d. **Cool all foods to their designated temperatures within allotted time**
    e. **Reheat leftovers to 165 degrees and only one time within two hours**
    f. **Discard foods left two hours or more in the TDZ**
3. **Thawing Frozen Foods Safely**
    a. **use thawed foods as soon as possible**
    b. **Never refreeze foods that have been thawed**
    c. **Never thaw foods at room temperature**

Note: most students see this done at home, so good point to discuss why this is not acceptable in foodservice operation

    d. **Some foods can be thawed during cooking process**

Note: ***have students identify some of these food items ie. French fries, frozen vegetables, hamburgers, breaded chicken products***

    e. **Best method to thaw foods in the refrigerator. Keep foods wrapped and place in pan on lowest shelf**
    f. **Place foods under running cold, potable water**
    g. **Thaw foods in a microwave.**

Note: Foods thawed in the must be cooked immediately

4. **Cooling of Foods Safely**

Note: Improper cooling of foods is a leading cause of foodborne illness

    a. **Must be cooled to 41 degrees F or below within 4 hours or use two stage method**
    b. **Two Stage Method: for cooked foods that are being stored –**
        1. **1st stage: Cool foods to 70 degrees F within two hours**

Note: If foods do not reach 70 degrees f within the two hours MUST DISCARD FOOD

        2. **2nd stage: Continue to cool food to 41 degrees F within 4 hours**
        3. **Total time cannot exceed 6 hours**
    c. **Liquid foods**
        1. **should be placed in metal containers**

Note: Avoid plastic containers as these insulate the food rather than conduct heat

2. **Place container in ice water bath and stir frequently - *Replace ice as needed. Use a Chill Paddle, if available, to stir liquid***

d. Cooling Solid and Semisolid Foods

1. **cut large pieces into smaller pieces**
2. **Allow foods to cool to room temperature within 2 hours**
3. **Wrap or cover all cooled foods before refrigerating**
4. **Use a blast chiller if so equipped**

5. Reheating Foods Safely

a. Reheat foods to 165 degrees F within two hours
b. Never reheat foods more than one time
c. Chilled foods must be reheated to 165 degrees regardless of food type
d. Proof cabinets or hot holding cabinets (food warmers) and steam tables are not ACCEPTABLE equipment to use for reheating

Attachments for Learning Experiences:

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Culminating Unit Performance Task/Description/Directions/Differentiated Instruction:

Attachments for Culminating Performance Task: Please list.

Student Activities:

1. Calibrate thermometers using ice bath method

2. Students research various reports on foodborne illnesses such as salmonella in peanut butter (two recent incidences)

3. Have students brainstorm possible problems with Two Stage Cooling Method for liquids –
   a. Accurate thermometers
   b. Metal containers vs Plastic containers
   c. Methods for cooling i.e use of ice baths, chill paddles, ice bags
   d. Contamination issues: what is purpose for stirring?
   e. Size of storage containers
   f. Length of time needed to cool items. Labor problems
   g. Reheating cooled product to proper temperature (165 degrees F within 2 hours needed)

4. If possible have students observe receiving of food products with the cafeteria management

5. Lab Activity: How do you know you have enough soap or sanitizer chemicals in your

sinks? Most chemical sanitizers are for cold water only. Use test strips for sanitizer to ensure proper strength. Soap solutions should be added to a certain amount of hot water based on manufacturers recommendations – you should know this.

6. Demonstrate proper setup of pot and pan sink with focus on chemicals i.e. storage, containers properly identified and use of sanitizer solutions

UNIT RESOURCES

Web Resources:

Attachments(s): **Supplemental files not listed in assessment, learning experiences, and performance task.**

Materials & Equipment:

What 21st Century Technology was used in this unit:

☐ Slide Show Software	☐ Graphing Software	☐ Audio File(s)
☐ Interactive Whiteboard	☐ Calculator	☐ Graphic Organizer
☐ Student Response System	☐ Desktop Publishing	☐ Image File(s)
☐ Web Design Software	☐ Blog	☐ Video
☐ Animation Software	☐ Wiki	☐ Electronic Game or Puzzle Maker
☐ Email	☐ Website	