

COMMUNITY UNIT SCHOOL DISTRICT 200

Curriculum Philosophy

Family and Consumer Science is a practical/critical science rather than a technical science. The courses focus on empowering students to manage the challenges of living and working in a diverse global society. The unique focus is on families, work, and their inter-relationships. This approach develops students' abilities to think, communicate, manage, and lead in the changing context of their lives.

Course: Food Science

High School – One Semester

Level - Intermediate

1. Subject Expectation Integrate knowledge, skills, and practices required for careers and personal application in food science

Essential Learning 1* **Explore career paths within food science**

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| Critical Content | * | | a. develop a broad overview of industrial, governmental, medical, media, and recipe development careers |
| | * | | <ul style="list-style-type: none"> • determine the roles and functions of individuals engaged in food science careers |
| | * | | <ul style="list-style-type: none"> • explore opportunities for employment |
| | * | | <ul style="list-style-type: none"> • examine education and training requirements for career paths in food science |

2. Subject Expectation Understand principles of health promotion and the prevention and treatment of illness and injury (State Goal 22)

Essential Learning 2 **Define and explain the factors that influence health among us**
(Learning Standard B)

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| Critical Content | | 22.B.5 | a. analyze how public health policies, law and the media function to prevent and control illness (e.g., product and food labeling, food safety and handling school immunizations) |
| | | | <ul style="list-style-type: none"> • apply standards of FATTOM (food, acid, time, temperature, oxygen and moisture) in prevention of food poisoning • incorporate personal hygiene standards and safety hazards necessary for kitchen safety • differentiate between food spoilage and food poisoning |
| | | * | <ul style="list-style-type: none"> • utilize industries date marking systems |

3. Subject Expectation **Demonstrate food safety and sanitation procedures**

Essential Learning 1*	Distinguish pathogens found in food and their role in causing illness
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| Critical Content | * | a. | determine factors that contribute to food borne illness |
| | * | | <ul style="list-style-type: none">• understand the interaction of organisms with their environment• apply and use laboratory techniques safely• differentiate between food spoilage and food poisoning |
| | * | b. | employ food service management safety/sanitation programs |
| | | c. | practice good personal hygiene/health procedures |

Essential Learning 2*	Examine current types and proper uses of cleaning materials and sanitizers
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Essential Learning 3*	Use acceptable sanitary standards and safety procedures for handling food products and equipment
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| Critical Content | | a. | explain and demonstrate correct procedures to prevent food contamination |
| | | b. | explain and demonstrate personal hygiene standards and safety hazards necessary for kitchen safety |
| | | c. | explain and apply FATTOM (food, acid, time, temperature, oxygen and moisture) in prevention of food poisoning |
| | | d. | analyze how public health policies, law, and the media function to prevent and control illness (e.g., product and food labeling, food safety and handling, school immunizations) |

4. Subject Expectation **Demonstrate appropriate usage and maintenance of food product equipment**

Essential Learning 1*	Demonstrate understanding of measure/weight, temperature, time and the volumes of liquids and solids
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| Critical Content | * | a. | convert measurement units from metric to English |
| | | b. | apply basic methods of measurements from metric and English systems |
| | | c. | differentiate volume with liquid and dry measuring cups |
| | | d. | demonstrate standards of measurement accuracy with ingredients |
| | | e. | apply and use scientific methods to solve problems |
| | | f. | measure temperature using Fahrenheit and centigrade scales |
| | | g. | measure time to complete a task |
| | * | h. | utilize the weights and measure to demonstrate proper scaling and measurement techniques |

- i. apply the fundamentals of time and temperature to cooking, cooling, and reheating a variety of foods

Essential Learning 2* **Explain types of equipment needed for efficient, safe, and economical food production**

- Critical Content
- a. demonstrate safety procedures and requirements for operating and maintaining food production equipment
 - b. identify and use the appropriate utensil or equipment for required task
 - c. explain vocabulary used to describe the physical properties desired in recipes

5. Subject Expectation (State Goal 11) **Understand the processes of scientific inquiry and technological design to investigate questions conduct experiments and solve problems**

Essential Learning 1 (Learning Standard A) **Know and apply the concepts, principles and processes of scientific inquiry**

- Critical Content 11.A.4b
- a. conduct controlled experiments or simulations to test hypothesis
 - report experiments stating hypothesis and conclusion
 - complete given experiments and reports incorporating knowledge using equipment and technology
- *
- explain how food scientists and consumer uses the human senses to analyze and evaluate food quality and preferences (MSG)
 - create, control, conclude and present one experiment of their own design

6. Subject Expectation (State Goal 6) **Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions**

Essential Learning 1 (Learning Standard D) **Solve problems using comparison of quantities, ratios**

- Critical Content 6.D.4
- a. solve problems involving recipes or mixtures, financial calculations and geometric similarity using ratios, proportions and percents
 - determine mass and volume and compute using both metric and US Customary System
 - produce recipe products using either metric or standard measurement procedures

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 - understand differences of volume using US standard measuring devices and standards of measurement accuracy
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 - determine saturation by temperature measurement
 - apply theories of accuracy and precision in evaluation of results
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 - create and explain ratios and proportions that represent quantitative relationships

7. Subject Expectation* Evaluate nutrition principles, food plans, and preparation techniques

Essential Learning 1 * Explain the basic functions of the six major nutrients

- Critical Content
- * a. recognize food sources of nutrients
 - * b. explain basic chemical properties of nutrients
 - * c. analyze and evaluate food additives

Essential Learning 2 * Differentiate between chemical and physical changes

- Critical Content
- * a. recognize and demonstrate properties of both physical and chemical changes found in food and food preparation

Essential Learning 3 * Differentiate between the properties of solutions, colloidal dispersions and emulsions

- Critical Content
- * a. recognize stable and unstable emulsions as related to food preparation
 - * b. explain how the degree of supersaturation affects the temperature of boiling and physical appearance
 - * c. discuss how impurities change the freezing and boiling points

Essential Learning 4 * Explain energy and heat transfer as applicable to food science

- Critical Content
- * a. explain conduction and convection
 - * b. differentiate between radiation and conduction
 - * c. discuss quality of heat transfer in relation to quality of equipment
 - * d. explain food density and composition in relation to heat transfer
 - * e. explore atmospheric pressure and the boiling point
 - * f. discuss ratio of surface area to rate of heat conduction and convection

Essential Learning 5 * Investigate the chemical properties of acids and bases

- Critical Content
- a. define acids and bases

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 - hydrogen and hydroxide ion concentration
 - pH measurement system
 - neutralization
- *
 - b. explain use of acids and bases to produce desired foods
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 - chemical properties of plant pigment
 - chemistry of leavening agent
 - correlation between pH and enzymatic browning
 - pH and rate of bacteria, yeast, and mold growth

8. Subject Expectation (State Goal 12) Understand the fundamental concepts, principles, interconnections of life, physical and earth/space sciences

Essential Learning 3 (Learning Standard C) Know and apply concepts that describe properties of matter and energy and the interactions

- Critical Content 12.C.5b a. analyze the properties of materials (e.g., mass, boiling point, melting point, hardness) in relation to their physical and/or chemical structures
- *
 - recognize and demonstrate properties of both physical and chemical changes found in food and food preparation
 - demonstrate and create emulsions, supersaturation, and explain the effect of impurities on freezing and boiling point
 - explain and apply methods and properties of heat transfer
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 - use acids and bases to produce desired results in food preparation and storage

9. Subject Expectation (State Goal 4) Listen and speak effectively in a variety of situations

Essential Learning 2 (Learning Standard B) Speak effectively using language appropriate to the situation and audience

- Critical Content 4.B.4d a. use verbal and nonverbal strategies to maintain communication and to resolve individual and group conflict
- discuss a problem within a group setting, list and evaluate possible solutions
 - recognize and assume differing roles within a group
 - analyze possible roles; select, evaluate, and reselect as appropriate
 - analyze and develop recipes and experiments to support a team approach
 - demonstrate effective use of time necessary to plan and accomplish lab work
 - analyze sequential skills necessary for completion of task/lab

- explain routine safety precautions
- demonstrate a basic knowledge of safety and sanitation methods
- develop cooperative responsibilities for lab accuracy, safety, sanitation, and clean up
- discuss a problem, list possible solutions, and analyze and evaluate solutions to arrive at a group consensus
- summarize and evaluate product and team functioning