Food Science
Year at a Glance (YAG)
2021-2022

First Semester		Second Semester	
1st Nine Weeks – 40 days		**3rd Nine Weeks – 45 days**	
TEKS 2.A,2.B (Unit 1) 4.A-4.F (Unit 2) 3.A-3.G (Unit 3) 1.A-1.E (Unit 4) 6.A-6.F (Unit 5) 18.A-18.D (Unit 6)	**Unit 1: Introduction to Food Science (7 days)** Students will do an introduction to the class, analyze the cover of what food science is, explore jobs of food scientists, and research contributions of food scientists. **Unit 2: Food Science Lab (all year;~3 days for intro)** Students will demonstrate safe practices during laboratory and field investigations and demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials **Unit 3: Scientific Methods and Equipment(all year;~3 days for intro;5 days for other related material)** Students will know that hypotheses are testable statements that must be supported or not supported by observational evidence, know scientific theories are based on natural and physical phenomena and are capable of being tested by research, distinguish between scientific hypotheses and scientific theories, plan and implement investigations, collect and organize data using kitchen and scientific tools. **Unit 4: Employability Skills (all year;~5 days intro)** The student will apply interpersonal communication skills in business and industry settings; explain and recognize the value of collaboration within the workplace; examine the importance of time management to succeed in the workforce; identify work ethics/professionalism in a job setting; and develop problem-solving and critical-thinking skills **Unit 5: Food Safety and Sanitation (10 days)** The student will investigate the properties of microorganisms that cause food spoilage,compare food intoxication and food infection, examine methods to destroy or inactivate harmful pathogens in foods, compare beneficial and harmful microorganisms, analyze sanitary food-handling practices; and prepare for a state or national food manager's sanitation certification or alternative credential within the field of food science technology **Unit 6: Water (7 days)** Students will compare the effects of hard and soft water on food production, analyze the phases of water and their effects on food production, and, explain the functions of water in food production such as a heat medium and a solvent and create a food product	**TEKS** 17.A-17.D (Unit 7) 12.A-12.C (Unit 8) 7.A-7.C (Unit 9) 8.A-8.D (Unit 10) 9.A-9.D (Unit 11)	**Unit 7: Vitamins and Minerals (10 days)** Students will discuss the functions of vitamins and minerals in food production, compare the effects of food production on water- and fat-soluble vitamins,and assess the interrelationships among vitamins and minerals in food production **Unit 8: Food Additives(10 days)** The student will evaluate the various types of food additives such as incidental, intentional, natural, and artificial, investigate the various roles of food additives such as food preservation, nutritive value, and sensory characteristics, and research agencies involved in regulating food additives **Unit 9:Chemical properties (10 days)** Students will describe elements, compounds, mixtures, and formulas related to food science, compare heterogeneous and homogeneous mixtures, use chemical symbols, formulas, and equations in food science **Unit 10: Chemical Properties continued (10 days)** Students will identify the solvent and solute in a given solution, compare unsaturated, saturated, and supersaturated solutions, including boiling and freezing points, calculate the concentration of a solution using mass percent, and describe the properties of colloidal dispersions **Unit 11: Enzymes (5 days)** Students will explain the relationship between an enzyme and a substrate, describe the role of enzymes as catalysts in chemical reactions of foo, analyze the functions of enzymes in digestion, including the factors that influence enzyme activity, and analyze enzyme reactions in food preparation

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2nd Nine Weeks – 43 days		**4th Nine Weeks – 45 days**	
TEKS 14.A-14.F (unit 12) 11.A-11.C (Unit 13) 10.A-10.C (Unit 14) 13.A-13.D (Unit 15)	**Unit 12: Carbohydrates (10 days)** Students will discuss photosynthesis, identify the chemical structures of carbohydrates, compare the structures of simple and complex carbohydrates and how these structures affect food production, describe the functions of carbohydrates in food production such as a caramelizing agent, crystallizing agent, and thickening agent, describe various process such as gelatinization, retrogradation, and syneresis in food production, and create food products using simple and/or complex carbohydrates **Unit 13: Leavening Agents (10 days)** Students will identify various leavening agents and describe their role,analyze the role of acids as leavening agents, compare doughs and batters,conduct laboratory experiments with various leavening agents using the scientific processes, and create baked products using various leavening agents **Unit 14: Microbiology of Food (10 days)** The student will analyze reasons food is fermented, assess the role of bacteria in food fermentation, and prepare various fermented food products **Unit 15: Energy of Food (10 days)** Students will discuss molecular motion and temperature, examine heat transfer processes such as conduction, convection, and radiation, analyze rates of reaction using various temperatures **~3 Flex Days~**	**TEKS** 15.A-15.G, 16.A-16.E (Unit 16) 14.A-14.F (Unit 17) 20.A-20.D,21.A-21.D (Unit 18) 19.A-19.B (Unit 19)	**Unit 16: Fats and Protein (10 days)** Students will identify the chemical structure of saturated and unsaturated fats, compare the properties of saturated and unsaturated fats, examine the functions of fats in food production, explore methods for controlling fat oxidation, analyze the effects of temperature on fats in food preparation, conduct laboratory experiments using the scientific processes to explore the functions of fats in food production,and create food products using saturated and unsaturated fats **Unit 17: Food Preservation and Packaging (10 days)** The student will research federal food packaging guidelines, analyze components of appropriate commercial food container,describe controlled-atmosphere packaging, and describe information required on a food label, describe reasons for food preservation,compare methods of dehydration and create a food product using dehydration; analyze various methods of personal and commercial food canning; and examine the various methods of personal and commercial food freezing **Unit 18: Food Biotechnology (10 days)** Students will examine the food irradiation process, and investigate the pasteurization process **Unit 19: Acids and Bases (12 days)** Students will evaluate physical and chemical properties of acids and bases, and analyze the relationship of pH to the properties, safety, and freshness of food **~3 flex days~**

Resources

1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
g-online textbook, google drive resources	g-online textbook,google drive resources	g-online textbook,google drive resources	g-online textbook,google drive resources