

Pre-Professional Assessment & Certification in Food Science Fundamentals

Alignment to the 21st Century Student Outcomes developed by the Partnership for 21st Century Skills



Core Subjects and 21st Century Themes
Learning and Innovation Skills
Information, Media, and Technology Skills
Life and Career Skills

Core Subjects	Global Awareness	Financial, Economic, Business, Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	Creativity & Innovation	Critical Thinking & Problem Solving	Communication & Collaboration	Information, Media, & Technology Skills*	Flexibility & Adaptability	Initiative & Self-Direction	Social & Cross-Cultural Skills	Productivity & Accountability	Leadership & Responsibility
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Careers

1A.	Define the study of food science.	✓													
1B.	Understand the various careers in food science and list the educational requirements.			✓						✓		✓			
1C.	Explain the roles, functions, and skills of individuals engaged in food science careers.			✓							✓		✓		

Food Protection

2A.	Analyze factors that contribute to food borne illnesses.	✓				✓		✓							
2B.	Analyze food safety and sanitation programs, including Hazard Analysis Critical Control Point (HACCP).					✓		✓		✓				✓	
2C.	Evaluate industry standards for documenting and investigating food borne illnesses.			✓	✓			✓		✓				✓	
2D.	Identify government agencies and laws in the United States that regulate the safety of the food supply.	✓			✓	✓				✓					

Nutritional Composition of Foods

3A.	Discuss the functionality of carbohydrates in food preparation and preservation.	✓				✓		✓		✓					
3B.	Discuss the functionality of lipids in food preparation and preservation.	✓				✓		✓		✓					
3C.	Discuss the functionality of proteins in food preparation and preservation.	✓				✓		✓		✓					
3D.	Discuss the functionality of vitamins, minerals, and phytochemicals, and the impacts by food preparation and preservation on their quality/integrity.	✓				✓		✓		✓					
3E.	Discuss the functionality of water activity and pH in food preparation and preservation.	✓				✓		✓		✓					
3F.	Apply basic concepts of human nutrition.	✓				✓		✓		✓					



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Food Processing, Preservation, and Packaging		Core Subjects	Global Awareness	Financial, Economic, Business, Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	Creativity & Innovation	Critical Thinking & Problem Solving	Communication & Collaboration	Information, Media, & Technology Skills*	Flexibility & Adaptability	Initiative & Self-Direction	Social & Cross-Cultural Skills	Productivity & Accountability	Leadership & Responsibility
4A.	Discuss the reasons for the use of food additives in processed food products.	✓						✓	✓							
4B.	Discuss units of operation in food preparation and preservation, including thermal energy.	✓							✓							
4C.	Evaluate procedures that affect product quality performance.			✓					✓		✓				✓	
4D.	Examine the principles of fermentation.	✓							✓							
4E.	Implement food preparation, production, and testing systems.							✓	✓				✓		✓	✓
4F.	Analyze packaging materials with regards to types, functions, and environmental factors.	✓					✓		✓		✓	✓	✓			
Product Development		Core Subjects	Global Awareness	Financial, Economic, Business, Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	Creativity & Innovation	Critical Thinking & Problem Solving	Communication & Collaboration	Information, Media, & Technology Skills*	Flexibility & Adaptability	Initiative & Self-Direction	Social & Cross-Cultural Skills	Productivity & Accountability	Leadership & Responsibility
5A.	Describe the role of science and food science management in the development of new food products.	✓						✓	✓		✓		✓			
5B.	Discuss the basic chemistry concepts and the food science applications.	✓							✓							
5C.	Prepare food products for presentation and assessment.							✓	✓		✓		✓		✓	✓
5D.	Explain the purpose of sensory evaluation panels and how to conduct a sensory panel using appropriate controls.	✓							✓		✓				✓	
5E.	Discuss factors affecting a person's food preference such as physical, psychological, cultural, and environmental influences.		✓			✓	✓				✓			✓		
Food Technology		Core Subjects	Global Awareness	Financial, Economic, Business, Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	Creativity & Innovation	Critical Thinking & Problem Solving	Communication & Collaboration	Information, Media, & Technology Skills*	Flexibility & Adaptability	Initiative & Self-Direction	Social & Cross-Cultural Skills	Productivity & Accountability	Leadership & Responsibility
6A.	Describe the functions/operations and maintenance of test laboratory and related equipment and supplies.	✓		✓					✓		✓					
6B.	Conduct testing for safety of food products, utilizing up-to-date technology.	✓				✓			✓		✓				✓	✓
6C.	Describe the benefits of various technological advances on the scientific study, processing, and preparation of food products.	✓						✓			✓					
6D.	Describe examples of emerging technologies that may impact careers in food science.			✓				✓			✓					