



Food Science

The Biochemistry of Food and Nutrition

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STANDARDS	PAGE REFERENCES
NUTRITION SCIENCE	
<p>Course Description: <i>Nutrition Science</i> is an interdisciplinary laboratory science course. Concepts of chemistry, biology, physics, and nutrition are applied to the production, processing, evaluation, and utilization of foods. Students use scientific methods in laboratory experiments to facilitate the understanding of the human body, food, nutrition, and science. Classroom experiences help students put scientific knowledge to practical use, making abstract concepts concrete.</p>	
<p>Course Standards and Expectations</p>	
<p>Standard 1.0 Analyze the interrelationship of food, nutrition, and science.</p>	
<p>Expectations and Performance Indicators:</p>	
<p>1.1 Compare and contrast food preparation, nutrition science and core science courses.</p>	<p>The following references introduce food preparation, food science and nutrition science and can be used to meet this objective. Student Edition: 25-27, 28-30, 30-31</p>

STANDARDS	PAGE REFERENCES
1.2 Summarize how technology has revolutionized food products and processing methods.	Student Edition: 25-27, 27-30, 424, 437-438, 453-456, 456-458, 458-462, 463-464 <i>Food Science Careers</i> 109, 198 <i>Tech Trends</i> 23, 47, 101, 173, 293, 399 Teacher Resource Guide: EL 255; LP 78 Access #3
1.3 Relate the main goal of food scientists to individuals, communities, cultures and the world.	Student Edition: 25, 25-27, 27-30, 35-37, 38-39, 39-41 <i>Food Science Careers</i> 40 <i>Tech Trends</i> 23 Teacher Resource Guide: EL 211-212
Standard 2.0 Use sound nutritional practices to create a personal profile to establish optimal lifelong health habits.	
Expectations and Performance Indicators:	
2.1 Use current guidelines and/or technology to determine personal nutrient intake and develop a plan for change.	Student Edition: 179-186, 186-187, 191 #3-#4 Teacher Resource Guide: LP 46 Access #3
2.2 Using scientific evidence, examine food and nutrition claims for accuracy.	Student Edition: <i>Nutrition Link</i> 185 <i>Real World Impact</i> 85
2.3 Evaluate current world health concerns to nutrition and food practices.	Student Edition: 394 <i>Real World Impact</i> 45, 143, 171, 217, 237, 255, 291, 307, 397, 421 <i>Tech Trends</i> 23
2.4 Examine the roll of the digestive system in the body's metabolism of food.	Student Edition: 193-197, 199-200, 205-208 <i>Chapter Summary</i> 202 <i>Experiment</i> 201

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Standard 3.0 Examine methodology for use of the scientific laboratory to conduct and report results of food science experiments.	
Expectations and Performance Indicators:	
3.1 Use appropriate safety techniques for the laboratory.	Student Edition: 53-56 <i>Chapter Summary</i> 58 <i>Experiment</i> 83 <i>Thinking Lab</i> 58 Teacher Resource Guide: LP 27-28
3.2 Identify the location and demonstrate the correct use of emergency equipment in the laboratory.	Student Edition: <i>Thinking Lab</i> 58
3.3 Design a laboratory experiment to demonstrate knowledge of the scientific method.	The following references discuss the scientific method and can be used to meet this objective. Student Edition: 75-76, 76-77, 77, 78, 79-82 <i>Thinking Lab</i> 84 Teacher Resource Guide: TM 339
3.4 Demonstrate the ability to complete a laboratory report based on the scientific method.	Student Edition: 78-79 Teacher Resource Guide: SG 120 #10-#11
3.5 Use the metric system in laboratory experiments for data collection and evaluation.	Student Edition: 61, 62-63, 64-65, 65-67, 67-69, 77 <i>Experiment</i> 70-71, 110-111, 124-125, 141, 155, 188-189, 201, 214-215, 234-235, 320-321, 336-337, 355 Teacher Resource Guide: LP 29-30
Standard 4.0 Research and analyze methods used in food product development and marketing.	
Expectations and Performance Indicators:	
4.1 Examine the sensory factors that make up the sensory characteristics for tasting foods.	Student Edition: 90-91, 91-94, 95-96, 96-97 <i>Experiment</i> 97 Teacher Resource Guide: EL 215; SG 123

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4.2 Demonstrate controlled sensory testing and rating techniques.	Student Edition: <i>Experiment</i> 97 <i>Thinking Lab</i> 98 Teacher Resource Guide: EL 247; LP 46 #11
4.3 Research the federal government’s role in regulating label information.	Student Edition: 186-187, 410-411 Teacher Resource Guide: EL 220; LP 46 #9-#10; TM 353
4.4 Analyze and compare food claims and wordings	Student Edition: 187 <i>Nutrition Link</i> 185 Teacher Resource Guide: EL 220
4.5 Develop a food label using federal guidelines, for a simulated food product.	The following references introduce food label information and can be used to meet this objective. Student Edition: 186-187, 191 #2 <i>Experiment</i> 43 Teacher Resource Guide: C 46; LP 46 #8; MC 288; TM 353
Standard 5.0 Evaluate a variety of changes, including chemical and physical, that affect food product quality.	
Expectations and Performance Indicators:	
5.1 Classify changes in matter as physical or chemical.	Student Edition: 103-104, 115-116, 116-120, 120-123, 123 <i>Experiment</i> 124-125 <i>Using Your Knowledge</i> 126 #11
5.2 Investigate the basic organization of the modern periodic table, including atomic number and atomic properties.	Student Edition: 104-107, 107-108 <i>Periodic Table of Elements</i> inside back cover <i>Skill Building Activity</i> 127 #5 Teacher Resource Guide: LP 38 Assess #3; SC 275; TM 344
5.3 Differentiate between mixtures and compounds as they are represented in various food products.	Student Edition: 106-107, 120-123 <i>Experiment</i> 110-111 <i>Real World Impact</i> 127 Teacher Resource Guide: SC 274; SG 125 #10; TM 342

STANDARDS	PAGE REFERENCES
5.4 Demonstrate how the major leavening agents are used in foods and describe the chemical processes observed.	Student Edition: 325-326, 326-331, 331-337 <i>Experiment 336-337</i> Teacher Resource Guide: LP 63-64; SG 161-162; VC 313
5.5 Demonstrate the difference between the chemical processes of fermentation and pasteurization and explain the usage of each in food technology.	Student Edition: 330, 341, 342, 342-343, 343-347, 348, 350, 350-354, 354
Standard 6.0 Apply science process skills when analyzing the structure and composition of nutrients.	
Expectations and Performance Indicators:	
6.1 Evaluate the properties and scientific functions of water in relation to food and food preparation.	Student Edition: 129-130, 130-136, 136-140 <i>Experiment 141</i> Teacher Resource Guide: LP 39-40; SG 129-130
6.2 Analyze the molecular structure of carbohydrates and fiber in relation to their scientific function in food and food preparation.	Student Edition: 195, 219, 220-221, 221-223, 224-225, 225-228, 228-235 Teacher Resource Guide: LP 51-52; SG 146-148; TM 355
6.3 Analyze the properties and composition of lipids in relation to their functions in food preparation.	Student Edition: 239-240, 240-242, 242-243, 244-248, 248, 248-251, 251-252 Teacher Resource Guide: LP 53-54; SG 149-151
6.4 Evaluate the properties and scientific functions of water, carbohydrates, fiber, and lipids in the body.	Student Edition: 140, 193-197, 225-228, 248-250 Teacher Resource Guide: EL 222, 223, 228
6.4 Describe the molecular structure of protein and the functions of protein in food.	Student Edition: 257, 257-261, 261-264, 264-267 Teacher Resource Guide: LP 55-56; SG 152-153; TM 360
6.5 Examine the types, functions, sources and deficiencies of minerals.	Student Edition: 285, 285-287 Teacher Resource Guide: EL 240, 241; LP 57-58; SG 155-156

STANDARDS	PAGE REFERENCES
6.6 Examine the types, functions, sources and deficiencies of vitamins.	Student Edition: 275-276, 276, 277-285 <i>Real World Impact</i> 291 Teacher Resource Guide: EL 239; LP 57-58; SG 155-156
Standard 7.0 Analyze methods used and factors involved in the scientific processing of food.	
Expectations and Performance Indicators:	
7.1 Research the use of additives in food products and food production.	Student Edition: 379-381, 382-383, 383-389, 389-393, 393-394 <i>Experiment</i> 395 Teacher Resource Guide: EL 246-247, 248; LP 69-70; SG 169-171
7.2 Evaluate current trends in commercial food preservation; including thermal preservation, dehydration and irradiation.	Student Edition: 423-424, 424-425, 425-427, 427-430, 443-447, 453-456, 456-458, 458-462 Teacher Resource Guide: LP 73-74, 75-76, 77-78; SG 175-176, 177-178, 179-180; TM 367; VC 319, 320. 321
7.3 Compare the processes of fermentation and curing.	The following references discuss fermentation and can be used to meet this objective. Student Edition: 330, 341, 342, 342-343, 343-347, 348, 350, 350-354, 354
7.4 Evaluate the causes and prevention of food contamination and spoilage.	Student Edition: 401-409, 414-417 Teacher Resource Guide: EL 250-251; LP 71-72; SG 172-174; TM 366
7.5 Analyze the science involved in developing new food products.	Student Edition: 90 <i>Food Science Careers</i> 109, 300 <i>Real World Impact</i> 33, 127

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Standard 8.0 Apply employability skills as an integral part of the nutrition science curriculum.		
Expectations and Performance Indicators:		
8.1	Participate in co-curricular student organization activities that enhances nutrition science skills.	This objective can be met through participation in school activities and organizations.
8.2	Practice leadership, citizenship and teamwork skills when planning and implementing collaborative projects.	The following references can be used to demonstrate leadership, citizenship and teamwork skills. Student Edition: 70-71, 83, 97, 124-125, 188-189, 214-215, 234-235, 253, 289, 305, 320-321, 336-337, 355, 395, 418-419, 432-433, 448-449, 465