



School District of Marshfield Course Syllabus

Course Name: Food Science
Length of Course: Semester
Credit: 1/2 Credit

Program Goal:

Empower learners to be college and career ready through standards-based experiences in the classroom and through career-based learning experiences with business and industry partners.

Course Description:

Food Science is the evaluation of processing, preparing, utilizing and evaluating food substances. In this course, students will analyze the composition of food, take the opportunity to evaluate the effects of food on our bodies as well as form conclusions about nutrition-related claims in the media.

Wisconsin Standards for Family & Consumer Sciences (FACS)	
Process for Areas of Study	
PAS1: Students will use the reasoning process, individually and collaboratively, to take responsible action in families, workplaces and communities.	
Evaluate reasoning for self and others. PAS1.a	1.a.3.h: Contrast consequences for decision making for self, others, culture/society and global environment.
Analyze practical reasoning components. PAS1.c	1.c.3.h: Analyze adequate and in-adequate information and sources in making decisions.
Demonstrate scientific inquiry and reasoning to gain factual knowledge and test theories on which to base judgments for action. PAS1.e	1.e.3.h: Judge validity and reliability of information, sources, opinions and evidence.
Consumer Services	
CS1: Students will integrate knowledge, skills and practices needed for a career in consumer services.	
Demonstrate skills needed for product development, testing and presentation. CS1.e	1.e.17.h: Analyze market research to determine consumer trends and product development needs. 1.e.18.h: Design or analyze a consumer product. 1.e.23.h: Research new products and explore the product reviews. Analyze the findings.
Facilities and Management Maintenance	
FMM1: Students will integrate knowledge, skills and practices required for careers in facilities management and maintenance.	
Demonstrate sanitation procedures for a clean and safe environment. FMM1.c	1.c.6.m: Identify the importance of a clean and sanitary environment. 1.c.10.m: Analyze the effectiveness of proper hand washing.
Demonstrate a work environment that provides safety and security. FMM1.e	1.e.6.m: Prepare safety and procedures in home and school. 1.e.13.h: Apply safety and security procedures as required by Hazard Analysis and Critical Control Point (HACCP), Occupational Safety and Health Administrations (OSHA) and other agencies.
Food Production and Services	
FPS1: Students will integrate knowledge, skills and practices required for careers in food production and services.	
Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs. FPS1.e	1.e.21.m: Prepare baked goods or desserts. 1.e.28.h: Utilize weights and measurement tools to demonstrate knowledge of portion control and proper scaling and measurement techniques.

Demonstrate implementation of food service management and leadership functions. FPS1.f	1.f.9.m: Market a new food innovation.
Food Science, Dietetics and Nutrition	
FSDN1: Students will integrate the knowledge, skills and practices required for careers in food science, food technology, dietetics and nutrition.	
Analyze career paths within food science, food technology, dietetics and nutrition industries. FSDN1.a	1.a.11.m: Identify skills, knowledge and dispositions that are necessary to work in the food service, dietetics and nutrition industries. 1.a.13.h: Analyze the roles and function of individuals engaged in food science, food technology, dietetics and nutrition careers. 1.a.16.h: Analyze the impact of food science, dietetics and nutrition.
Apply risk management procedures to food safety, food testing and sanitation. FSDN1.b	1.b.18.h: Analyze factors that contribute to food borne illness. 1.b.21.h: Use HACCP during all food handling processes to minimize the risk of food borne illness. 1.b.23.h: Demonstrate standard procedures for receiving and storage of raw and prepared foods.
Evaluate nutrition principles, food plans, preparation techniques and specialized dietary plans. FSDN1.c	1.c.11.m: Compare food options for health benefits. 1.c.18.h: Critique the selection of foods to promote a healthy lifestyle.
Apply basic concepts of nutrition and nutritional therapy in a variety of settings. FSDN1.d	1.d.13.h: Construct a modified diet based on nutritional need and health conditions.
Demonstrate use of current technology in food product development and marketing. FSDN1.e	1.e.15.h: Implement procedures that affect quality product performance. 1.e.16.h: Conduct sensory evaluations of food products.
Demonstrate food science, dietetics and nutrition management principles and practices. FSDN1.f	1.f.11.m: Develop new food products. 1.f.16.h: Implement food preparation, production and testing systems. 1.f.17.h: Apply standards for food quality. 1.f.20.h: Analyze new food products.
Hospitality, Tourism and Recreation	
HTR1: Students will synthesize knowledge, skills and practices required for careers in hospitality, tourism and recreation.	
Analyze career paths within the hospitality, tourism and recreation industries. HTR1.a	1.a.8.h: Explain the roles and functions of individuals engaged in hospitality, tourism and recreation careers. 1.a.9.h: Analyze opportunities for employment in hospitality, tourism and recreation careers.
Apply concepts of quality service to assure customer satisfaction. HTR1.c	1.c.6.h: Apply industry standards for service methods that meet expectations of guests or customers.

Demonstrate practices and skills involved in lodging occupations. HTR1.d	1.d.15.h: Apply basic food preparation and services skills in catering operations. 1.d.16.h: Manage use, care, storage, maintenance and safe operations of equipment, tools and supplies. 1.d.18.h: Apply time and work management skills to facility service tasks.
Demonstrate management of recreation, leisure and other programs and events. HTR1.f	1.f.6.m: Devise an event within your school or community.
Nutrition and Wellness	
NW1: Students will demonstrate nutrition and wellness practices that enhance individual and family well-being.	
Demonstrate ability to acquire, handle and use foods to meet nutrition and wellness needs of individuals and families across the life span. NW1.c	1.c.8.h: Demonstrate ability to select store, prepare and serve nutritious and aesthetically pleasing foods.
Wisconsin Common Career Technical Standards (WCCTS)	
Career Development	
CD1: Students will consider, analyze and apply an awareness of self, identity and culture to identify skills and talents.	
Identify person strengths, aptitudes and passions. CD1.a	1.a.3.h: Evaluate various occupations and career pathways to identify personal, academic and career goals based on personal strengths, aptitudes and passions.
Demonstrate effective decision making, problem solving and goal setting. CD1.b	1.b.3.m: Develop effective coping skills for dealing with problems 1.b.5.h: Use a decision-making and problem-solving model.
CD2: Students will identify the connection between educational achievement and work opportunities in order to reach personal and career goals.	
Assess attitudes and skills that contribute to successful learning in school and across the life span. CD2.b	2.b.4.m: Assess changes due to influences and shifts in regional, national and global economies related to career opportunities. 2.b.5.m: Apply academic information from a variety of sources to enhance career preparedness and lifelong learning. 2.b.6.m: Research local and regional labor market and job growth information to analyze career opportunities. 2.b.7.h: Interpret and analyze the impact of current education, training and work trends on life, learning and career plans. 2.b.8.h: Assess education and training opportunities to acquire new skills necessary for career advancement. 2.b.9.h: Analyze local and regional labor market and job growth information to select a career pathway for potential advancement.

CD3: Students will create and manage a flexible and responsive individualized learning plan to meet their career goals.

Investigate the world of work in order to gain knowledge of self in order to make informed career decisions.

CD3.a

3.a.5.m: Demonstrate the ability to use technology to retrieve and manage career information that inspires educational achievement.
 3.a.6.m: Build an ongoing awareness of personal abilities, skills, interests and motivation and determine how these fit with chosen career pathway.
 3.a.7.m: Develop an individual learning plan to enhance educational achievement and attain career goals based on a career pathway.
 3.a.8.m: Choose career opportunities that appeal to personal career goals.
 3.a.9.m: Use assessment results in educational planning including career awareness.
 3.a.10.h: Analyze how career plans may be affected by personal growth, external events and changes in motivations and aspirations.
 3.a.11.h: Apply academic and employment readiness skills in work-based learning situations such as internships, shadowing and/or mentoring experiences.
 3.a.12.h: Evaluate changes in local, national and global employment trends, societal needs and economic conditions related to career planning.
 3.a.13.h: Recognize how chance opportunities integrate with learning and career goals.
 3.a.14.h: Implement an individual learning plan to maximize academic ability and achievement.

Examine and evaluate opportunities that could enhance life and career plans and articulate plan to guide decisions and actions.

CD3.b

3.b.2.m: Describe educational levels (e.g., work-based learning, certificate, two-year, four-year and professional degrees) and performance skills needed to attain personal and career goals.
 3.b.3.m: Demonstrate openness to exploring a wide range of occupations and career pathways.
 3.b.4.h: Implement strategies for responding to transition and change with flexibility and adaptability.
 3.b.5.h: Evaluate the relationship between educational achievement and career development.

Employ career management strategies to achieve future career success and satisfaction.

CD3.c

3.c.3.m: Identify work values and needs.
 3.c.4.m: Define adaptability and flexibility in the world of work.
 3.c.5.h: Determine how principles of equal opportunity, equity, respect, inclusiveness and fairness, affect career planning and management.
 3.c.6.h: Discuss how adaptability and flexibility, especially when initiating or responding to change, contributes to career success.

CD4: Students will identify and apply employability skills.

Identify and demonstrate positive work behaviors and personal qualities needed to be employable. CD4.a	4.a.3.m: Demonstrate self -discipline, self-worth, positive attitude and integrity. 4.a.4.m: Demonstrate flexibility and willingness to learn new knowledge and skills. 4.a.5.m: Identify positive work qualities typically desired in each of the career cluster's pathways. 4.a.6.h: Evaluate how self-discipline, self-worth, positive attitude and integrity displayed in a work situation affect employment status. 4.a.7.h: Assess how flexibility and willingness to learn new knowledge and skills affect employment status. 4.a.8.h: Apply communication strategies when adapting to a culturally diverse environment. 4.a.9.h: Use positive work qualities typically desired in each of the career cluster's pathways. 4.a.10.h: Manage work roles and responsibilities to balance them with other life roles and responsibilities.
Demonstrate skills related to seeking and applying for employment to find and obtain a desired job. CD4.b	4.b.3.m: Use technology to assist in career exploration and job seeking activities. 4.b.5.h: Use multiple resources to locate job opportunities. 4.b.6.h: Prepare a resume, cover letter, employment application. 4.b.7.h: Employ critical thinking and decision-making skills to exhibit qualifications to a potential employer in an interview.
Identify and exhibit traits for retaining employment. CD4.c	4.c.2.m: Demonstrate the behavior and etiquette appropriate to interactions with adults. 4.c.3.m: Distinguish between appropriate behaviors in a social vs. professional setting. 4.c.4.h: Model behaviors that demonstrate reliability and dependability. 4.c.5.h: Maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite. 4.c.6.h: Complete required employment forms and documentation. 4.c.7.h: Summarize key activities necessary to retain a job in an industry.
Develop positive relationships with others. CD4.d	4.d.5.h: Participate in cocurricular and community activities to enhance the school experience. 4.d.6.h: Evaluate the best method to assist co-workers in accomplishing goals and tasks. 4.d.7.h: Examine the skills required to enable students to successfully transition to postsecondary opportunities.

Key Vocabulary:

adulteration	flavonoids	HACCP	rancid
leavener	enzymatic browning	emulsion	coagulation
hydrogenated	gluten	food analog	denaturation
phytochemicals	cellulose	acid/base	amino acid
cross-contamination	GMO	glucose	organic

Topics/Content Outline- Units and Themes:

Quarter 1:

- Examine the development of food products
- Identify the process of sensory evaluation
- Analyze food safety & sanitation
- Examine role of food analogs (artificial sweeteners & meat substitutes)
- Identify the desirable effects of microbes (fermented products & yeast)
- Analyze food preservation & processing techniques (jellies & dehydration)

Quarter 2:

- Investigate saccharides and the function of sugar in baking
- Analyze sugar/carbohydrate's effect on the body
- Describe the characteristics of the four categories of complex carbohydrates
- Examine the functions of lipids in food preparation
- Analyze fat's effect on the body
- Identify the amino acids found in protein
- Differentiate between complete & Incomplete proteins
- Analyze protein's effect on the body
- Compare cooking methods for various meats & cuts
- Analyze the functions of vitamins & minerals
- Identify the sources of flavonoids & phytochemicals
- Career possibilities in food science
- Final Project: Developing a new food product

Primary Resource(s):

Introduction to Food Science and Food Systems
Cengage Learning
ISBN: 978-0-323430-26-5
© 2017