STRANDS AND STANDARDS
FOUNDATIONS OF NUTRITION

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Course Description

This course is an introduction to the science of nutrition and the relationship of food intake and health. Nutrient requirements and food selection to meet those requirements are discussed.
Students evaluate their own food intake, eating behaviors; learn to be informed consumers of food and nutritional information in our modern environment. Provide students with critical human life and nutrition information that will expand their understanding of science and also be personally applicable to their daily and life-long health and wellbeing in the modern environment through applied assessments, exams, and discussions. It will also serve as the foundation course for subsequent course work in the area of nutrition and satisfy a life science general education course requirement.
Student leadership and competitive events (FCCLA) may be integrated into this course.

Intended Grade Level	11-12
Units of Credit	0.5 - 1.0
Core Code	34.01.00.00.185
Concurrent Enrollment Core Code	34.01.00.13.185
Prerequisite	N/A
Skill Certification Test Number	N/A
Skill Certification Cut Score	**N/A**
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	FACS General Composite
Endorsement 2	CTE License: Food Science/Nutrition

Updated: March 2025

STRAND 1

Students will demonstrate knowledge of the common terminology used in the discipline of fundamental scientific principles of nutrition and levels of organization in nature. They will understand the foundations of how to fuel and nourish the body optimally using the guidelines and standards based on these principles They will compare the six categories of nutrients that function in cellular structure and metabolism that are essential to life due to human genetics; carbohydrates, proteins, lipids, vitamins, minerals and water.
*Obtain the chemical composition of food from the plant and animal kingdoms and explain how they meet the nutritional needs of humankind. Utilize basic nutritional scientific terminology; describe the essential nutrients and their role in normal metabolism; and identify good dietary sources of nutrients. (STEM) *Science/Biology/Chemistry/Ecology*

Standard 1

Understand the basic nutrition terms, the six categories of nutrients in human nutrition (substances that nourish the body), the characteristics of a sound diet, the results of a sound diet (health) or poor diet (malnutrition), and factors affecting longevity and food choices.

- Identify nutrition terms (include diet, food, nourish, nutrition, nutritional sciences, metabolism, nutrients, energy producing, calorie, nutritious, nutrient density)
- Explain the six categories of nutrients (include carbohydrate, protein, fat, vitamin, mineral and water)
- Understand the characteristics and results of sound diet (include calorie control, adequacy, balance, moderation, variety, health and malnutrition) Consume a healthy diet composed of various plants, animals, and flora. (STEM) *Biology/Ecology
- Recognize the factors affecting longevity (include diet, exercise, and other lifestyle choices)
- Evaluate the factors affecting food choices (include hunger, appetite, satiety, personal preferences, availability, economics and social factors)

Standard 2

Explain carbohydrates energy yield, functions, categories, food sources, and recommended intake levels.

- Identify chemical composition of carbohydrates and the energy yield of carbohydrates (include organic-contains carbon) (STEM) *Chemistry
- Describe the categories of carbohydrates (include simple and complex carbohydrates)
- Name the three mono-saccharides and explain how they combine to form the three di- saccharides, identifying specific foods that contain such di-saccharides
- Describe the complex carbohydrates (include polysaccharides, starch, and fiber)
- Differentiate between soluble and insoluble fiber, explain the dietary sources, and function of both types of fiber
- Identify food sources of carbohydrate (include plant and animal sources)
- Calculate the recommended intake levels of carbohydrates (include AMDR, DRI, calorie/gram and personalized DRI formula for fiber)
- Recognize that alcohol functions similar to carbohydrate but provides 7 cal/gram and acts like a drug.

Standard 3

Explain proteins composition, energy yields, functions, categories, food sources, and recommended intake levels.

- Identify the chemical composition of a protein and the energy yield of proteins (include amino acid) (STEM) *Chemistry
- Describes the categories of protein (include high/low quality, complete/incomplete, and complementation)
- Identify the food sources of protein (include plant and animal sources)
- Calculate the recommended intake level of protein (include AMDR, DRI, calorie/gram and the personalized DRI formula for protein)

Standard 4

Explain Lipids / Fats composition, energy yields, functions, categories, food sources, and recommended intake levels.

- Identify the chemical composition of lipids/fats and the energy yield of lipids/fats (include triglycerides, phospholipids, sterols) (STEM) *Chemistry
- Identify the categories of triglycerides and explain how the body responds to each class (include saturated, monounsaturated, polyunsaturated)
- Identify the two essential fatty acids (polyunsaturated), explain what they do for the body, and list good dietary sources of these acids (include omega 3-alpha linolenic acid and omega 6-linoleic acid)
- Identify the food sources of lipids/fat (include plant and animal sources)
- Calculate the recommended intake level of lipids/fats (include AMDR, DRI, and calorie/gram)
- Identify the chemical composition, function, energy yield, food sources, and recommended intake of phospholipids (include lecithin and emulsify) (STEM) *Chemistry
- Identify the chemical composition, function, energy yield, food sources, and recommended intake of sterols (include cholesterol and bile) (STEM) *Chemistry

Standard 5

Explain Vitamins, Mineral, and Water composition, energy yields, functions, categories, food sources, and recommended intake levels.

- Identify the chemical composition of vitamins and the energy yield of vitamins (STEM) *Chemistry
- Identify the recommended intake levels of vitamins (include RDA and AI)
- Identify the categories of vitamins (include fat and water soluble)
- Identify the food sources of vitamins
- Identify the chemical composition of minerals and the energy yield of minerals (include inorganic) (STEM) *Chemistry
- Identify the recommended intake levels of minerals (include RDA and AI)
- Identify the categories of minerals (include major and trace minerals)
- Identify the food sources of minerals
- Identify the chemical composition of water and the energy yield of water (include inorganic). (STEM) *Chemistry
- Identify the recommended intake levels of water and food sources of water.

STRAND 2

Understand how to use various dietary tools to plan, manage, and evaluate diets for nutritional adequacy. Communicate the evolution from the Paleolithic diets to today's diet in the content of dietary recommendations for Americans. Utilize tools to determine nutrient values of foods consumed by diverse populations. Plan, evaluate, and manage diets to improve and support life-long health. Integrate the scientific knowledge of nutrition, genetics, chemistry, metabolism, exercise and lifestyle while utilizing several standards/guidelines/guidance systems to plan, evaluate, and manage diets to support life- long health. (STEM) *Biology/Chemistry/Social Science/Technology

Standard 1

Demonstrate knowledge of food package label legislation and information, Daily Reference Values (DRVs), and the Reference Daily Intakes (RDIs), nutrients listed in the nutrition facts panel, ingredient list, common food allergens, legal terms, and legal health claims. Evaluate food package label information - analytically and critically knowing the basis of the specific standards used for providing nutrition information; and understand the responsibility of the FDA to insure the safety of processed foods in order to make healthy food choices. (STEM) *Science/Chemistry

- Identify nutritional labeling legislation (include nutrition facts panel, DV, DRV, RDI, ingredient list, and health claims).
- Understand that the DRVs are based on a 2,000 calorie diet.
- Understand how carbohydrates, protein and fat are labeled on the food label.
- Classify food by its fat content (include calculating by calories and calculating by weight and high, moderate, and low fat categories).
- Understand that the RDIs are for vitamins and minerals on the food label.
- Understand that the ingredients are listed by descending order by weight.
- Identify the most common food allergies.
- Identify the legal terms used on food packaged labels (include free, reduced, light or lite, low, lean, and extra lean).
- Identify the health claims that may be used on food labels.
- Compute percentages, ratios, proportions, decimals, and fractions as applied to essential nutrients and calories for humans via dietary analysis and food package label interpretation.

Standard 2

Demonstrate knowledge of Dietary Reference Intakes (DRIs), and explain the components, basis, and uses for generalized and individualize nutrient and activity needs.

- Identify the scientific findings associated with DRIs (include RDA, AI, EAR, UL, AMDR, EER, and PA).
- Understand that there are some nutrients that do not have DRIs.

Standard 3

Demonstrate knowledge of the MyPlate Food Guidance System including food groups, food patterning, and recommended physical activity. Apply dietary patterning techniques to determine the nutritional adequacy of diets and make recommendations for improving dietary intake based on diet analysis results.
(STEM) *Science/Biology/Chemistry/Technology

- Determine the food groups in MyPlate and the importance of physical activity
- Understand that each food group has specific food sources, serving sizes, health benefits, and nutrients
- Calculate serving equivalents and patterning according to MyPlate

Standard 4

Demonstrate knowledge of the similarities and differences among Dietary Guidelines and Recommendations including those established for Americans, by the American Heart Associations, and American Cancer Society, and included in Healthy People 2020. (STEM)*Biology/Chemistry/Technology

- Understand the Dietary Guidelines
- Identify the different guidelines according to American Heart Association and American Cancer Society.
- Understand the objectives of Healthy People 2020.

Standard 5

Demonstration knowledge of food composition Information and the Exchange List System.

- Understand the Food Composition Database (include chemical makeup of food).
- Identify the different Exchange Lists created by the American Diabetes Association.

STRAND 3

Understand how to manage the intake of energy to prevent the development of nutrition- related chronic disease. Identify essential nutrients for humans, how humans obtain and use energy, and how they maintain or disrupt homeostasis through sustained or altered metabolisms affected by their cumulative dietary food choices and lifestyle. Provide specific roles of nutrition in metabolism and homeostasis in the human body. Explain how the human body processes food and utilizes nutrients with additional reference to energy balance and weight control. Associate nutrition, genetics, metabolism, exercise and lifestyle with health promotion and disease prevention. Identify risks factors for developing chronic disease including the interpretation of biochemical, clinical and anthropometrical laboratory measures.
(STEM) *Biology/Chemistry

Standard 1

Demonstration knowledge the gastrointestinal system, including enumerating the steps in the digestive process (ingestion and chemical and mechanical breakdown of food, absorption and metabolism of nutrients, and excretion of waste), as well as both the anatomy and physiology of the digestive system. Describe how the human body digests food, metabolizes and utilizes the nutrients and Calories/energy in health or disease. (STEM) *Biology

- Identify the digestive process (include digestion, absorption, transportation, excretion, bolus, esophagus, stomach, gastric acid, chyme, and feces).
- Differentiate between mechanical and chemical digestion (include peristalsis, mastication, hydrochloric acid and saliva).
- Identify the anatomy of the gastrointestinal system (include mouth, esophagus, stomach, small and large intestine, and the accessory organs).
- Identify the absorption mechanisms in the small intestine (include passive diffusion, facilitated diffusion, and active transport).
- Understand the utilization and storage of nutrients inside the body (include short- term, intermediate, and long-term storage).
- Differentiate between anabolic and catabolic reactions.
- Understand how the body excretes waste products (include feces, urinary output, respiration, and skin secretions).

Standard 2

Proteins as nutrients, including protein denaturation, digestion, synthesis, character, types, functions, recommendations, deficiency, and excess. Relate diet to examples of evolved genetic mutations in inborn errors of metabolism and predisposed genetic diseases that are reinforced by diet composition, preserved by natural selection, and passed on generationally. (STEM) *Biology/Genetics

- Understand the difference between protein denaturation and protein digestion. (STEM) *Biology/ Chemistry
- Identify the process of protein synthesis (include gene expression, DNA, mRNA, and tRNA).
- Understand that the essential and non-essential amino sequence affects the protein characteristics (include primary, secondary, tertiary, and quaternary structure).
- Identify the types of protein (include fibrous and globular).
- Explain the different functions of protein (include antibodies, enzymes, hormones, fluid and electrolyte balance, acid/base balance).
- Calculate the amount of protein a person needs daily based on body weight and activity level.
- Compare the protein deficiency and excess (include kwashiorkor, edema, marasmus, and kidney aging from protein excess).

Standard 3

Photosynthesis, including carbon fixing, and fiber, including dietary fiber types, categories, recommendations, benefits and actions, negative effects of excess, and effects from whole- grain processing.

- Identify the process of photosynthesis (include chlorophyll). (STEM) *Biology/Chemistry
- Identify the difference between dietary, functional, and total fiber.
- Differentiate between soluble and insoluble fiber.
- Calculate the fiber recommendation based on calories consumed.
- Explain the benefits and negative effects of fiber (include diverticular disease and cholesterol reducing effects).
- Understand the effect of whole grain processing on fiber (include enrichment).

Standard 4

Carbohydrate storage and disorders, including the metabolism of glucose and glycogen, lactose intolerance and mal-digestion, milk allergy, hypoglycemia, and diabetes. Relate diet to examples of evolved genetic mutations in inborn errors of metabolism and predisposed genetic diseases that are reinforced by diet composition, preserved by natural selection, and passed on generationally. (STEM) *Biology/Genetics

- Explain how the body absorbs and uses glucose and glycogen (include insulin and glucagon).
- Identify the disorders related to carbohydrates (lactose intolerance and lactose mal- digestion, evolution, milk allergy, hypoglycemia and diabetes). (STEM) *Genetics/Biology
- Understand the causes of hypoglycemia (reactive, spontaneous, and drug-induced).
- Contrast Diabetes Type I and Type II, outlining the reasons for the development of each and identifying the appropriate dietary response for each.

Standard 5

Lipids in heart disease and cancer, including heart attack, strokes, atherosclerosis, serum triglycerides and cholesterol, metabolic syndrome, dysilipidemia, lipoprotein, oxidation of fat, antioxidants, hydrogenation and partial hydrogenation of fat, cis and trans fatty acids, eicosanoids, and nutrition and cancer.

- Understand the role lipids play in heart disease (include atherosclerosis, hypertension, hyperhomocystemia).
- Identify the categories of blood pressure measurements (include ways reduce blood pressure and DASH diet).
- Contrast the serum tryiglycerides (Chylomicrons, VLDL, and recommended levels).
- Contrast the serum cholesterol (LDL, HDL and recommended levels).
- Understand the five abnormalities of metabolic syndrome and recommended levels (include dyslipidemia and TLC diet and antioxidants).
- Understand the difference between hydrogenation and partial hydrogenation (include cis and trans fatty acids) and detrimental effects. (STEM) *Chemistry
- Identify eicosanoides and the two essential fatty acids, explain what they do for the body, list good dietary sources of these acids, and recommended intakes.
- Identify other factors that affect heart health (include folate, niacin, statins, alcohol, soluble fiber and exercise).
- Understand the role lipids play in cancer (include P: S ratio, AMDR, and antioxidants). (STEM) *Math

STRAND 4

Investigate energy balance, physical activity, and weight control to prevent obesity and achieve nutritional adequacy. Identify scientific methods used; discern the reliability of nutrition information based on scientific evidence, source and professional credentials. Relate the knowledge across several different scientific disciplines such as physiology, anatomy, biochemistry, biology, immunology, and microbiology. (STEM) *Biology/Chemistry/Science/Technology

Standard 1

Insert standard text Demonstrate knowledge of scientific inquiry, including the scientific methods used to develop evidence that supports theories. Distinguish science from other views for understanding humanity. Utilize scientific inquiry to test hypotheses by collecting and analyzing data, and drawing conclusions about their data in regards to the hypothesis tested. Address diet and nutrient issues and concerns for weight control, disease prevention, and physical activity. (STEM) *Biology/Science/Ecology

- Understand that nutrition utilizes scientific inquiry and the scientific method.
- Differentiate the types of scientific studies (include case studies, clinical trials, intervention trials, epidemiology, and laboratory experiments).
- Identify aspects of good science (include number of subjects, matching groups, control groups, duration of study, reproducible results, blind study, double blind study, cross over and double blind crossover study).
- Understand the epidemic increase of obesity (include BMI, overweight, obese).

Standard 2

Demonstrate knowledge of energy balance, including states of energy balance, and use energy balance equations to show energy expenditure. (STEM) *Biology/Chemistry

- Determine the energy balance using the calorie intake versus calorie expenditure formula (include behavior modification, positive/negative energy balance). (STEM) *Math
- Identify the three ways to expend energy (BMR, PA, and SDA).
- Calculate BMR (include Mifflin-St. Jeor equation and variations based off of age, gender, physiological state, and environmental temperature). (STEM) *Math
- Calculate PA (include REE, hours spent in activity, and activity factor). (STEM) *Math
- Understand the specific dynamic action of food.

Standard 3

Demonstrate knowledge of body composition and weight control, including types of body mass, body weight versus body fat, body mass index, combating obesity, and optimal dietary planning for adequacy. (STEM) *Biology/Chemistry/Technology

- Identify the different components of body mass (include lean body mass, fat mass— essential and stored fat, mineral mass, and water).
- Differentiate between body weight and body fat and methods to determine body fat percentage (include hydrostatic weighing, air displacement/bodpod, skin fold, bioelectrical impedance, light absorption, and other techniques).
- Understand the difference between android obesity and central adiposity (include visceral and subcutaneous fat, and android and gynoid obesity).
- Calculate BMI. (STEM) *Math
- List ways to combat obesity (include metabolic changes under conditions of feasting and fasting).
- Understand the importance and benefits of exercise in weight management (include DRI for exercise).
- Explain that lifelong healthy behaviors include eating a well-balanced diet, exercise, and behavior modification.

- Understand the levels of nutritional deficiency (less than 66% of the DRI), nutritional inadequacy (66-99% of the DRI), nutritional adequacy (100% of the DRI up to the UL), and nutritional toxicity (above the UL).

Standard 4

Demonstrate knowledge of principles of fitness for health, including total fitness for health, including total fitness for health, aerobic and resistive exercise, the overload principle, and logging activity to plan, evaluate, and achieve weight control and health. (STEM) *Math/Technology

- Identify principles of fitness (include fitness testing, aerobic exercise, FIT classification, and resistive exercise).
- Understand how to calculate the overload principle.
- Understand the role of logging activity for weight control and health.

Standard 5

Demonstrate knowledge of fundamentals of exercise nutrition, including fuel utilization during exercise; fueling before, during, and after exercise; thermal regulation and injury; and the benefits of hydration management.

- Understand fuel utilization during exercise (include glycolysis, citric acid cycle, and electron transport system).
- Identify how carbohydrates are used during exercise (include liver and muscle glycogen stores)
- Explain the timing of carbohydrate intake for athletic exercise (include before, during, and after the exercises).
- Identify how proteins are used during exercise (include protein metabolism when carbohydrate stores are depleted).
- Explain the management of protein during exercise (include the formula for calculating protein DRI for 0.8grams/kilogram of body weight). (STEM) *Math
- Identify what types of fats should be eaten for exercise (avoid unhealthy saturated and trans fat)
- Understand the importance of thermal regulation and hydration (include thermal injury and dehydration effects).

Standard 6

Problem solving and data analysis and be able to compute a personalized analysis of two-day intake and draw conclusion from the analysis.

- Complete a computer-aided two-day average personal diet (nutrient and energy) analysis and base their conclusions and recommendations on data collected, analyzed, interpreted data and make recommendations for improving nutritional health. Utilize recently published nutrition standards based on empirical nutrition and related science data that has been rigorously analyzed, interpreted, and generalized for publics, recommendations. (STEM) *Biology/Chemistry/Technology
- Compute percentages, ratios, proportions, decimal and fractions as applied to essential nutrients and calories for humans via dietary analysis and food package label interpretation.

STRAND 5

Understand the appropriate intake of vitamins and minerals to regulate metabolism and maintain health. Provide examples of shared genetic processes in regards to essential nutrients, function, health, and disease. (STEM) *Biology/Chemistry/Genetics

Standard 1

Identify the functions of the fat-soluble vitamins (A, D, E, K), including their forms, dietary reference intake (DRI) values, deficiency, toxicity, and sources. (STEM) *Biology/Chemistry

- Understand that diagnosing and confirming a nutrient deficiency or toxicity requires analysis of the diet, clinical evaluation, biochemical analysis, and evaluation of the response to corrected intake levels.
- Understand that toxicities and deficiencies take longer to develop for fat-soluble vitamins than for water-soluble vitamins.
- Understand that the fat soluble vitamins have specific chemical forms and functions in the body.
- Examine the DRIs for essential fat-soluble vitamins.
- Identify the different deficiency and toxicity signs and symptoms and food sources for each nutrient.
- Examine Vitamin D's role in genetic alteration, evolution, and health and how it can be explained by applying science to society. Describe the interaction of the human with the environment for vitamin D synthesis and the current environmental and societal issues hindering adequate synthesis and the resulting disease complications. (STEM) *Biology/Ecology
- Understand how controlling oxidative stress with antioxidants can positively affect health (include fat soluble antioxidants).

Standard 2

Identify the functions of the water-soluble vitamins (Thiamin, Riboflavin, Niacin, Folate, B6, and B12), including their forms, DRI values, deficiency, toxicity, and sources. (STEM) *Biology/Chemistry

- Identify the functions of the water-soluble vitamins (Thiamin, Riboflavin, Niacin, Folate, B6, and B12), including their forms, DRI values, deficiency, toxicity, and sources. (STEM) *Biology/Chemistry

Standard 3

Identify the functions of water and the electrolytes (Sodium, Chloride, Potassium), including their forms, DRI values, deficiency, toxicity, and sources. (STEM) *Biology/Chemistry

- Understand that there are seven major minerals and 10 trace minerals that need to be consumed daily to support normal body functioning in humans.
- Identify adequate fluid intake for health and optimal functioning (include intracellular fluid, extracellular fluid and plasma).
- Determine the water DRI.
- Understand how dehydration negatively affects cognitive, cardiovascular, and thermal regulatory body functions.
- Recognize that fluid intake should support production of a clear urine every 2 hour while awake; water intoxication results from deliberate excessive intake.
- Examine electrolytes function to regulate fluid and acid-base balance.
- Understand that the electrolytes have individual DRIs, deficiencies, toxicities, and food sources.
- Identify that the major extracellular minerals are sodium and chloride.
- Identify that the major intracellular minerals is potassium.

Standard 4

Identify the functions of the major minerals in bones and protein (Calcium, Phosphorus, Magnesium, and Sulfur), including their forms, DRI values, deficiency, toxicity, and sources. (STEM) *Biology/Chemistry

- Understand that the major minerals have individual DRIs, deficiencies, toxicities and food sources.
- Discuss how Calcium, Phosphorus, and magnesium are important for bone and tooth structure, while sulfur is important for bone (include calcium phosphorus ratio).
- Understand that a calcium-adequate diet and weight-bearing physical activity throughout the life span, but especially up to age 25, can help maximize bone mineral density.
- Examine when bone loss begins to occur after the age of 35 for women and after age 55 for men and loss of bone mineral leads to osteoporosis.
- Understand that sulfur has no DRI because the sulfur-containing amino acids in protein are the major food source.

Standard 5

Identify the functions of the trace minerals in bones and protein (Iron, Iodine, Zinc, Fluoride, Selenium, Manganese, Molybdenum, Chromium, Copper, Cobalt), including their forms, DRI values, deficiency, toxicity, and sources. (STEM) *Biology/Chemistry

- Understand that each of the 10 trace minerals has a DRI established, deficiency, toxicity, and food sources (except cobalt has no DRI).
- Discuss how the bioavailability of minerals is better from animal sources than from plant sources.
- Recognize that Iron-deficiency anemia is the most common nutritional anemia in the United States and the world (include other nutritional anemia, Vitamin E, B6, B12, folic acid, iron, and copper).
- Understand the different food sources in the diet (heme, non-heme and hemochromatosis).
- Identify that Iodine is essential to thyroid hormones (include discussion that goiter may occur with a deficiency or toxicity).
- Discuss how Zinc is important for protein metabolism, structure of insulin, and delayed sexual maturation.
- Recognize the importance of Fluoride in dental health (include discussion of fluorosis).
- Understand that Chromium augments the action of insulin.
- Explain how cobalt is required in the structure of vitamin B12.
- Identify the trace minerals that are involved with antioxidants (selenium and copper).

Standard 6

Problem Solving and Data Analysis and be able to compute a personalized analysis of two-day intake and draw conclusion from the analysis.

- Evaluate and interpret laboratory and anthropometrical data in relation to chronic disease risk. (STEM) *Biology/Chemistry/Technology

STRAND 6

Recognize scientifically based nutrition information and to understand the food industry, food safety, food processing, and food production. Demonstrate knowledge of human nutritional needs and the role of nutrition in improving individual life and the societal economic impact of good versus bad nutrition. Relate technological advancements in medicine and food production to the advancement of the science of human nutrition. Explain the impact that the food industry has on human food choices and the subsequent relationship to health and disease at the individual, society, and environmental level. Provide examples of past and present nutrient and diet trends in modern society and the positive and/or negative implications for human health and earth's resources. In addition describe the federal agencies and their responsibilities to insure public food safety, sustainable food production; and personal food handling skills to avoid food borne illness from a variety of microorganisms. (STEM) *Science/Human Biology

Standard 1

Identify the necessary components of credible nutrition information. Distinguish scientific information from information that is not scientific as well as the appropriate methods to seek scientifically sound information. (STEM) *Science/Biology

- Identify fact-versus-fallacy tools to determine the credibility of nutrition information.
- Analyze credibility of nutritional information by consider author credentials and affiliation, sources, references used to support the information, purpose and scientific methodology involved in the research (include private and public sector, nutritionist, registered dietician, refereed journals, websites, and editorial board).
- Apply nutrition information credibility tools to all aspects of nutritional science to affirm or discredit information for a less credible source, as in testimonials are non- scientific evidence.
- Understand that public recommendations are based off of credible professional scientific communities. Identify scientific experimental designs and understand that dietary recommendations are based on repeatedly examined data and are progressively updated and revised based on newly published scientific findings. (STEM) *Science/Biology

Standard 2

Identify the key food safety regulations and government agencies responsible for enforcing them and the division of responsibility with in the Food and Drug Administration (FDA) regarding drugs and foods. (STEM) *Science/Biology

- Understand Food Safety Legislation, and which government agencies that are responsible for the safety of food (include FDA, Delaney Clause, Gras List, USDA, CDC, NMF, EPA, WHO)_
- Identify which division of FDA is responsible over specific drugs and foods.
- Understand that rigorous scientific testing is not FDA-mandated on dietary supplements and became familiar with product certification insignia.
- Identify consumer responsibility to read supplement fact panel and look for credible publications supporting the safety and efficacy of the supplement.
- Examine what is included in the DSHEA Act (include herbs, essential and non- essential vitamins and minerals, nutritional substances, glandulars, fiber, and enzymes).

Standard 3

Identify common intentional food additives, fat substitutes and indigestible fat, and artificial sweeteners. (STEM) *Science/Biology

- Identify the categories of additives (intentional, incidental, and indirect).
- Identify the categories of intentional additives and why they are used (include antimicrobial, antioxidants, artificial colors and flavors, bleaching, chelating, emulsifying, additives, stabilizing and thickening).
- Explain how processing and the incorporation of additives affect the nutritional value of foods (include fat and sugar substitutes).

Standard 4

4 Food safety, including microbial growth and microorganisms causing food-borne illnesses and microorganisms that support health. Provide examples of positive and negative interactions of humankind with microorganisms regarding sickness, health and food production. (STEM) *Science/ Human Biology

- Understand the different microorganisms and microbial growth and classifications of microorganisms (include parasites, protozoa, bacteria, toxins, fungi, viruses, and prions).
- List the different food-borne illnesses and identify the cause of food-borne illnesses, time of onset of the illness, the signs and symptoms of the illness, and the type of food consumed.
- Explain how proper food handling can prevent food-borne illness and the severe GI distress, pH and electrolyte imbalance, and potentially life-threatening illnesses that result from it.
- Identify the microorganisms that are beneficial for health, and others are intentionally added to food for processing purposes (include probiotics and antibiotics).

Standard 5

Understand food safety as it pertains to consumer awareness including food handling, factors affecting microbial growth, manufacturing methods for extending shelf life, food systems, food production, and other food safety concerns. Demonstrate and apply knowledge on life concepts, from the genetic basis of life to cells, organs, organ systems, organisms and the ecosystem in which they interact. Relate levels of organization to humans, plant and animal foods, and the environment. (STEM) *Science/Biology

- Identify safe food handling processes to reduce microbial growth (include temperature control, water, protein, pH, washing hands) Prevent food borne illness by adopting good food handling techniques. (STEM) *Science/Biology/Ecology
- Discuss how most microbes multiply rapidly in a warm environment that is rich in water and protein with a neutral pH.
- Describe how chemical additives, dehydration, irradiation, and modified atmosphere packaging are employed by the food industry to control microbial growth, and HACCP is employed to reduce the risk of food-borne illness.
- Explain the problems associated with natural toxins in food.
- Understand the different levels of organization in the food production system. Demonstrate knowledge of the plant and animal kingdoms in regards to the food system, food webs, food chains, and human interaction. (STEM) *Science/Biology/Ecology
- Identify the benefits and risks of genetically modified foods (GMO), pesticides, antibiotics, and hormones
- Understand the nitrogen cycle from soil to gas
- Catalogue the risk factors for various residues and contaminants in food
- Understand the difference between organic and conventional food production practices
- Examine the sustainability of food systems (grow it, buy it, cook it, local, and organic) Relate the ecological impact and the role for environmental responsibility pertaining to food choices and food system sustainability. (STEM) *Science/Biology/Ecology

Standard 6

Problem Solving and Data Analysis and be able to compute a personalized analysis of two-day intake and draw conclusion from the analysis.

- Evaluate and interpret laboratory and anthropometrical data in relation to chronic disease risk. (STEM) *Biology/Chemistry/Technology

STRAND 7

Apply the principles of proper nutrition to each phase in the life cycle, specifying the particular nutritional choices most important during pre-pregnancy, pregnancy, lactation, infancy, childhood, adolescence, and older adulthood. (STEM) *Human Development/Biology

Standard 1

Pre- Pregnancy/Pregnancy (STEM) *Human Development/Biology

- Explain the development of the fetus from zygote to fetus, identifying the essential maternal nutrients essential for each stage of that development.
- Catalogue the nutrients and vitamins that a woman should consume in increased amounts during pregnancy, explaining the need for this increased consumption.
- Explain how a pregnant woman's inadequate prenatal consumption of folate can increase the risk of birth defects such as spina bifida.
- Explain how a pregnant woman exposes her unborn child to developmental risks if she smokes.
- Takes certain medicines, uses illegal drugs, contracts foodborne illnesses, takes megadoses of vitamins, follows a nutritionally unsound diet, consumes sugar substitutes, or ingests caffeine.
- Explain the effects of maternal alcohol consumption on the fetus and the consequent problems (specifically Fetal Alcohol Syndrome) for her infant child.
- Identify medical problems—particularly gestational diabetes and preeclampsia--that can arise during pregnancy.

Standard 2

Lactation (STEM) *Human Development/Biology

- Contrast the ideal diet for a pregnant woman with the ideal diet for a lactating mother, highlighting the specific nutritional differences.
- List the nutritional and immunological advantages of breast-feeding.
- Identify and explain healthy alternatives for the mother who cannot breast-feed.
- Identify circumstances (maternal illness or maternal use of certain medications, illegal drugs or alcohol) under which a mother should not breast-feed.

Standard 3

Infant (STEM) *Human Development/Biology

- Compare the nutritional value of breast milk to the nutritional value of formula, identifying professional concerns relevant to both.
- Explain at what point in the infant's physical developments the introduction of solid food is nutritionally appropriate.
- Identify which solid foods are the appropriate first complements to formula or breast milk for an infant's diet and explain why.
- List foods should be entirely excluded from the infant's diet for the first year of life and explain why.

Standard 4

Children (STEM) *Human Development/Biology

- Identify the causes of childhood obesity and strategies for helping children either to avoid the problem or to escape from it.
- Explain the role each nutrient plays in the body of the developing child, giving special attention to vitamins and minerals.
- Describe problems associated with children's diets—including childhood allergies, childhood susceptibility to television advertising for nutritionally deficient foods, and childhood vulnerability to dental caries—and outline strategies for dealing with such problems.

Standard 5

Adolescence (STEM) *Human Development/Biology

- Trace the growth and consequent nutritional needs of a typical teenager.
- Explain how the body changes during adolescent puberty and how nutritional choices can affect these changes.
- Describe how eating patterns in teenagers affect their overall health.

Standard 6

Older Adult (STEM) *Human Development/Biology

- Catalogue the nutritional implications of the physical changes incident to aging.
- Summarize the adjustments appropriate for the older adult in their intake of each of the basic nutrients.
- Examine the role of nutrition in fostering longevity and in reducing the risk of Alzheimer's disease—or at least in mitigating its symptoms.
- Identify the obstacles the older adult face in maintain a nutritionally adequate diet.

FCCLA Integration into Foundations of Nutrition:

STAR Events: Career Investigation, Entrepreneurship, Environmental Ambassador, Illustration Talk, Interpersonal Communications, Job Interview, Leadership, Life Event Planning, Nutrition & Wellness, Advocacy, Chapter Service Project Display, Chapter Service Project Portfolio, National Programs in Action, Food Innovations, Hospitality, Tourism and Recreation, Sports Nutrition.

Skill Demonstration Events: Impromptu Speaking, Technology in Teaching, Nutrition, Science in FACS.

National Programs: Career Connection, Families First, Leadership Service in Action, Power of One, Student Body.