

PROGRAM CONCENTRATION: Family and Consumer Science
CAREER PATHWAY: Nutrition and Food Science
COURSE TITLE: Food and Nutrition through the Lifespan

COURSE DESCRIPTION: Food and Nutrition through the Lifespan is an advanced course in food and nutrition that addresses the variation in nutritional needs at specific stages of the human life cycle: lactation, infancy, childhood, adolescence, and adulthood including old age. The most common nutritional concerns, their relationship to food choices and health status and strategies to enhance well-being at each stage of the lifecycle are emphasized. This course provides knowledge for real life and offers students a pathway into dietetics, consumer foods, and nutrition science careers with additional education at the post-secondary level.

FCS-FNL-1. Students will design and demonstrate a nutritious diet.

- a. Define and demonstrate an understanding of the components of a nutritious diet by planning menus for different age groups using Dietary Guidelines for Americans, other consumer dietary recommendations including My Pyramid, and the Exchange Lists for Meal Planning and Food Labels to plan menus.
- b. Identify common food allergies and intolerances and their effect on menu planning, meal preparation, and the selection of foods in the marketplace.
- c. Select and incorporate healthy recipes when planning menus and select cooking methods and ingredient substitutions that improve healthfulness of foods prepared, including reduction of salt and fat and enhancement with herbs and spices, vinegars and oils, rubs and marinades, aromatic vinegars and reduction and searing; discuss health-related selection criteria for convenience foods and restaurant foods.
- d. Assess the effects of lifestyle, income, health, and other factors on food selection and nutrition at different stages in the lifespan.
- e. Identify and describe resources, both governmental and other, that provide a nutrition safety net for eligible individuals at different stages of the life cycle (e.g. WIC, School Nutrition Programs, Food Stamps, EFNEP, Nutrition Program for the Elderly, Soup Kitchens, Food Banks, etc) and link to potential careers.

ACADEMIC STANDARDS:

ELA11LSV1. The student participates in student-to-teacher, student-to-student and group verbal interactions.

NFCS14.3.1. Apply various dietary guidelines in planning to meet nutrition and wellness needs.

FCS-FNL-2. Students will discuss the requirements of maternal and fetal nutrition during pregnancy.

- a. Discuss the changes throughout pregnancy for the mother and the developing fetus and the role of the placenta.

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- b. Identify the stages of fetal growth and the nutritional influences during critical periods.
- c. Discuss prenatal nutrition related concerns for the baby during pregnancy, such as supplements, pica, alcohol, caffeine, artificial sweeteners, heavy metals and pesticides, smoking and neural tube defects.
- d. Study common nutrition-related issues and complaints of pregnancy such as constipation, hemorrhoids, heartburn, gestational diabetes, hypertension, nausea, and vomiting.
- e. Discuss high risk pregnancies with emphasis on teenage pregnancies

ACADEMIC STANDARDS:

SAP1. Students will analyze the role of the reproductive system as it pertains to the growth and development of humans.

- b. Describe the stages of human embryology and gestation including investigation of gestational and congenital disorders (e.g. ectopic pregnancy, miscarriage, cleft palate, hydrocephaly, fetal alcohol syndrome).*

ELARL5. The student participates in student-to-teacher, student-to-student and group verbal interactions.

ELA11SV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning and combine traditional rhetorical strategies of narration, exposition, persuasion and description.

NFCS 14.2. Evaluate the nutritional needs of individuals and families in relation to health and wellness across the life span.

FCS-FNL-3. Students will discuss the proper feeding of newborns by analyzing nutritional requirements and potential deficiencies of mother and child during the first weeks after birth.

- a. Compare and contrast the nutritional content of breast milk (produced in the various stages of lactation), cows milk, soy milk, and various infant formulas.
- b. Discuss the advantages and disadvantages of breastfeeding versus bottle feeding to both mother and baby.
- c. Demonstrate the steps in the proper preparation of infant formula, and identify potential safety hazards in the preparation of infant formula and the storage of infant formula and expressed breast milk.

ACADEMIC STANDARDS:

ELARL5. The student participates in student-to-teacher, student-to-student and group verbal interactions.

NFCS14.2.2. Research the relationship of nutrition and wellness to individual and family health throughout the life span.

FCS-FNL-4. Students will develop and analyze a nutritionally balanced diet for infants from birth through the first year of life.

- a. Outline the development of the digestive system, absorption process, renal function, and oral structure in infancy and the implications of these developments for feeding infants.
- b. Outline and justify the recommendations for the introduction of solid foods, taking into account early food allergies.
- c. Compare commercially available infant foods and describe techniques for the home preparation of infant foods.

ACADEMIC STANDARDS:

ELA11LSV1. The student participates in student-to-teacher, student-to-student and group verbal interactions.

SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.

- a. Describe the chemical and physical mechanisms of digestion, elimination, transportation, and absorption within the body to change food and derive energy.
- c. Relate the role of the urinary system to regulation of body wastes (i.e. water-electrolyte balance, volume of body fluids).

NFCS9.3.3. Assess principles to maximize nutrient retention in prepared foods.

FCS-FNL-5. Students will explain the nutritional requirements of the stages of childhood.

- a. Analyze the causes, treatment, and prevention of childhood obesity.
- b. Evaluate a school nutrition program for meeting the nutritional needs at different stages of childhood and determine and recommend any needed changes to the program.
- c. Investigate nutrients that may pose problems in the diet and evaluate the use of dietary supplements in early childhood.
- d. Identify children at nutritional risk.

ACADEMIC STANDARDS:

NFCS9.3.6. Critique the selection of foods to promote a healthy lifestyle.

FCS-FNL-6. Students will explain the nutritional requirements of the adolescence diet.

- a. Identify changes in body composition as a result of growth and development and explain the cause of increased nutritional risk for individuals in this age group.
- b. Demonstrate an awareness of fluids, hydration, carbohydrates, and supplements on physical activity.
- c. Explain the causes of obesity and evaluate popular weight loss diets within the context of an adequate and balanced diet.
- d. Distinguish between eating disorders, predict the outcomes, and identify the at-risk individuals.

ACADEMIC STANDARDS:

SAP1. Students will analyze anatomical structures in relationship to their physiological functions.

- b. *Investigate the interdependence of the various body systems to each other and to the body as a whole.*

NFCS14.2.3. Assess the impact of food and diet fads, food addictions and eating disorders on wellness.

FCS-FNL-7. Students will explain the nutritional requirements of the middle adult years.

- a. Identify the benefits of regular exercise such as reduced disease risk, healthy weight, and improved sense of well-being.
- b. Describe and demonstrate the components and appropriate activities of a physical fitness program such as muscle strength, endurance (aerobic fitness), and flexibility.
- c. Discuss nutrition strategies to prevent the development of chronic diseases such as heart disease, diabetes, cancers, and osteoporosis.
- d. Discuss the use of alternative sweeteners and fat substitutes and analyze their nutritional effects and cooking performance.
- e. Predict the weight and nutritional status outcomes in women as a result of hormonal changes.

ACADEMIC STANDARDS:

SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.

- b. *Explain how the skeletal structures provide support and protection for tissues, and function together with the muscular system to make movements possible.*

NFCS 14.3.2. Design strategies that meet the health and nutrition requirements of individuals and families with special needs.

FCS-FNL-8. Students will explain the nutritional requirements of the aging individual.

- a. Describe the biological aspects of aging and life expectancy in relation to current demographics in the U.S.
- b. Compare nutrient needs of the elderly with middle age adults, being certain to focus on the nutrients of concerns such as water, vitamin B₆, vitamin B₁₂, folate, vitamin D, calcium, and zinc.
- c. Identify medications commonly used by the elderly and the potential of medications to impact nutritional status.
- d. Describe food assistance programs for the elderly.

ACADEMIC STANDARDS:

SAP3. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.

- a. *Describe the chemical and physical mechanisms of digestion, elimination, transportation, and absorption within the body to change food and derive energy.*
- e. *Describe the effects of aging on body systems.*

NFCS14.1.5. Examine legislation and regulations related to nutrition and wellness issues.

FCS-FNL-9. Students will identify careers in foods and nutrition.

- a. Identify foods and nutrition careers in the government, business, media, educational, and healthcare sectors and list the educational requirements for those identified.
- b. Analyze how studying foods and nutrition now can benefit one in the future.

ACADEMIC STANDARDS:

ELA11LSV1. The student participates in student-to-teacher, student-to-student and group verbal interactions.

NFCS 9.1. Analyze career paths within food science, dietetics, and nutrition industries.

Reading Standard Comment

After the elementary years, students engage in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas in context.

Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

MRC. Students will enhance reading in all curriculum areas by:

- a. Reading in all curriculum areas
 - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
 - Read both informational and fictional texts in a variety of genres and modes of discourse.
 - Read technical texts related to various subject areas.
- b. Discussing books
 - Discuss messages and themes from books in all subject areas.
 - Respond to a variety of texts in multiple modes of discourse.
 - Relate messages and themes from one subject area to messages and themes in another area.
 - Evaluate the merit of texts in every subject discipline.
 - Examine author's purpose in writing.
 - Recognize the features of disciplinary texts.
- c. Building vocabulary knowledge
 - Demonstrate an understanding of contextual vocabulary in various subjects.
 - Use content vocabulary in writing and speaking.

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- Explore understanding of new words found in subject area texts.
- d. Establishing context
- Explore life experiences related to subject area content.
 - Discuss in both writing and speaking how certain words are subject area related.
 - Determine strategies for finding content and contextual meaning for unknown words.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.

Characteristics of Science

Habits of Mind

SCSh3. Students will identify and investigate problems scientifically.

- a. Suggest reasonable hypotheses for identified problems.
- b. Develop procedures for solving scientific problems.
- c. Collect, organize and record appropriate data.
- e. Develop reasonable conclusions based on data collected.
- f. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

SCSh6. Students will communicate scientific investigations and information clearly.

- b. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.
- d. Participate in group discussions of scientific investigation and current scientific issues.

The Nature of Science

SCSh7. Students analyze how scientific knowledge is developed.

Students recognize that:

- b. Universal principles are discovered through observation and experimental verification.
- c. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
- e. Testing, revising, and occasionally rejecting new and old theories never ends.