



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	NUTR
Course Number:	110
Descriptive Title:	Introduction to Nutrition Science
Division:	Industry and Technology
Department:	Nutrition and Foods
Course Disciplines:	Family and Consumer Sciences
Catalog Description:	This course is an introduction to the fundamental principles of nutrition utilizing the scientific method and dietary approaches to health and wellness. Nutrients will be identified, along with their physiological functions, metabolic pathways and role in diet and disease. Additional topics will include food science, the application of food safety principles and lifecycle nutrition.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	Eligibility for English 1A
Enrollment Limitation:	
Hours Lecture (per week):	3
Hours Laboratory (per week):	0
Outside Study Hours:	6
Total Course Hours:	54
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	Prior to July 1992
Transfer UC:	Yes
Effective Date:	
General Education: ECC	Area I, Natural Sciences Area 5, Health and Physical Education
Term:	
Other:	
CSU GE:	Area B2 - Life Science Area E - Lifelong Understanding and Self-Development

	Term:
	Other:
	IGETC:
	Term:
	Other:
Student Learning Outcomes:	<p>SLO #1 Personal Dietary Intake</p> <p>Utilizing dietary analysis software students will apply current nutrition standards and dietary guidelines to analyze and critique their personal dietary intake.</p> <p>SLO #2 Nutrition News Article</p> <p>Following textbook review and classroom discussion, students will analyze and evaluate the reliability and validity of a nutrition news article.</p> <p>SLO #3 Nutrition Fact Panel</p> <p>Given in-class demonstration students will interpret and evaluate information provided on a Nutrition Facts Label.</p>
Course Objectives:	<ol style="list-style-type: none"> 1. Examine how food availability, advertising, convenience, sustainability, food insecurity and nutrition impact the physiological, social and cultural factors that influence eating behavior and food choices. 2. Understand the principles of the scientific method in forming and testing hypotheses in the field of nutrition. 3. Evaluate nutritional information for scientific merit, utilizing the principles of the scientific method and reliable nutrition resources. 4. Evaluate a personal diet using dietary self-assessment software to identify nutrients of concern and make appropriate recommendations based on MyPlate and the Dietary Reference Intakes (DRI's) to address those concerns. 5. Evaluate the nutrient nutritional value of food based on the Nutrition Facts Label, noted ingredients and food allergen warning information. 6. Discuss how the immune system functions and the supporting role nutrition plays to resist diseases. 7. Identify the functions and structures involved in the cardiovascular, lymphatic and endocrine systems and how they are affected by chronic diseases. 8. Describe the roles of the mouth, stomach, small intestine, large intestine, liver, gallbladder and pancreas in digestion and the absorption of nutrients throughout the gastrointestinal tract. 9. Compare and contrast the structures of macro and micro nutrients to include carbohydrates, lipids, protein, vitamins, minerals and water, their sources from food, physiological functions, deficiency diseases, and their roles in the body and human health. 10. Identify genetic, metabolic and physiologic factors involved in energy balance and weight control. 11. Discuss psychological factors and symptoms of various eating disorders and identify appropriate resources for treatment.

	<ol style="list-style-type: none"> 12. Define and describe the processes involved in metabolism including the glycolysis and the creation of adenosine triphosphate (ATP); differentiate between anabolic and catabolic reactions. 13. Explain the physiological effects of exercise on muscles and organs, as well as its impact on metabolism, mental and physical health. 14. Identify dietary and lifestyle factors that contribute to chronic health problems in the United States including obesity, cardiovascular disease, diabetes, osteoporosis, cancer, dental health and food allergies. 15. Compare and contrast common sources of viruses, bacteria, fungi, and parasites that can make their way into the food supply and explain the basic principles of food safety. 16. Understand foodborne illnesses caused by various microbes including symptoms, incubation periods, high-risk food sources and duration of illness. 17. Discuss common food additive chemicals, their functions in food and the laws that govern their use in the food supply. 18. Examine factors that affect global nutrition, malnutrition, regenerative agriculture, biofortification, sustainability, the food supply and food safety; explore Federal and Non-Federal food assistance programs for people in the United States. 19. Analyze how nutrient needs change throughout the lifecycle including pregnancy nutrition, infant nutrition, lactation, childhood through adolescents and adulthood.
<p>Major Topics:</p>	<p>I. Overview of nutrition science (6 hours, lecture)</p> <ol style="list-style-type: none"> A. Introduction to nutrition <ol style="list-style-type: none"> 1. Nutrient classifications, functions and food sources 2. Food choices 3. Nutrition and chronic disease B. Evaluating nutrition information <ol style="list-style-type: none"> 1. Scientific method and principles 2. Identifying trustworthy nutrition information 3. Identifying credible nutrition and health professionals <p>II. Designing a healthy diet (3 hours, lecture)</p> <ol style="list-style-type: none"> A. Dietary Reference Intakes B. MyPlate C. Dietary Guidelines for Americans D. Healthy People 2030 E. Diet planning <ol style="list-style-type: none"> 1. Ethnic diets and cultural influences F. Food package labeling G. Nutrition facts label H. Food allergen warning I. Health and nutrient claims <p>III. The human body (4 hours, lecture)</p> <ol style="list-style-type: none"> A. The cell <ol style="list-style-type: none"> 1. Structure and organelles

- B. The systems
 - 1. Digestive system
 - a. Nutrient ingestion, digestion, absorption, transport, metabolism, excretion
 - b. Gastrointestinal problems
 - 2. Cardiovascular system
 - a. Heart, blood, blood vessels
 - 3. Respiratory system
 - 4. Lymphatic and immune systems
 - 5. Endocrine System
 - a. Hormones and glands

IV. Carbohydrates (6 hours, lecture)

- A. Structure, classification, food sources
 - 1. Photosynthesis
 - 2. Monosaccharides, disaccharides, polysaccharides
 - 3. Physiological functions in the body
 - 4. Digestion, absorption, transport and metabolism
 - 5. Dietary recommendations
- B. Complications and diseases
 - 1. Lactose intolerance
 - 2. Diabetes and glucose intolerance
 - 3. Hypoglycemia

V. Lipids (4 hours, lecture)

- A. Structure, classification, food sources
 - 1. Triglycerides, phospholipids, cholesterol
 - 2. Physiological functions in the body
 - 3. Digestion, absorption, transport and metabolism
 - 4. Dietary recommendations
- B. Cardiovascular disease, diet and prevention
 - 1. Blood lipids and lipoproteins
 - 2. Atherosclerosis
 - 3. Hypertension

VI. Proteins (4 hours, lecture)

- A. Structure, classification, food sources
 - 1. Amino Acids
 - 2. Physiological functions in the body
 - 3. Protein synthesis
 - 4. Digestion, absorption and metabolism
 - 5. Dietary recommendations
 - 6. Plant based diets and protein needs
 - 7. Protein and amino acid supplements
- B. Protein-energy malnutrition
 - 1. Marasmus and kwashiorkor
- C. Food allergies

VII. Vitamins (4 hours, lecture)

- A. Classification, food sources
 - 1. Water soluble, fat soluble
 - 2. Physiological functions in the body
 - 3. Absorption, transport, storage and excretion
 - 4. Food sources
 - 5. Antioxidants and phytochemicals
 - 6. Dietary recommendations
- B. Deficiency diseases and toxicity symptoms
- C. Nutrition and cancer

VIII. Water and minerals (4 hours, lecture)

- A. Classification, food sources
 - 1. Physiological functions in the body
 - 2. Absorption, transport, and excretion
 - 3. Food sources
- B. Deficiency diseases and toxicity symptoms
 - 1. Dehydration and hyponatremia
 - 2. Fluid and electrolyte balance
- C. Bone and blood health

IX. Weight management (6 hours, lecture)

- A. Body composition
 - 1. Estimating energy requirements
- B. Nutrition assessment methods
 - 1. Anthropometric, clinical, dietary
 - 2. Environmental influences
- C. Weight related health problems
 - 1. Evaluating weight loss diets
 - 2. Behavior modification
- D. Metabolism
 - 1. Genetic factors
 - 2. Hormones
- E. Eating disorders
 - 1. Anorexia nervosa, bulimia nervosa, and binge eating disorder
 - 2. Symptoms and treatment

X. Nutrition and physical activity (3 hours, lecture)

- A. Benefits of physical fitness
- B. Cardiorespiratory activity
- C. Weight resistance training
- D. Energy metabolism and metabolic pathways
 - 1. Glycolysis
 - 2. Tricarboxylic acid cycle
 - 3. ATP
 - 4. Catabolic and anabolic reactions
- E. Utilization of energy fuels
 - 1. Carbohydrates and lipid oxidation

	<p>F. Sports drinks, nutrient supplements, performance diets</p> <ol style="list-style-type: none"> 1. Fluids and temperature regulation 2. Ergogenic aids <p>XI. Nutrition through the lifecycle (4 hours, lecture)</p> <p>A. Prenatal</p> <p>B. Pregnancy</p> <ol style="list-style-type: none"> 1. Physiological changes and nutrient needs <p>C. Infant nutrition</p> <ol style="list-style-type: none"> 1. Lactation 2. Formula feeding <p>D. Child and teen adolescent nutrition</p> <p>E. Adult nutrition</p> <p>F. Geriatric nutrition</p> <ol style="list-style-type: none"> 1. Physiological changes and nutrient needs 2.. Nutrient-drug interactions <p>XII. Food safety and food science (6 hours, lecture)</p> <p>A. Microbes and causes of foodborne illness</p> <p>B. Government agencies</p> <ol style="list-style-type: none"> 1. Food law <p>C. Food additives</p> <p>D. Pesticides and contaminants</p> <p>E. Food science</p> <ol style="list-style-type: none"> 1. Food processing and nutrient value 2. Irradiation 3. Genetically modified organisms (GMO) 4. Organic foods <p>F. Global nutrition</p> <ol style="list-style-type: none"> 1. Hunger and food insecurity 2. Regenerative agriculture, biofortification, and sustainability
Total Lecture Hours:	54
Total Laboratory Hours:	0
Total Hours:	54
Primary Method of Evaluation:	Substantial writing assignments
Typical Assignment Using Primary Method of Evaluation:	Select a food product from your cupboard, refrigerator or pantry. Evaluate and identify all components of the Nutrition Facts Label of the food package. This includes the micro nutrients, macro nutrients, ingredients and product details. Prepare a two-page report and submit to the instructor.
Critical Thinking Assignment 1:	Locate a nutrition news article from any mainstream newspaper or magazine to identify the scientific method used in the research cited. The validity and credibility of the article will be evaluated. Prepare a two-page written critique and submit to the instructor.

Critical Thinking Assignment 2:	Utilize a dietary computer database to evaluate a personal diet record. Accurately record all food and beverage intake over a three-day period. Using the dietary analysis software, analyze nutrient intake, and recommend appropriate dietary adjustments for deficiencies and excesses. Prepare and submit a three- to five-page report to the instructor.
Other Evaluation Methods:	Performance Exams Quizzes Written Homework Term or Other Papers Multiple Choice Matching Items True/False Other (specify): Dietary Analysis Assignment
Instructional Methods:	Discussion Group Activities Lecture Multimedia Presentations
If other:	Dietary Analysis Assignment
Work Outside of Class:	Study Required reading Written work
If Other:	Dietary Analysis Assignment
Up-To-Date Representative Textbooks:	Smith, Anne, <u>Wardlaw's Contemporary Nutrition</u> , 12th edition, McGraw-Hill, 2022. Schiff, Wendy, <u>Nutrition for Healthy Living</u> , 6th edition, McGraw-Hill, 2022.
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Dietary Analysis Software program
Requisite:	
Category:	
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	Eligibility for English 1A

<p>Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).</p>	<p>It is recommended that students should be able to read and comprehend textbooks that include science-based information and write an essay that demonstrates critical thinking.</p> <p>Summarize, analyze, evaluate, and synthesize college-level texts.</p> <p>Write a well-reasoned, well-supported expository essay that demonstrates application of the academic writing process.</p>
<p>Requisite Skill:</p>	
<p>Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable</p>	
<p>Enrollment Limitations and Category:</p>	
<p>Enrollment Limitations Impact:</p>	
<p>Course Created by:</p>	<p>Nancy Hufstetler</p>
<p>Date:</p>	<p>09/01/1977</p>
<p>Original Board Approval Date:</p>	
<p>Last Reviewed and/or Revised by:</p>	<p>Mary Lyons</p>
<p>Date:</p>	<p>03/31/2022</p>
<p>Last Board Approval Date:</p>	<p>1/17/2023</p>