

OHLONE COLLEGE
Ohlone Community College District
OFFICIAL COURSE OUTLINE

I. Description of Course:

1. **Department/Course:** CFS - 106
2. **Title:** Food: The Chemicals We Eat
3. **Cross Reference:**
4. **Units:** 3
Lec Hrs: 3
Lab Hrs:
Tot Hrs: 54.00
5. **Repeatability:** No
6. **Grade Options:** Grade Only (GR)

7. **Degree/Applicability:**
Credit, Degree Applicable, Transferable
- CSU (T)
8. **General Education:**
9. **Field Trips:** May be Required
10. **Requisites:**

12. Catalog Description:

This course introduces non-majors to the basics of chemicals present in food. A series of topics are discussed, which will integrate and elucidate the components of food by making use of the chemical, physical, and biological sciences. Beginning with the introduction to food as a chemical, students will learn about different kinds of foods and their properties. Students will also learn about food additives, coloring and flavoring agents. The Government's role in assuring food quality will be examined. At the end of the course, students will be able to recognize the information that is on a food label and be able to apply this knowledge to their well-being.

13. Class Schedule Description:

Introduction to food as a chemical: foods consumed by humans, food additives, toxicology, government role in processing.

14. Counselor Information:

CFS 106 is a new lecture course developed specifically for non-science majors. Its primary audience is students who are interested in learning more about the kind of chemicals present in food, additives, and their diet, while fulfilling their GE requirements at the University level. The Department foresees that the course will be very popular since food is a basic requirement of life. In addition, this course will integrate basic sciences and explain the chemistry of food in the context of its natural constituents and additives.

II. Student Learning Outcomes

The student will:

1. Demonstrate the understanding of introductory concepts of chemicals in food components, additives, analysis, and the basics of food processing, packaging, storage, and quality control.
2. Recognize some basic chemical reactions and where and how these reactions relate to observations about food in the real world.
3. Integrate the concept of scientific method as applied to consumer and family studies as it

relates to food.

4. Illustrate how the chemicals in food are an important and integral part of our food chain, culture, its health, and societal behavior through foods.
5. Analyze how food chemicals pervade food science and intervene in food production and packaging with cost-benefit implications.
6. Develop critical thinking skills, such as analytical and critical interpretation, integrative application of concepts to problem solving.

III. **Course Outline:**

A. The Foundation of Food Chemistry

1. Introduction to Food Chemistry
 - a. Definition
 - b. Overview of sensory evaluation
 - c. Food colors and flavors
 - d. Methods of science, e.g. measuring
2. Food as Substance
 - a. Changes in food
 - i. Elements
 - ii. Compounds and solids
 - ii. Liquids and gases
3. Chemical Nature of Foods
 - a. Aspects of food
 - i. Food chemicals
 - ii. Components and structures
 - iii. Acidic and basic foods
 - a) Why does food form gas?

B. Chemistry of Food Components Consumed by Humans

1. Water and its role in life
 - a. Sources
 - b. Requirements
 - c. Functions
2. Sugars and starches
 - a. Types of sugars and starches in food
 - b. Role in candy and confectionary and humans
3. Proteins and their constituents
 - a. Egg as a source of protein
 - b. Types of proteins in food and their functions
 - c. Properties and requirements
4. Fats and oils
 - a. Common fats and oils
 - i. Use and functions
 - ii. Saturated and unsaturated fat
 - iii. Cholesterol: advantages and disadvantages
5. Vitamins and Minerals
 - a. Types of vitamins (Vitamin A, D, E and K; B-Complex)
 - b. Types of minerals (chromium, calcium, phosphorous, iron, zinc)
 - c. Basic constitution
 - d. Presence and interaction with other food components

- e. Overview of functions as they relate to food technology
- C. Food Additives and Toxicology
 - 1. Introduction to Principles of Toxicology
 - a. Safety
 - b. Exposure
 - c. Absorption
 - d. Storage
 - e. Excretion
 - 2. Determination of Toxicants in food
 - a. Definition
 - b. Sampling
 - c. Extraction
 - d. Clean up
 - e. Types of toxicities
 - 3. Food Additives
 - a. Overview of Regulations
 - b. Preservatives
 - c. Antioxidants
 - d. Sweeteners
 - e. Coloring agents
 - f. Flavoring agents
 - g. Flavor enhancers.
 - 4. Pesticide Residues in Foods
 - a. Role of government and chemistry
 - b. Pesticides in food chain
 - c. Insecticides
 - d. Herbicides

IV. **Course Assignments:**

A. Reading Assignments

1. Reading of the text and literature, including on line articles and handouts.

B. Projects, Activities, and other Assignments

1. Individual and group exercises/projects based on various food science topics: food components, preservatives, additives, food processing, food law.
2. Written and short oral presentations.

C. Writing Assignments

1. Lecture worksheets based on the topics covered during the semester.

V. **Methods of Evaluation/Assessment:**

- A. Graded worksheets
- B. Individual and group inquiry and discovery exercises/projects/presentations
- C. Quizzes
- D. Midterm exam
- E. Comprehensive final exam

VI. **Methods of Instruction:**

- A. Lecture
- B. Discussion
- C. Demonstration
- D. Audiovisual
- E. Computer Assisted Instruction
- F. Collaborative Learning

VII. Textbooks:

Recommended

1. Kaur, J and B. H.Gump *Food: The Chemicals We Eat* First Edition, Houghton Mifflin, 2008 ISBN: 978-0547-083

Supplemental

VIII. Supplies:

CID 3331