

# NUFD 5: SCIENCE OF FOOD

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## In Workflow

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## Approval Path

1. Sun, 21 Feb 2021 16:35:47 GMT  
Mical Shilts (shiltsm): Approved for FACS Committee Chair
2. Sun, 21 Feb 2021 19:52:45 GMT  
Lynn Hanna (lhanna): Approved for FACS Chair
3. Wed, 24 Mar 2021 15:56:09 GMT  
Tristan Josephson (tristan.josephson): Rollback to Initiator
4. Thu, 25 Mar 2021 04:47:49 GMT  
Mical Shilts (shiltsm): Approved for FACS Committee Chair
5. Thu, 25 Mar 2021 18:13:15 GMT  
Lynn Hanna (lhanna): Approved for FACS Chair
6. Fri, 02 Apr 2021 18:14:22 GMT  
Tristan Josephson (tristan.josephson): Approved for SSIS College Committee Chair
7. Mon, 05 Apr 2021 23:49:05 GMT  
Marya Endriga (mendriga): Approved for SSIS Dean

## New Course Proposal

Date Submitted: Wed, 24 Mar 2021 18:46:47 GMT

### Viewing: NUFD 5 : Science of Food

Last edit: Wed, 24 Mar 2021 18:46:45 GMT

Changes proposed by: Seunghee Wie (101022892)

#### Contact(s):

Name (First Last)	Email	Phone 999-999-9999
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#### Catalog Title:

Science of Food

#### Class Schedule Title:

Science of Food

#### Academic Group: (College)

SSIS - Social Sciences & Interdisciplinary Studies

#### Academic Organization: (Department)

Family and Consumer Sciences

#### Will this course be offered through the College of Continuing Education (CCE)?

No

#### Catalog Year Effective:

Spring 2022 (2022/2023 Catalog)

**Subject Area: (prefix)**

NUFD - Nutrition and Food

**Catalog Number: (course number)**

5

**Course ID: (For administrative use only.)**

TBD

**Units:**

3

**In what term(s) will this course typically be offered?**

Fall, Spring, Summer

**Does this course require a room for its final exam?**

Yes, final exam requires a room

**Does this course replace an existing experimental course?**

No

**This course complies with the credit hour policy:**

Yes

**Justification for course proposal:**

We are proposing to develop a new course, NUFD 5 Science of Food, for GE Area B1 Physical Science.

– NUFD 5 is an introductory food science course, including basic food composition, food processing, and food technology related to food's chemical and physical properties. The course explains the chemical and physical properties of major food components. It examines the color, flavor, and texture of food to understand key factors in visual and sensory appeal. Students will review evidence-based practices and form reasoned opinions about food selection and food safety issues of personal, public, and ethical concern. –The need and demand for an introductory food science course has been raised by recent graduates and in general as consumers. A recent CSUS study identified that students wanted to know more about food and cooking (Hall et al., 2018). The majority of Americans (Food Safety News, October 20, 2020) are concerned about chemicals in food, the use of new technology such as GMOs, allergens, and intolerance provoking substances in food. NUFD 5 would meet students' desire to know more about food and prepare them to be knowledgeable consumers.

– Currently, GE Area B1 includes courses from ASTR, CHEM, GEOG, GEOL, and PHYS, which offers limited choices for non-science majors. This course will give an additional option in GE Area B1. NUFD 5 can also be offered in an asynchronous or synchronous online format and be attractive for the Course Match program.

**Course Description: (Not to exceed 80 words and language should conform to catalog copy.)**

Introduction to food science fundamentals including food composition, chemical and physical reactions, and nutritional properties of food. Overview of evidence-based practices for food selection, storage, and preparation. Examination of specific issues such as food safety, food technology, food supply, and food law. Lecture 3 hours.

**Are one or more field trips required with this course?**

No

**Fee Course?**

No

**Is this course designated as Service Learning?**

No

**Does this course require safety training?**

No

**Does this course require personal protective equipment (PPE)?**

No

**Does this course have prerequisites?**

No

**Does this course have corequisites?**

No

**Graded:**

Letter

**Approval required for enrollment?**

No Approval Required

**Course Component(s) and Classification(s):**

Lecture

**Lecture Classification**

CS#02 - Lecture/Discussion (K-factor=1WTU per unit)

**Lecture Units**

3

**Is this a paired course?**

No

**Is this course crosslisted?**

No

**Can this course be repeated for credit?**

No

**Can the course be taken for credit more than once during the same term?**

No

**Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."**

Upon completion of this class, students will be able to:

1. Discuss different types of foods and food products in the market and survey food labeling.
2. Identify food composition and examine the chemical and physical reactions and functional and nutritional properties of food.
3. Apply knowledge of food composition and properties to the understanding of food selection, storage, and preparation.
4. Interpret federal food regulations and food standards applicable to food quality, safety, and nutritional value.
5. Review emerging trends in food industry and food products (i.e. biotechnology, organic, allergens).

This course also fulfills GE Area B1 Learning Outcomes.

1. A student will be able to explain and apply core ideas and models concerning physical systems and mechanisms, citing critical observations, underlying assumptions and limitations.
2. A student will be able to describe how scientists create explanations of natural phenomena based on the systematic collection of empirical evidence subjected to rigorous testing and/or experimentation.
3. A student will be able to access and evaluate scientific information, including interpreting tables, graphs and equations.
4. A student will be able to recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public, and ethical concern.

**Attach a list of the required/recommended course readings and activities:**

NUFD 5 Syllabus for Form A.docx

**Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.**

Three Quizzes (Course Objectives, 1, 2, 3, 4, &amp; 5)

Three Exams (two midterms and one comprehensive final) (Course Objectives 1, 2, 3, 4, &amp; 5)

Five Food Group Worksheets (Course Objectives 1, 2, &amp; 3)

One Reflective Writing Assignment (Course Objectives 4 &amp; 5)

**For whom is this course being developed?**

General Education

Other

**Is this course required in a degree program (major, minor, graduate degree, certificate?)**

No

**Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?**

No

**Will there be any departments affected by this proposed course?**

No

**I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.**

I/we agree

**University Learning Goals**

**Undergraduate Learning Goals:**

Competence in the disciplines  
Knowledge of human cultures and the physical and natural world  
Intellectual and practical skills

**Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?**

No

**GE Course and GE Goal(s)**

**Is this a General Education (GE) course or is it being considered for GE?**

Yes

**In which GE area(s) does this apply?**

B1. Physical Science

**Which GE objective(s) does this course satisfy?**

Read, write, and understand relatively complex and sophisticated English prose.  
Find and use common information resources, engage in specialized library research, use computers and seek out appropriate expert opinion and advice.  
Use mathematical ideas to accomplish a variety of tasks.  
Gain a general understanding of current theory, concepts, knowledge, and scientific methods pertaining to the nature of the physical universe, ecosystems, and life on this planet.

**Attach Course Syllabus with Detailed Outline of Weekly Topics:**

NUFD 5 Syllabus for Form A.docx

Syllabi must include: GE area outcomes listed verbatim; catalog description of the course; prerequisites, if any; student learning objectives; assignments; texts; reading lists; materials; grading system; exams and other methods of evaluation.

**Will more than one section of this course be offered?**

Yes

**Provide a description of what would be considered common to all sections and what might typically vary between sections:**

The course objectives, course textbook, quizzes, exams, worksheets, the reflective writing assignment, and the outlined topics in the master syllabus will be consistent across all sections. Class activities, additional assignments, and additional references may vary based on the instructor.

**Please write a statement indicating the means and methods for evaluating the extent to which the objectives of the GE Area(s) and any writing requirements are met for all course sections:**

The means and methods for evaluating the GE Area B1 objectives will be met by the following assessments.

- Quizzes (GE Area B1 LO 1, 2, 3, & 4)
- Exams (GE Area B1 LO 1, 2, 3, & 4)
- Worksheets (GE Area B1 LO 1, 3, & 4)
- Writing Assignment (GE Area B1 LO 1, 2, 3, & 4)

**What steps does the department plan to take to ensure that instructors comply with the respective category criteria and who is responsible?**

These multi-sectioned courses taught by different faculty will be required to use a master syllabus to attain the shared learning outcomes of AreaB1 and additional learning outcomes specific to its content. We will have a lead tenured faculty member who coordinates the core textbook adoption for multi-sections. The other faculty members are required to include all the course objectives, core assignments, and topics outlined in the master syllabus. They may add additional assignments, readings, or activities. At the beginning of each semester, each syllabus prepared by different faculty for multi-sections of NUFD 5 should be submitted and reviewed by the lead tenured faculty. The FACS Department is maintaining substantial compliance to the master syllabus. This is to ensure that we continue to meet the General Education requirements as well as our program articulation requirements.

## General Education Details - Area B1: Physical Science

Section 1.

**"Indicate in written statements how the course meets the following criteria for Category B1. Relate the statements to the course syllabus and outline. Be as succinct as possible.**

### General Criteria:

**Is an introductory course with no college level prerequisites.**

NUFD 5 is an introductory food science course that doesn't require any college-level prerequisites. People are biological beings who require food to sustain life. Their daily food choices and eating practices are sufficient enough to take this introductory-level food science course.

**Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.**

Food consumption patterns are influenced by many social and economic factors. Technological developments also influence our food choices. Exploring various food products available in the market place will prepare students to discern differences in food composition (protein, carbohydrates, fats, vitamins, minerals, and water). This course will cover broad and comprehensive food groups in the U.S. market referring to the USDA's MyPlate food groups (fruits, vegetables, grains, protein foods, and dairy). The topics and discussions are not restricted to specialized food groups.

**Introduces students to one or more of the disciplines whose purpose is to acquire knowledge of the physical universe.**

NUFD 5 will introduce the chemical and physical properties of food composition and discuss various processing methods to refine and diversify the type of foods and enhance food quality. For example, homogenization, gelatinization and gelation, coagulation, oxidation, and emulsification are food components' physical changes and reactions that occur during manufacturing, storage, cooking, or holding. Students will learn the specific mechanism of the physical movement and the chemical reaction via graphs, tables, and visual aids.

### Specific Criteria:

**A student will be able to explain and apply core ideas and models concerning physical systems and mechanisms, citing critical observations, underlying assumptions and limitations.**

Students will use scientific evidence-based data to apply their knowledge of food selection related to the physical properties and the nutritional value of food. Through five food group worksheet assignments, students will be able to compare the food products offered in the database and identify the specific type of food or brand which will meet their needs.

**A student will be able to describe how scientists create explanations of natural phenomena based on the systematic collection of empirical evidence subjected to rigorous testing and/or experimentation.**

NUFD 5 will introduce food technologies (i.e. GMO and Food irradiation) and emphasize the pros and cons of these food options using empirical evidence based on a review of journal articles and educational media prepared by experts and scientists in the field. Students will reflect on their position in a writing assignment about GMO and irradiated food technologies being used in the production of food available to consumers.

**A student will be able to access and evaluate scientific information, including interpreting tables, graphs and equations.**

Students will access and evaluate the data from various resources, including the USDA's FoodData Central database, to examine the impact of the different processing methods on the nutrient properties. Students will evaluate scientific information from peer-reviewed journal articles and the textbook to learn about the changes in chemical and physical reactions that occur throughout food processing (i.e. cooking, cooling, reheating). Students will interpret data in tables and graphs to evaluate scientific information.

**A student will be able to recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public, and ethical concern.**

In NUF5, students will explore scientific evidence resulting from the USDA's FoodData Central database (<https://fdc.nal.usda.gov/>) and discuss and analyze the data related to the composition of foods. They will learn various determinants of food choice and identify their own rationale for food selection based on the evidence-based observation.

### Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term

**paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]**

In this lower division course, written assignments are integrated throughout the semester with five periodic food group worksheets. Each worksheet will include fill-in blanks and reflection questions (Course Objectives 1, 2, 3). In addition to the worksheets, a 250 word reflective writing assignment (Course Objective 4 & 5) will be assigned. After students watch the films (i.e., GMO, food irradiation, and organic food) specified in the class, students will write their reflective statement concerning course material, personal experiences, opinions, and analysis.

Section 2.

**If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.**

The course will appeal to a wide array of students because many food science topics can be easily applied to daily life. The course will also add to the limited options in Area B1.

**Reviewer Comments:**

**Tristan Josephson (tristan.josephson) (Wed, 24 Mar 2021 15:56:09 GMT):** Rollback: Please see email for minor changes requested.

Key: 14386