



*Department of Sociology, Social Work and Family
Sciences*

NUT 4055 - Food Science
3 units

Spring 2023

Meeting days: Tues/Thurs	Instructor title and name: Prof Cindy Swann, MS, RD, CDCES
Meeting times: 1:30-2:45	Phone: 619-849-2351
Meeting location: Evans 112	E-mail: cindyswann@pointloma.edu
Final Exam: Thurs, 5/04 1:30-4:00 pm	Office location and hours: Mon/ Wed 1:30-2:20; Tues/Thurs 9:00-9:45 am or by appt.

PLNU Mission:

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

GOALS AND OUTCOMES:

COURSE DESCRIPTION:

Analysis of the composition and chemical structure of food that affect the color, flavor, texture, aroma, and nutritive quality is studied. Current research in food technology and food consumption patterns is investigated. Research report writing is required. Three (3) semester units.

DEPARTMENT STUDENT LEARNING OUTCOMES

1. Students will demonstrate an understanding of the multiple factors that influence the development and quality of life of individuals, families, and communities throughout the lifespan.
2. Students will identify appropriate resources to use in application for problem solving.
3. Students will examine the value of societal diversity and ethical treatment of others as a result of their Christian faith.

DIETETIC PROGRAM LEARNING OUTCOMES

1. Demonstrate content knowledge of food and nutrition as well as concepts and theories of nutrition across a broad range including: lifecycle stages, cellular nutrition, disease prevention and medical therapy; food and food systems; development, modification, and evaluation of recipes, menus and food products.
2. Demonstrate basic skills in food preparation, sanitation and safety in working with a variety of food products.
3. Identify and assess scientific research evaluating current evidence-based research related to dietetics.
4. Evaluate the effects of societal, cultural, ethical and financial dynamics upon diet trends, dietary choices, and food preparation methods among families and societies.

COURSE STUDENT LEARNING OUTCOMES:

1. Define scientific physical and chemical properties of food systems.
2. To develop skill in use of objective and subjective testing methods on foods.
3. To review food standards, edible portions and costs of foods prepared in lab.
4. To observe, evaluate, and compare in the laboratory the composition, nutritive value, quality attributes and properties, quality assurance, and consumer acceptance of food and nutritional products and effects of variations in food formulation and preparation practices.
5. To gain fundamental knowledge of and experience with practical applications of the methods (theory, operation, applications, limitations) of compositional analysis, physical/chemical property testing, and sensory panel evaluation of foods.
6. To learn how to organize and prepare comprehensive technical research reports.
7. To gain experience in creative problem solving, designing food evaluation experiments, analyzing and interpreting data, comparing data to that published in the literature and to that claimed on the nutrition label.
8. To examine recent scientific literature in referred journals and analyze reports concerning research findings on various nutrients and products.
9. If available, attend field trips to professional organizations relating to food science.

AND's KRDN Didactic Course Core Knowledge for the RDN in DPD Programs based on 2022

Standards:

KRDN 1.1 Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based practice decisions.

KRDN 1.2 Select and use appropriate current information technologies to locate and apply evidence-based guidelines and protocols.

KRDN 1.3 Apply critical thinking skills.

KRDN 2.1 Demonstrate effective and professional oral and written communication and documentation.

KRDN 2.9 Defend a position on issues impacting the nutrition and dietetics profession.

KRDN 4.5 Apply safety and sanitation principles related to food, personnel and consumers.

KRDN 4.6 Explain the processes involved in delivering quality food and nutrition services.

KRDN 4.7 Evaluate data to be used in decision-making for continuous quality improvement.

COURSE CREDIT HOUR INFORMATION: In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 3 unit class delivered over 17 weeks. Specific details about how the class meets the credit hour requirement can be provided upon request.

ESSENTIAL INFORMATION:

REQUIRED TEXTS:

Edelstein, S. Food Science: An Ecological Approach, 2nd ed. Jones & Bart Publishing Company, 2019.

Canvas Learning Management System:

All lecture notes, chapter quizzes and most assignments are located here.

1. Please use **Chrome** as your browser.
2. Go to canvas.pointloma.edu.
3. Create a shortcut or bookmark to this site.
4. Log in with your PLNU username and password.

COURSE REQUIREMENTS AND STANDARDS:

COURSE GRADING CRITERIA:

Assignment:	Total Possible Points
17 Chapter quizzes @ 10 pts each	170
3 Term Exams @ ~75 pts. each	225
4 Laboratory Reports @ 20 pts each	80
Food Science Journal Abstract	30
Debate participation	25
Oral presentation on controversial subject	50
Oral Presentation on Equipment (Project 1)	50
Product Comparison Project (2)	100
Product Development Project (3)	100
Class and Laboratory Participation	50
TOTAL POINTS	880

Attention: You are required to turn in a portfolio project as a senior. Keep any and all graded work you want to showcase.

GRADE DISTRIBUTION:

GRADE	PERCENTAGE RANGE	GRADE	PERCENTAGE RANGE
A	≥ 93%	C	73-76%
A-	90-92%	C-	70-72%
B+	87-89%	D+	67-69%
B	83-86%	D	63-66%
B-	80-82%	D-	60-62%
C+	77-79%	F	≤ 59%

PROJECT OUTLINES:

Project 1 – Oral Equipment Presentation

Choose one piece of equipment and develop a handout explaining its purpose and directions for use. Present and demonstrate the equipment orally to the class on the due date. Currently, the equipment available are: Moisture analyzer, Muffle Furnace (ash), pH meter (Acid/Base), Water Activity, Brix (sugar solutions), Penetrometer (Texture), Viscometer (Rheology), Bostwick Consistometer (flow), and Volume (seed displacement).

The handout should include application, directions, calculations, clean-up/sanitation, and limitations if there are any. See syllabus for oral presentation due date.

Project 2 - Product Comparison Report

Develop a scenario in which you are required to compare two similar products. You must be able to use at least three pieces of equipment to compare these products. Develop a sensory questionnaire to test whether consumers sense a difference between the products, and to measure their preference.

Write a paper with the following sections:

Intro: who you represent and the scenario of why you are testing these products

Methods & Materials: of the tests conducted, including sensory questionnaire and methods

Results: final data of all tests

Discussion: what do the results mean? To the company you represent?

References: list all references used to research/write the paper. Follow the *Journal of Food Science* format for your references.

Appendices: provide all raw data, calculations, sensory questionnaire tool, tabulation of questionnaire results.

See syllabus schedule for individual paper due date.

Project 3 - Product Development Report

Develop a new product that represents a need to the public.

Test the new product with at least two pieces of equipment. You may compare your new product with something similar on the market, if available.

Develop the product label.

Develop a sensory questionnaire to see if consumers accept and like the product.

Write a paper with the following sections:

Intro: who you represent, why this product was developed. Include a literature review on why there is a need for this product.

Methods & Materials: of the tests run; include the final recipe here (all modifications belong in the appendix, with the final version in the methods section)

Results: final data of all tests; include the Nutrition Facts label of the new product (data analysis belongs in the appendix)

Discussion: what do the results mean? To the company you represented?

References: list all references used to research/write the paper. Follow the *Journal of Food Science* format for your references.

Appendices: provide all raw data, calculations, sensory questionnaire tool, tabulation of questionnaire results.

See the syllabus for individual paper due date. An Informal oral group presentation will be the last day of class

Journal Abstract

The journal article must be on a food science topic, but it does not need to come from the Journal of Food Science. An abstract is a summary of a journal research article. Although most all articles contain their own abstract, ignore it and write your own. The paper begins with the reference of where the article was obtained. Write this in the same format the journal requires where you obtained the article. The best way to learn it is to look at the reference page.

An abstract is always written in the past tense. Be sure the article you choose contains an Introduction, Methods/Materials, Results and Discussion sections. If it doesn't, it is not a research article, but only a summary of past research. You must choose a research article to review. Your written abstract should focus on the results section of the study.

Debate Participation

Topic = TBA. Research the pros and cons of the assigned topic. This debate will be a "tag" format. When you are called on, you must state a fact about the topic that is the opposite side of the argument of your classmate. For instance, if the student before you stated a "con", you must then state a "pro".

Oral presentation on controversial subject

Group into 2 or 4 students; divide in half and form a 'team'. Each team will research one side of a controversial topic by examining research studies. You will present your side in an oral presentation with slides of the research results.

For example: topic = does high fructose corn syrup cause obesity? One team will represent the

“pro” side and evaluate research studies that result in evidence stating HFCS contributes to obesity. The other team will represent the “con” side and research studies that result in evidence that HFCS does not contribute to obesity. Both teams will present their argument in an oral presentation, using slides/handout to review studies researched.

Other topic ideas: soy products and hormonal based cancers; coconut oil – healthy due to its medium-chain fatty acids or unhealthy due to its high degree of saturation? Low carb diets? Low fat diets? Intermittent fasting? Check with instructor before choosing your controversial topic.

DAILY SCHEDULE:

Week	Lecture Topic	Chapter Readings
1 (1/10 & 1/12)	No class / Intro to Food Science (Q 1 & 2 due 1/12)	1,2
2 (1/17 & 1/19)	Sensory, Objective & Water / Sensory Lab (Q 3 due 1/17) (Q 4 & 5 due 1/19)	3
3 (1/24 & 1/26)	Project 1 Lab (Q 6 due 1/24) / Carbohydrates (Q 7 due 1/26)	4, 16
4 (1/31 & 2/02)	Oral Reports on Equipment	
5 (2/07 & 2/09)	Sugar Cookery Lab / Starch & Fiber (Q 8 & 9 due 2/09)	4,16
6 (2/14 & 2/16)	EXAM 1 / Fats (Q 10 due 2/16) & Start Project 2	15
7 (2/21 & 2/23)	Debate / Food Safety (Q 11 due 2/23)	5
8 (2/28 & 3/02)	Milk & Dairy (Q 12 due 2/28) / Frozen Dessert Lab	10
9 (3/07 & 3/09)	Spring Break!	
10 (3/14 & 3/16)	Project 2 Report Due / Meats (Q 13 due 3/16) /Review & Start Project 3	7,8,9
11 (3/21 & 3/23)	EXAM 2 / Eggs (Q 14 due 3/23)	11
12 (3/28 & 3/30)	Controversial Topic / Baked Goods & Project 3 Lab (Q 15 due 3/30)	14
13 (4/04 & 4/06)	Food Laws (Q 16 due 4/04) / Holiday	
14 (4/11 & 4/13)	Federal Standard of Identity Lab / Food Preservation & Packaging (Q 17 due 4/13) Journal Abstract Due (4/11)	18
15 (4/18 & 4/20)	Catch-up	
16 (4/25 & 4/27)	Project 3 Report Due (4/25) / Project 3 Oral Presentation	

NUT 4055 POLICIES AND PROCEDURES

I am not one to reprimand a student during class, but I will quietly subtract participation points from your grade when I see you making poor choices. What are examples?

- Arriving late to class, especially lab classes
- Using the computers during *lecture* for personal reasons
- Using electronics during lecture
- Inappropriate dress code during labs
- Poor hygiene when preparing food in labs
- Failure to clean your lab space, dishes, sinks, common areas, etc.

ATTENDANCE: Class attendance and participation are expected since they are part of your integrated experience in nutrition. Attendance and punctuality is considered important here, as in your future professional life. If absent: You are required to obtain information from your peers.

LATE POLICY: Quizzes are on Canvas and cannot be made up or re-taken. There is a **50%** penalty for any work turned in late. Due dates are enforced.

EXAMS: No makeup exams are given. Emergencies will be processed on an individual basis.

EMERGENCIES: Everyone has them. Be responsible, communicate promptly and privately, tell the truth, don't take advantage of the instructor's goodwill. Each will be evaluated on its merits. Documentation may be requested.

SPIRITUAL CARE

PLNU strives to be a place where students grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If you have questions, a desire to meet with the chaplain, or if you have prayer requests, you can contact the [Office of Student Life and Formation](#).

STATE AUTHORIZATIONⓈ

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

INCOMPLETES AND LATE ASSIGNMENTS

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

PLNU COPYRIGHT POLICY Ⓢ

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC HONESTY POLICYⓈ

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY ☼

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

SEXUAL MISCONDUCT AND DISCRIMINATION

Point Loma Nazarene University faculty are committed to helping create a safe learning environment for all students. If you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, it is required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/title-ix

PLNU ATTENDANCE AND PARTICIPATION POLICY ☼

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation.