

**Science in the Modern World: Food Science
Spring 2017 (FRS 1200)
Purchase College**

Course Meeting

Tuesday + Friday, 8:30-10:10am, Library 0001

Professor Elizabeth Middleton

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Office hours: Tue 12:30pm-2:30pm, Wed 10:15am-11:15am, or by appointment

Learning Assistant

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Course Texts and Materials

The recommended textbook for this course is listed below, as are several options for purchasing or renting the book for the duration of our course. The textbook is also on reserve at the library. All other readings, articles, videos, and other learning materials will be provided to you through the course website at moodle.purchase.edu.

- Shewfelt, Orta-Ramirez, and Clarke, *Introducing Food Science, 2nd ed.*, 2016
- Purchase or rent hard copy or digital copy through [Amazon](#)
- Purchase or rent digital copy through [VitalSource](#)
- Purchase or rent hard copy through [Purchase Bookstore](#)

Two other useful resources available through the library are

- Knechtges, *Food Safety Theory and Practice*, 2012—on reserve
- Nestle, *Safe Food, The Politics of Food Safety*, 2010—available as an [E book](#)

Course Description

We all interact with food on a daily basis, but how much do we understand about what's in our food and what happens before it reaches our tables? This course will explore the chemistry and biology underlying food safety and answer the following questions. What nutrients are found in foods? How do our bodies make use of these nutrients? How can we define "healthy" food? What happens to food when it is cooked? What processes are responsible for fermentation to make yogurt, cheese, beer, and wine? How can food be prepared in safe ways? What are some diseases that are related to food consumption? Why are some microbes safe to eat, but not others?

Scientific Concepts

Structure and function of biological macromolecules; major vitamins and minerals in foods; how different nutrients are processed by the body; reading and understanding food labels; chemical changes that occur when food cooks; chemical reactions in baking; biochemistry of fermentation; microbial agents in food; non-microbial food hazards; the human immune system; biology of celiac disease and prion diseases.

Societal Issues

Challenges in identifying and stopping an ongoing food outbreak; roles and limits of government intervention in food labeling and food safety; governmental agencies and policies regarding nutritional recommendations; safety of and controversy around genetically modified food.

SMW Course Description

An understanding of scientific principles is essential for an educated and engaged citizenry. This course investigates the substance and process of modern science and its role in society, including the scientific method and nature of scientific inquiry; scientific principles, analysis, and critical thinking; sources of scientific information, critical reading, and evaluation of authenticity; and distinguishing science from pseudoscience. Each course section focuses on a different topic or theme and considers some of the important scientific issues of our times.

SMW Course Objectives

- Students will demonstrate critical thinking skills and information literacy in a scientific discipline.
- Students will explore the relationship between science and society and participate in civic engagement.
- Students will understand ethical issues in a scientific discipline and apply scientific ethics to real-world situations.

SUNY Learning Outcomes

“Students will demonstrate understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis.”

The important point here is for you to understand science as one of the ways that we make sense of the world around us. Science is not just a collection of facts, but rather it is an ongoing process of inquiry that we use to build knowledge and understanding about the universe we live in.

“Students will demonstrate application of scientific data, concepts, and models in one of the natural science.”

The best way to understand how science works is to examine a specific field from a scientific perspective, rather than discussing generalities of scientific method in a vacuum. This course will explore food safety from the perspective of chemistry and biochemistry disciplines.

Student Disabilities

Students with documented physical, learning, psychological and other disabilities are entitled to receive reasonable accommodations. If you need classroom or testing accommodations, please contact the Office of Disability Resources at ORD@purchase.edu or in person in the Student Services Building, Room 317A. Students must also inform the professor at the beginning of the semester so arrangements can be made.

Purchase College Academic Integrity Policy

The purchase college academic integrity policy (www.purchase.edu/policies/academicintegrity.aspx) explicitly forbids cheating, plagiarism, and other forms of academic dishonesty. Plagiarism is the appropriation or imitation of the language, ideas, and/or thoughts of another person and the representation of them as one's own original work. Students are responsible for familiarizing themselves with the definition of plagiarism and acceptable methods of attribution.

STUDENTS WHO HAVE ANY QUESTIONS OR DOUBTS ABOUT WHETHER AN ACTIVITY IS ACADEMICALLY PERMISSIBLE SHOULD CHECK WITH THE INSTRUCTOR!

For written assignments, you may want to use the [TurnItIn Self Checker](#) to identify potential issues before submitting your work to the course.

Collaboration

There will be many opportunities to collaborate with fellow students in this course, including on group projects and in-class activities. In these instances, all students should participate equally in completing the assignment. At other times, students will work independently on assignments, and then all work should represent the unique and distinct work of each student. If you have any questions regarding this policy or how it applies to a particular assignment, please speak to me!

Communication

The best way to get in touch with me is by stopping by my office hours or by email. I will respond to emails promptly during regular business hours. You can also call my office phone. You are always welcome at office hours without an appointment or can set up an appointment to meet at another time.

I expect you to check your Purchase email daily and the class Moodle site regularly for information or updates about the course. I also ask that you treat emails with me as professional communication. Please write in complete sentences, use capitalization, and use correct grammar.

Attendance policy

- Attendance and participation are required for every class. Your presence is vital for participation in varied learning activities and group work.
- You are permitted two unexcused absences without impacting your grade. Your attendance and participation grade will be reduced by 10% for each additional unexcused absence.
- If you miss a class, it is your responsibility to find out what you missed from classmates, including announcements, notes, and assignments.
- Absence is not an excuse for late work. You must still submit assignments on their due date except for in extreme circumstances warranting an excused absence or extension.
- If you have a planned conflict with our class due to sports competitions, travel, etc., you must alert me in writing (email is best) two weeks in advance to discuss a possible excused absence and alternate arrangements for quizzes or other assignments.
- In case of a medical or other emergency keeping you from class, you must alert me immediately about the issue if you are requesting an excused absence or extension. Waiting until the next class period is not acceptable.
- Whether your absence is planned or due to an emergency, you must provide documentation (doctor's note, flight confirmation, interview invitation, etc.) before you will be able to schedule a make-up assignment. Make-up quizzes are not permitted after the fact except in the case of a documented emergency.

Policy for late work

- Late assignments are penalized 2% per day (including weekends), so turn in late assignments ASAP after the due date.
- Most assignments will either be due at the start of class (if submitted in person) or at 11:55pm (if submitted through Moodle). Please carefully check the due date and time for each assignment to avoid late penalties.
- If you have a planned, excused absence, you will generally be required to submit any assignments or take any quizzes before the rest of the class.
- Make-up quizzes and exams are not permitted after the fact except in the case of a documented emergency.

Classroom Expectations

- Please be on time, listen actively, and participate in class discussions and activities.
- Ask a question if you don't understand something! But please do not engage in side conversations during class, even regarding the course, since they are distracting to me and your fellow classmates.
- You must turn off cell phones and other electronic devices.
- Phones, laptops, tablets, etc. may not be used during class except during specified activities.
- Recording devices of any kind are not permitted in class.
- In order to avoid disrupting the class, please arrive on time, stay until the end of class, and minimize times that you need to leave to use the restroom.
- Make sure the area around your seat is clean at the end of each class.

Course Requirements and Major Assignments

1) Attendance and participation (10%)

- Attendance is required as explained in the attendance policy.
- Participation in class activities and discussions will also contribute to your grade. You may be asked to complete a short writing assignment during class to assess your participation that day.

2) Quizzes (30%)

- Quizzes are given at the beginning of class and last 15-30 minutes
- If you arrive late, you will not receive extra time on the quiz
- There will be approximately 5 quizzes, each covering roughly 2 chapters of material
- There are NO midterm or final exams

3) Current events presentation (10%)

- You will give an in-class presentation on a current topic in the news related to food science

4) Food safety essay (10%)

- You will research and write about the food safety topic of your choice

5) Personal nutritional assessment (10%)

- You will keep a food log and analyze the quality of your diet

6) Other assignments (30%), including

- Scientific seminar reflection
- Case studies regarding the paleo diet and the immune system
- Foodborne outbreak investigation exercise
- Investigation of the meaning behind food labels
- Risky eating behaviors analysis
- Designing a scientific experiment
- And more!

Final Grades

Highest	Lowest	Letter Grade
100	93	A
92.99	90	A-
89.99	87	B+
86.99	83	B
82.99	80	B-
79.99	77	C+
76.99	73	C
72.99	70	C-
69.99	60	D
59.99	0	F

A grade of A+ will be given at the discretion of the professor for exceptional work in the course

Purchase College does not award grades of D+ or D-

Course Outline

Please see course Moodle site for specific dates for each topic and assignment. All dates are subject to change, and the most up to date schedule will always be found on Moodle.

Unit 1: Nutrition

- Chemistry in your food
- Nutrient requirements and biomolecules
- Health of diets and specific foods
- Food labels and nutrition claims

Unit 2: Food Safety

- Biological and nonbiological food safety threats
- Immune system response to foodborne infection
- Procedures and policies that improve food safety
- Foodborne outbreak investigations

Unit 3: Food Preparation and Consumers

- Food science research
- Food storage, preservation, and processing
- Practical safety tips in the kitchen
- Chemical changes in proteins, carbohydrates, and lipids during cooking