

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

ACADEMIC SENATE

GENERAL EDUCATION COMMITTEE

REPORT TO

THE ACADEMIC SENATE

GE-006-134

FST 325: Food Safety and Current Issues (GE Sub-area B5)

General Education Committee

Date: 02/05/14

Executive Committee
Received and Forwarded

Date: 04/06/16

Academic Senate

Date: 04/13/16
FIRST READING

BACKGROUND: This course is being proposed for GE Area B5 (Science Synthesis) for the quarter system by the Department of Food Science and Technology

RESOURCES CONSULTED: Harmit Singh; Martin Sancho-Madriz; Karoline Harrison

DISCUSSION:

This course was submitted during Spring 2013 to a different GE Committee. The consultation was conducted by the previous committee, but then nothing happened with the course. It was resurrected during Winter 2015. The GE Committee examined the documents again and made several recommendations to the authors. The GE Committee subsequently met with the authors to work out all of the expectations in the ECO. This ECO was revised several times until now when we have a final version that we could present to the Senate.

The course is proposed for the quarter system. It is a science synthesis course that integrates several disciplines. The subject matter is relevant for all students. The General Education Outcomes (SLO's) are well delineated and appropriately discussed. The ECO is clear on how these SLO's will be met. Altogether, the ECO in its final version is worthy of a positive recommendation.

RECOMMENDATION:

The GE Committee recommends approval of GE-006-134 (FST 325: Food Safety and Current Issues) for GE Area B5.

Attachment 1: Expanded Course Outline: FST 325: Food Safety and Other Issues as modified 2/29/16.

California State Polytechnic University, Pomona
COLLEGE OF AGRICULTURE
DEPARTMENT OF HUMAN NUTRITION AND FOOD SCIENCE

EXPANDED COURSE OUTLINE

Course Subject Area:	Food Science and Technology
Course Number:	FST 325
Course Title:	Food Safety and Other Issues
Units:	4
C/S Classification #:	C-2
Component:	Lecture/Discussion
Grading Basis: (graded only, CR/NC only, student's choice)	Graded
Repeat Basis: (may be taken once, taken multiple times, taken multiple times only with different topics)	May be taken only Once
Cross Listed Course: (if offered with another department)	NA
Dual Listed Course: (if offered as lower/upper division or undergraduate/graduate)	NA
Major course/Service course/GE Course: (pick all that apply)	GE
General Education Area/Subarea: (as appropriate)	Sub-area B5
Date Prepared:	Oct. 2013, revised February 29, 2016
Prepared by:	Dr. Harmit Singh and Karline Harrison

I. Catalog Description

FST325 Food Safety and Current Issues (4 units) (GE Area B5)

Overview of physical, chemical and microbiological hazards and their role in foodborne illness and the safety of the food supply. Introduction to the Hazard Analysis Critical Control Point System. The role of government and basic aspects of food safety laws and regulations. Review of current issues in food safety, food protection, food production, and food processing as they relate to public health. 4 hr lecture discussions.

II. Required Background or Experience

Pre-requisite courses – A1, A2, A3 and B1, B2 and B4. This course is valuable to students in all majors.

III. Expected outcomes

Please see a fuller description of these outcomes in no. IX below.

After completion of this course the students should be able to:

1. Identify the historical milestones leading to current challenges in food safety
2. Identify the role of the cultural factors and industrial growth in formulation of new food safety regulations
3. Recognize important pathogenic microorganisms in foods and the conditions that microorganisms need to grow in food
4. Learn about the role various factors in food such as pH of food in controlling the microbial inactivation
5. Understand the basic principles of the food hazard prevention system used by food industry to formulate a food safety plan.
6. Identify and learn the main federal and local regulations for the manufacture and sale of food products with emphasis on food safety.
7. Identify various toxins, synthetic and natural chemicals under the category of food additives and adulterants present in foods
8. Independently research scientific and non-scientific information and identify potential biases in publications.
9. Become aware of current issues/topics of importance related to food and the food industry with an emphasis on food safety, food protection and food defense.
10. Apply critical and logical thinking and demonstrate the use and practice of different levels of oral and written communication skills. This includes such skills as writing technical reports.
11. Critically analyze the information from peer reviewed and popular articles

IV. Instructional Material

Required Books –

Marion Nestle. *Safe Food: The Politics of Food Safety* (California Studies in Food and Culture, Book 5) Berkeley, Calif. : University of California Press, 2010.

Pollan, Michael. *Cooked: A Natural History of Transformation*. New York : The Penguin Press, 2013.

Shaw, Ian. *Is it Safe to Eat? Enjoy Eating and Minimize Food Risks*. New York Springer; 2005.

Other Recommended Material:

Almanza, Barbara and Ghiselli, Richard, *Food safety : researching the hazard in hazardous foods*; Waretown, New Jersey, Apple Academic Press, 2014.

Benedict, Jeff. *Poisoned: The True Story of the Deadly E.Coli Outbreak That Changes the Way Americans Eat*. Buena Vista, VA: Inspire Books, 2011.

Berry, Wendell and Michael Pollan. *Bringing It to the Table: On Farming and Food*. Berkeley, CA: Counterpoint Press, 2009.

Ellefson, Wayne, Zach, Lorna, and Darry, *Improving import food safety* Chicago, IFT Press ; Ames, Iowa, Wiley-Blackwell, 2013.

Knetchges, Paul L. *Food Safety: Theory and Practice*. Burlington, MA: Jones & Bartlett Learning, 2012.

Nestle, Marion. *Food Politics: How the Food Industry Influences Nutrition and Health* (California Studies in Food and Culture). Berkeley : University of California Press, 2002.

Pollan, Michael. *The Botany of Desire: A Plant's-Eye View of the World*. New York: Random house Inc. 2001.

Yasmine Motarjemi, *The Encyclopedia of Food Safety*, Troud, UNITED KINGDOM: Elsevier Science , 2014.

V. Minimum Student Materials

Text and appropriate instruments for taking notes are needed. Computer access with web browser and word processing software are also needed.

VI. Minimum College Facilities

A smart classroom equipped with computerized audio-visual equipment and online access is required. Library.

VII. Course Outline

The following are the course topics:

TOPIC
Introduction to course
Food safety historic background
Biological hazards/Foodborne Infections
Chemical hazards/Toxicology and Physical hazards
Foodborne Illness Prevention
Controls and Technology for Food Preservation
Introduction to HACCP principles

Safety management of food supply/regulatory aspects
Review of current issues in food safety and related topics

VIII. Instructional methods

Lectures with PowerPoint presentations and discussions will be the primary mode of instruction. Videos and demonstrations will also be used. The instructor will involve the students in discussions to broaden the understanding of the subject matter. Written group and individual projects will be assigned. Oral presentations of papers are required of all students.

IX. Outcomes Assessment :

As an AREA B5 Science and Technology Synthesis course this class will address the following requirements of B5 category by placing basic knowledge of science and technology in an historical context. This course will be integrative in nature, requiring application and generalization of basic scientific or mathematical knowledge from the foundation courses to real world or practical problems.

Food Safety issues to be explored by Synthesis courses would include but not be limited to: **the impact of science and technology on civilization and human values, natural systems issues**, history and philosophy of science and technology, **scientific method and reasoning, health and diseases**, medical technology and its ethical implications, general systems theory and its application, exploration of Earth systems, **relationships between Earth's biological and physical systems**, impact of concept biological evolution on scientific thinking, computers and humankind, **roles and impact of biological resources and systems on various areas of human life such as nutrition, pharmacy, biodiversity benefits, economics and culture.**

As specified in the ECO under the 'Expected Outcomes' section students will learn and understand the importance of food safety related to health and wellness. Upon completion of this course, the student will be able to:

1. When studying the history of food safety, students will learn about how various biological, chemical and physical contaminations of food led to present challenges of food safety.
2. Students will also learn the importance of cultural factors (leading to preferences such as Kosher, Vegetarian, Organic, Unprocessed etc.) and industrial growth in formulation of new regulations to be complied by food industry.
3. Categorize the important pathogenic microorganisms in foods and the conditions that microorganisms need to grow in food. Students learn about various microorganisms responsible for food safety issues and the conditions which can promote their growth.
4. Relate the role and significance of microbial inactivation by using environmental factors (i.e. aW, pH, temperature) to the growth and response of microorganisms in various environments. This course addresses scientific

methods and reasoning to understand the various factors used to prevent and control microbial spoilage and toxicity, including quantitative information regarding prevalence of certain disease, understanding of the data related to time, temperature or other conditions related to food safety issues.

5. Understand the basic principles of the food hazard prevention system and apply the knowledge to formulate a food safety plan. This course addresses the impact of science and technology on civilization and human values. Students learn the effect of changes in food industry due to science and technology, centralization of modern food processing industry, growth of large agriculture farms and health issues associated with the. Student also learns about the protocols developed by food industry to tackle the safety issues in food production facilities of modern times.
6. Recognize the main federal and local regulations for the manufacture and sale of food products with emphasis on food safety. This course addresses the growth of regulations at all levels of government to address various kinds of health issues to control food additives, colors, pesticides as well as labeling requirements to help consumer obtain safe and good quality food.
7. Introduce chemistry of toxins, synthetic and natural chemicals under the category of food additives and adulterants present in foods. Student will learn, how do they enter food, what is their composition, what is their effect on humans and how are they regulated?
8. Independently research scientific and non-scientific information and identify potential biases in publications. Students learn this by participating in two projects during this course.
9. Become aware of current issues/topics of importance related to food and the food industry with an emphasis on food safety, food protection and food defense. This course addresses natural systems and impact of biological resources and systems on various areas of human life especially health and disease issues FDA and CDC websites are explored for latest outbreaks. Projects assigned to students will include the collection and comparison of information on current food safety issues.
10. Apply critical and logical thinking and demonstrate the use and practice of oral and written communication skills. This includes such skills as writing technical reports. The project work from outcome # 8 and # 9 will be presented in the form of class presentation and corresponding written report will be used to assess this outcome.
11. During writing assignments listed in #8 and #9 students will be comparing and critically analyzing the information from peer reviewed and popular articles. Students will also be using quantitative data in the form of tables and graphs from these publications to critically analyze the significance of the collected data for the particular study. All written assignments will be returned within two weeks with feedback on the writing itself (grammar, typos, etc., as well as the content).

Grading of student performance:

Evaluation of students will be based on the following:

1. Two Assignments

a. Individual writing assignment

- Students have to read two articles about the same food safety topic (one peer-reviewed, one popular journal). They are required to critically compare the articles based on who is the intended audience and what is the goal of the article.
- Students will have to compare quantitative data such as incubation times, outbreak statistics, nutritional information, components of food additive, and national/international food safety regulation.
- Students have to provide background information on the authors and evaluate the intention of the authors. The value of the information provided in the article will be compared and evaluated.
- Critical thinking will be required to assess the way the authors chose to present the information and if this method was effective.
- Students will also be required to discuss the existence of bias in either article and justify their position in their writing assignment.

b. Group assignment

- Students will choose a recent foodborne illness outbreak and will explore the quantitative information about foodborne illness and outbreaks.
- They will be required to explore the microbe responsible for the outbreak such as growth conditions, incubation time, toxins, and characteristics.
- Students will have to assess the impact of a foodborne illness outbreak in terms of economics and public health, which will require the evaluation of quantitative information from 6 peer-reviewed, 4 trade journals and 2 governmental sources.
- Students will compile the background information on the microbe, the source of the outbreak, reaction to the outbreak and how it could have been prevented into a 15 minute presentation.
- Students will explore food safety management system such as HACCP and how they should be implemented for the food in question.

2. In class participation

3. One or more mid-term exam/s

4. One final exam

The final exam will be comprehensive. Student peer review input will be considered when determining grades for group projects. Proposed evaluation components and percentages are subject to change by the instructor teaching the course. Suggested grade weights:

Class participation	5 – 10 %
Group assignment	20 – 25 %
Individual assignment	15 – 20 %
Exams	50 - 60%

For course assessment: A survey will be conducted at the end of course. Students will be asked to provide feedback and suggestions to the instructor regarding the course content and assignments, pace of teaching, instructional methods, meeting course objectives and student workload. Based on the comments of the students, the instructor will modify and improve teaching strategies accordingly, if the contributions are reasonable and constructive.

A. Assessment of GE learning outcomes is based on:

1. Review of student assignments and written reports and providing them feedback
2. In class participation
3. Embedded exam questions

GE assessment will also be conducted by evaluation of the level and quality of students' written and oral work collected throughout the quarter and by examination of students' feedback on the questionnaire of the course to determine if stated educational objectives were met, giving students the opportunity to describe what they learned in class and to suggest how the course might be improved.

GE B5 assessments	Midterm	Final	Individual Assignment	Class participation	Group Assignment
1a – Write effectively			X		X
1b - Speak effectively to various audiences			X	X	X
1c - Find, evaluate, use, and share information effectively and ethically			X		X
1d - Construct arguments based on sound evidence and reasoning to support an opinion or conclusion	X	X	X	X	X
2a - Apply scientific methods and models to draw quantitative and qualitative conclusions about the physical and natural world.	X	X		X	
2d - Integrate concepts, examples, and theories from more than one discipline to identify problems,	X	X			X

construct original ideas, and draw conclusions					
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Department and Program Assessments

Contribution of FST 325 to ACEND (The Accreditation Council for Education in Nutrition and Dietetics) Core Knowledge Requirements Outcomes

Program Student Learning Outcomes	Outcome Measure	Data	Method
KRD 1.1 Students demonstrate how to locate, interpret, evaluate and use professional literature	(P). Report of recent advances in an area of food safety. 100% of students will complete assignment with 80% of students earning a grade of 70% or higher	Completion	Rubric for report.
KRD 4.2 Students apply safety principles.	(P). Student will answer embedded exam question with 80% of students earning a grade of 70% or higher	Percent grade	Embedded Exam questions

Contribution of FST 325 to IFT (institute of Food technologist) Core Knowledge Requirements Outcomes

Course learning outcomes	Outcome Measure	Data	Method
1. Identify the historical milestones leading to current challenges in food safety	70% or higher students answered the questions correctly	Percent grade	Embedded Exam questions
2. Identify the role of the cultural factors and industrial growth in formulation of new food safety regulations	70% or higher students answered the questions correctly	Percent grade	Embedded Exam questions
3. Recognize important pathogenic microorganisms	70% or higher students answered	Percent grade	Embedded Exam questions

in foods and the conditions that microorganisms need to grow in food	the questions correctly		
4. Learn about the role various factors in food such as pH of food in controlling the microbial inactivation	70% or higher students answered the questions correctly	Percent grade	Embedded Exam questions
5. Understand the basic principles of the food hazard prevention system used by food industry to formulate a food safety plan.	70% or higher students answered the questions correctly	Percent grade	Embedded Exam questions
6. identify and learn the main federal and local regulations for the manufacture and sale of food products with emphasis on food safety.	70% or higher students answered the questions correctly	Percent grade	Embedded Exam questions
7. Identify various toxins, synthetic and natural chemicals under the category of food additives and adulterants present in foods	70% or higher students answered the questions correctly	Percent grade	Embedded Exam questions
8. Independently research scientific and non-scientific information and identify potential biases in publications.	100% students will complete the assignment with 80% of students earning a grade of 70% or higher	Individual Presentation grade	Rubric for report/presentation
9. Become aware of current issues/topics of importance related to food and the food industry with an emphasis on food safety, food protection and food defense.	100% students will complete the assignment with 80% of students earning a grade of 70% or higher	Completion and/or % grade	Rubric for report and/or embedded questions
10. Apply critical and logical thinking and demonstrate the use and practice of oral and written communication skills. This includes such skills as writing technical reports.	100% students will complete the assignment with 80% of students earning a grade of 70% or higher	Completion	Rubric for presentation/report

11. Critically analyzing the information from peer reviewed and popular articles.	100% students will complete the assignment with 80% of students earning a grade of 70% or higher	Group presentation grade	Rubric for report
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This ECO was prepared by Harmit Singh and Karoline Harrison, HNFS Dept. submitted October 2013 (Revised 2. 29. 2016)