Food Safety and Quality (3 cr)

FS220 (WSU & UI)

Spring Semester, 2016

INSTRUCTOR:

Dr. Meijun Zhu, Rm232, Food Science and Human Nutrition Building;

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LECTURE TIME: M, W, F, 11:10am - 12:00pm

LOCATION: Hulbert Hall 23

OFFICE HOURS:

- M1:00 - 3:00 pm or by appointment
- Location: FSHN 232

COURSE DESCRIPTION*:*

Regulation, safety, and wholesomeness of food products; microbiological, chemical, and physical risks associated with foods; hazard analysis (HACCP) as related to food safety, processing and quality; sanitation and pest management principles; methods for analyzing the sensory qualities of food products.

RECOMMENDED TEXTBOOKS:

Food Safety: The Science of Keeping Food Safe

By Ian C. Shaw. 2013, Wiley-Blackwell, A John Wiley & Sons, Ltd. Publication

READING MATERIALS:

- Recommended Textbook
- PowerPoint lecture notes, and materials handed out in class

COURSE OBJECTIVES:

1. Learn basic principles and concepts of chemical food safety.
2. Know basics about microbiological food safety and major foodborne pathogens associated with foods.
3. Understand the fundamentals about food preservation.
4. Learn principles of HACCP and overview of global food safety initiative.
5. Know principles of food safety and quality management.
6. Understand federal regulations on food safety and quality.

STUDENT LEARNING OUTCOMES:

After completing this course, the student will be able to:

- Recognize and identify basic concepts and terminology of food safety and quality.

- Understand the sources of foodborne risks.
- Understand basic biological and chemical changes associated with food safety and quality.
- Know major federal regulatory agencies in the United States in regards to our food supply.
- Understand selected laws and regulations pertaining to food safety.
- Understand basic principles of HACCP and global food safety initiative as well as their impact to food industry.

COURSE REQUIREMENTS AND EXPECTATIONS:

Attendance is essential to your success in this class. Therefore, students are expected to attend all classes. Excused absences include university-sanctioned events, illness and family emergencies. Students should become engaged in interactive learning processes, participate in classroom discussions, and ask questions when a particular topic or point is unclear. Appropriate professional behavior demonstrating respect for fellow students and instructor is expected.

EXAMS AND ASSIGNMENTS

1. Students will complete two exams (100 points each) and a final exam.
   - The final exam, which will be partially comprehensive, will worth 130 points.
   - First part of final exam will be on material since exam II (100 points), and the second part (30 points) will be on material covered by exam I and II.
2. Paper assignment

   Students will be required to write a short paper on "Genetically Modified Foods: are they a risk to human health? You will need write both a pro and con position and then come to your own conclusion and justify your position. Paper should have a minimum of 2 single-spaced page, 12 font Times New Roman with 1-inch page margins. References, tables, structures, or figures, will be not included in page count. A minimum number of 5 references from the peer reviewed literature are required. No more than 2 references from reputable government or technical web sites can be included in your reference section (if you have questions about the appropriateness of a source, please contact Dr. Zhu). Please provide no more than 10 references.

   - Due date for the paper: April 15, 2016,
   - Each student's paper will be graded for both technical and written quality.
   - A penalty of 5 points per working day will be assessed to papers submitted after the due date (no later than 5:00 pm PST that day).
   - Submit your paper as a Word document electronically via email before or on the day of due date.
   - Total points for paper assignment is 80 points
3. You may earn up to 30 points for attendance/participation, and each unexcused absence will result in a 2-point deduction from your overall score. An excused absence requires prior approval by the instructor.

EXTRA CREDITS OPTION

- On 1st class of each weak, students are encouraged to present one 5-minute verbal summary of a current news item, publication or article on the subject of Food Safety and Quality.

- Evaluation will be based on organization and speaking effectiveness, visual aid as well as technical content of the presentation.
- You may earn up to 5 points for each extra credit presentation, each students have up to two times of extra credit presentation.

GRADING:

1. Course assignments and points:

Exam I	100
Exam II	100
Final exam	130
Paper assignment	80
Attendance/participation	30
TOTAL POINTS	440

2. Grade scale

Grade	% of Total Points
A	≥91.0
A-	89.0 - 90.9
B+	86.0 – 88.9
B	82.0 - 85.9
B-	80.0 - 81.9
C+	77.0 - 79.9
C	72.0 - 76.9
C-	70.0 - 71.9
D+	67.0 - 69.9
D	60.0 - 66.9
F	<60

3. Exams will cover material discussed in classes and lecture handouts.
   - A university approved absence must be presented to the instructor prior to missing any written exam. Possibilities for a make-up exam will be discussed as problems arise.
   - Dictionaries, cell phones, computers, ipods, or ANY other electronic equipment cannot be used, played, or consulted during examinations

STUDENTS WITH DISABILITIES:

WSU

Reasonable accommodations are available for students with a documented temporary or permanent disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Access Center (Washington Building 217) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center.

UI

Reasonable accommodations are available for students who have documented temporary or permanent disabilities. Please notify your instructor(s) during the first week of class regarding accommodation(s) needed for the course. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306; phone 885-6307; email at dss@uidaho.edu; website at www.access.uidaho.edu or www.webs.uidaho.edu/taap.

CAMPUS SAFETY:

Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "***Alert, Assess, Act***" protocol for all types of emergencies and the *"Run, Hide, Fight"* response for an active shooter incident. Remain ***ALERT*** (through direct observation or emergency notification), ***ASSESS*** your specific situation, and ***ACT*** in the most appropriate way to assure your own safety (and the safety of others if you are able).

Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's *Run, Hide, Fight* video and visit the WSU safety portal.

ACADEMIC HONESTY:

Students who violate WSU's Standards of Conduct for Students will receive an F as a final grade in this course, will not have the option to withdraw from the course and will be reported to the Office of Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these standards: http://conduct.wsu.edu/default.asp?PageID=338.

PLAGIARISM:

Plagiarism is defined by Webster's Dictionary as, "*to steal and pass off the ideas or words of another as one's own*." There are two general forms of plagiarism:

(a) Unintentional: the use of other writers' words, phrases, sentences, paragraphs as though they were your own *without understanding* the need to cite the original source. Unintentional plagiarism normally occurs when the individual does not understand the conventions of scientific writing and the need to cite sources of information.

(b) Intentional: the use of another writers' work and claiming it as your own. Intentional plagiarism includes *knowingly copying* or incorporating sections of books, articles, or other sources into your work without citation.

To evade plagiarism, you must acknowledge the source of information. In scientific writing, this can be performed in the text of your work through the use of surnames of authors and the year of publication (*e.g.*, Smith et al., 2003) or by using numbers enclosed by parentheses which correspond to specific citations in the reference section. In addition to employing citations in the text, plagiarism can be avoided by applying special techniques when writing about information obtained from a source:

(a) Paraphrase: rewording information in which you accurately present the main ideas from the source but do so using your own organization, words, and sentence structures.

(b) Summary: a concise statement of the main idea from a section within a source.

(c) Direct quotation: use of quotes surrounding the passage written by another author.

In general, paraphrasing (a) and the use of summary statements (b) are very common techniques used in scientific writing. Use of quotations (c) in scientific writing is rare and should be avoided.

Plagiarism is dishonest and is **not** tolerated. If caught using all or portions of a current or former classmate's writing or other sources of information (*e.g.*, purchase a paper), a grade of "zero" will be given for the exercise. Additional penalties for plagiarism are possible as outlined in the *Washington State University Student Handbook*.

COURSE OUTLINE

Approximate dates and tentative topics

Week	Date	Day	Topic(s)
Section I	**Introduction/overview**		
1	1/11/16	M	An introduction
	1/13/16	W	Food composition: quality, safety and health
	1/15/16	F	Food characteristics and safety related to food
2	1/18/16	M	Martin Luther King Day
	1/20/16	W	Who regulates what? Role of FDA, USDA and states in food production, safety and trade Food Safety Modernization Act
Section II	**Chemical food safety**		
	1/22/16	F	Intentional food additives: Preservatives
3	1/25/16	M	Intentional food additives: Food coloring
	1/27/16	W	Intentional food additives: Food sweeteners
	1/29/16	F	Intentional food additives: Fat substitutes and texturizers (Guest lecturer: Dr. Min Du, Washington State University)
4	2/01/16	M	Natural toxins: Endogenous toxins of plant origin, seafood toxins and mycotoxins
	2/03/16	W	Chemicals from processing: Pyrazines, nitrosamine, polyaromatic hydrocarbons and acrylamide
	2/05/16	F	Incidental contaminants: Pesticide residues and polychlorinated biphenyls
5	2/8/16	M	Incidental contaminants: 1. Veterinary medicines and growth promoters 2. Heavy metals, packaging materials
	2/10/16	W	Review and discussion
	2/12/16	**F**	**Exam I**
6	2/15/16	M	Presidents Day Holiday
	2/17/16	W	Food allergen and food allergy
	2/19/16	F	Food allergen and food allergy
Section III	**Microbiological Food Safety**		
7	2/22/16	M	Introduction of microorganisms
	2/24/16	W	Factors affecting bacterial growth
	2/26/16	F	Food preservation methods

8	2/29/16	M	Food preservation methods
	3/02/16	W	Novel food preservation and processing technologies–A case study (Guest lecturer: Dr. Juming Tang, Dept. of Biological Systems Engineering)
	3/04/16	F	Overview of microbiological foodborne illness
9	3/07/16	M	*Listeria monocytogenes* and safety of ready-to-eat foods
	3/09/16	W	*E. coli* O157: H7 and safety of ground beef and other foods
	3/11/16	F	*Salmonella* spp.: sources and challenges
10	3/14/16	M	Spring Break No Class
	3/16/16	W	Spring Break No Class
	3/18/16	F	Spring Break No Class
14	3/21/16	M	*Campylobacter jejuni, and Yersinia enterocolitica*
	3/23/16	W	Review and discussion
	3/25/16	F	WSU pilot plant tour (RF, microwave heating, PEE, UVC)
16	**3/28/16**	**M**	**Exam II**
	3/30/16	W	*Staphylococcus aureus, Vibro* spp.
	4/01/16	F	Gram positive spore-forming bacteria: *Clostridium botulinum, Clostridium perfringens*, *Bacillus cereus*
13	4/04/16	M	Major foodborne viruses: Hepatitis A virus and Norovirus
Section IV	**Food Safety and Quality Management: Prevention and Control**		
	4/06/16	W	Pre-requisition programs – The foundation to an effective HACCP program
	4/08/16	F	HACCP 7 principles
14	4/11/16	M	Creating an effective HACCP program for today's complex food supply chain
	4/13/16	W	Overview of GFSI benchmarked standards: SQF, BRC, and FS22000
	4/15/16	F	Field trip: Tour Creamery
15	4/18/16	M	Food safety in tree fruit/apple production: interventions and challenges (Guest lecturer: Dr. Ines Hanrahan, Washington Tree Fruit Research Commission)
	4/20/16	W	Sanitizer interventions in fresh produce industry (Guest lecturer: Laura Grunenfelder, Northwest Horticultural Council, Yakima, WA)
Section V	**Selected Topics of Interested**		
	4/22/16	F	Food packaging and its impacts on food safety and quality (Guest lecturer: Dr. Shyam S. Sablani, Dept. of Biological Systems

			Engineering)
16	4/25/16	M	Impacts of processing on the quality of food products: A case study of french fryer processing. (Guest lecturer: Dr. Girish Ganjyal, School of Food Science)
	4/27/16	W	Organic foods: more nutritious?
	4/29/16	F	Review and Discussion