

FNH 413: Food Safety (3 Credits)

The University of British Columbia

Food, Nutrition and Health, Faculty of Land and Food Systems

Meeting Time: 2-3:30 pm, Tue & Thur

Meeting Place: FNH 40

Instructor: Dr. Siyun Wang

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Office Hours: Available by appointment

I. Course Overview

This course covers a variety of topics in current and critical food safety issues, specifically on:

- Biological and chemical hazards that pose public risks through foodborne transmission;
- Characterization and occurrence of causative agents in various foods;
- Surveillance, control and prevention of foodborne disease

II. Course Prerequisites MICB 202 and CHEM 233

III. Learning Outcomes

Upon completion of the course you should be able to:

- Identify major bacterial, viral and parasitic foodborne pathogens;
- Identify major microbial food toxins, naturally occurring food toxins and food allergens;
- Understand major types of foodborne infections and intoxications in their: (i) clinical manifestations, (ii) exposure pathways, and (iii) prevention;
- Appraise high risk foods and the associated risks;
- Describe the concepts underlying the development of risk-based food safety systems;
- Illustrate the principles of foodborne illness surveillance and prevention;
- Know how to facilitate group projects as well as be a good team member;
- Apply critical thinking skills to solving problems in food safety

IV. Course Materials

Clicker Requirement: All students in FNH 413 are required to have access to an I-Clicker that is registered to their name and Student ID.

Reference Textbooks:

Morris JG, Potter ME (eds). Foodborne Infections and Intoxications, 4th edition. Academic Press. Publication date: March, 2013. ISBN-9780124160415

Schrenk D (ed). Chemical contaminants and residues in food. Woodhead Publishing Limited. Publication date: August, 2012. ISBN-9780857090584

You are not required to purchase the textbooks. A copy of the textbooks will be placed on reserve at the Woodward library.

Peer-reviewed Journals: Available online in UBC libraries. Selected papers will be used as reading materials in classes and group projects, and such notifications will be given in advance on Connect.

- Applied and Environmental Microbiology
- Food and Chemical Toxicology
- Food Microbiology
- Food Research International
- International Journal of Food Microbiology
- Journals of Food Science
- Journal of Agricultural and Food Chemistry

V. Course Format and Evaluation

The format of the course will be two 90-min face-to-face contact time per week.

Quizzes:	15%
Group projects:	25%
Oral presentation (graded as a group)	10%
Individual written report	15%
Midterm examination:	25%
Final examination:	35%
	100%
Participation bonus:	2%

Quizzes: Six quizzes will be held during the course of the term, and five of them with highest marks will be counted towards your final mark for “quizzes” (3% x 5 = 15% of your final mark). Each quiz will be composed of 10 multiple-choice questions and will be completed during the class using **clickers**. The dates of the quizzes are provided in the course outline.

Group projects: You will be required to participate in a group project during the term. There will be 3-4 students in each group. This is an exercise in synthesizing knowledge, developing problem-solving strategies related to food safety and developing solutions to mitigate food safety risk using real-world examples. A list of topics will be provided in the second class. The grouping and topic for each group will be randomly decided in the second class (September 9).

Group Presentation: The group assignment information and schedule will be posted to Connect by Week 3. Each group will give a 20-minute presentation in the order of their topics. You need to submit the presentation slides to the instructor **at least one week prior to your presentation date**, otherwise 10% of the total points for group projects will be deducted. You are also required to schedule a discussion session with the teaching assistant to go through the

materials to be presented **at least one week prior to your presentation date**. At the end of the presentation, you need to design three clicker questions based on the content you discuss. These questions will not be used for evaluation. But it is possible that topics in group presentations will be used in the final examination.

Report: Each student should submit a report for the case you work on via the assignment section of the Connect site. The report will be 1,200-1,500 words with proper citation (*e.g.*, authors, date of publication, title of article, journal title, journal volume, page numbers) using the APA Citation style. All text should be Times New Roman 12-point font, double spaced. The report is due at **8 PM Pacific Time by November 21, 2014**.

Midterm examination: A midterm examination is scheduled for 1.5 hours on October 14. Information regarding the format will be made available closer to the examination date. The midterm exam will be composed of (i) multiple choice and (ii) short answer.

Final examination: The final examination will be **cumulative**. Final date and time will be as scheduled by the Registrar's office. The final exam will be composed of (i) multiple choice; (ii) short answer and (iii) essays.

Participation bonus: Throughout the term, you will be given three chances to volunteer for a 3-min improvisational talk about a current food safety issue or event. In the talk, you will clearly state the food safety issue or event (*i.e.*, where, when, what's the causative agent, what are the consequences), and provide appropriate and relevant critiques. The dates of the talks are decided by the instructor. Current food safety updates can be found at: <http://barfblog.com/>.

VI. Academic Integrity

You are expected to act in accordance with the University of British Columbia policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook for more details).

Use of cell phones and smart phones is NOT allowed in classes and exams. If your cell phone rings at the exam, 5 points will be deducted from the total points of the exam.

You will be required to electronically submit your report through "Turn It In" at www.turnitin.com to check for plagiarism prior to submitting the reports to the FNH 413 Connect Website. The "Turn It In" class ID for FNH 413 and password will be provided at a later date. You can find more information about TurnItIn at the following website: http://www.turnitin.com/en_us/home.

VII. Course Schedule

- September 2 Imagine UBC Day: No Class
- September 4 Introduction and course overview
Estimates of disease burden associated with foodborne disease
- September 9 Foods most often associated with major foodborne pathogens
- September 11 Bacterial pathogens: *Salmonella* spp.
- September 16 Bacterial pathogens: *Escherichia coli* (**Quiz 1**)
- September 18 Bacterial pathogens: *Campylobacter* spp.
- September 23 Bacterial pathogens: *Listeria monocytogenes* (**Quiz 2**)
- September 25 Bacterial pathogens: *Clostridium perfringens* and *Clostridium botulinum*
- September 30 Viral pathogens: Norovirus
- October 2 Viral pathogens: Hepatitis A (**Quiz 3**)
- October 7 Microbial toxins
- October 9 Parasites and prions
- October 14 Mid-term examination
- October 16 Seafood toxins
- October 21 Chemical contaminants: veterinary drug residues in foods
- October 23 Chemical contaminants: Pesticide and herbicide residues in foods
- October 28 Chemical contaminants: toxicants formed during food processing (**Quiz 4**)
- October 30 Allergens
- November 4 Development of risk-based food safety systems
- November 6 Effects of food processing on disease agents (**Quiz 5**)
- November 11 Remembrance Day: No Class
- November 13 Post-processing food safety
- November 18 Detection and identification of foodborne disease agents
- November 20 Foodborne outbreak investigation (**Quiz 6**)
- November 25 Frontiers of food safety
- November 27 Course review

VIII. Schedule for group presentation

October 16 Group 1

October 21 Group 2

October 23 Group 3

October 28 Group 4

October 30 Group 5

November 4 Group 6

November 6 Group 7

November 13 Group 8

November 18 Group 9

November 20 Group 10