

Applied Food Microbiology and Sanitation
FST 5624 Fall, 2009 CRN 97013

Syllabus (8/22/09)

I. Catalogue Description

Overview of the causes, transmission, and epidemiology of major environmental, food-, and water-borne diseases in the food industry. Detection, monitoring, and control of important environmental pathogens. Chemical, physical, and biological sanitation to control pathogens in food, water, and the environment.

Pre: Academic and/or professional background in microbiology, food safety, or environmental health. (3H, 3C). Graduate standing.

Course Number: FST 5624

ADP TITLE: Appl Food Micro & Sanitation
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II. Learning Objectives

Upon completion of the course, students will be able to:

- A. Describe the role and impact of potential environmental contaminants on the safety of food from the origin of the food in the field to retail purchase.
- B. Relate environmental pathogen transmission patterns to prevention of food-borne disease.
- C. Describe the importance of sanitation and water supply for disease control in food industries.
- D. Develop strategies for monitoring and control of food- and water-borne diseases in the food industry.
- E. Relate microbiological methods used during routine surveillance and monitoring to the safety of food products.

III. Justification

Many public health professionals need a strong background in environmental microbiology and sanitation practices. This course is designed for public health practitioners and other professionals and students interested in the safety of food, water, and the environment. FST 5624 addresses the microbiological, social, and public aspects of sanitation and water supply, the microorganisms responsible for disease, their origins, mechanisms for elimination, and the epidemiology of environmental disease.

This course will build on a students' knowledge of microbiology and food safety. This advanced course addresses and synthesizes theories, methodology and models in the current and/or primary literature. Students will have the ability to adapt and innovate to solve problems and master the capacity to critically analyze and question knowledge claims in microbiology, food safety.

IV. Prerequisites and Co-requisites

Academic and/or professional background in microbiology, food safety, or environmental health will provide insights that greatly facilitate learning this course's content. Graduate standing.

V. Texts and Special Teaching Aids

Principles of Food Sanitation, 5th edition, 2006. Marriott, N.G. and Gravani, R.B., Springer, Secaucus, NJ, 413 pp. (ISBN: 10: 0-387-25025-5). Cost: ~ \$65 new. Other optional texts will be recommended, and additional information will be obtained from internet websites.

VI. Course Topics

Part One: 30%

- A. Overview of food and water microbiological safety – 10%
- B. Overview of food and water quality, microbial spoilage – 5%
- C. Source, transmission and persistence of microbial contaminants in food production and processing; biofilms; predictive microbiology – 10%
- D. Surveillance for foodborne illness – 5%

Part Two: 30%

- E. Sampling for microorganisms in foods – 5%
- F. Sampling for microorganisms in food processing environments – 10%
- G. Detection of microorganisms in food and environmental samples – 5%
- H. Control of environmental pathogens in foods – 10%
Antimicrobial chemicals; Antimicrobial processes

Part Three: 40%

- I. Cleaning and sanitation operations in food processing – 10%
Environment and food contact surfaces; COP & CIP; Wet vs. Dry cleaning; Worker hygiene; Pest control; Allergen control
- J. Designing and maintaining a sanitary environment – 10%
Facility hygiene and hygienic design
Verification of the effectiveness of sanitation programs
- K. Selection and use of cleaners and sanitizers – 10%
Gas vs. liquid; Food /non-food contact; home /industrial; residual effects
Removal of biofilms, preventing bacterial attachment
- L. Regulatory requirements for sanitary operations in food industries – 10%
EPA vs. FDA vs. USDA; GMP's, SSOP's, HACCP; International aspects

VII. Grades and Grading:

A. Exams and assignments and their grade values are listed below. For each day late that all assignments, quizzes, exams, and discussion board responses are submitted, the maximum points that can be earned will decrease by 5%.

Assignments (ordered by due date)	Points	Assigned	Due (11pm)
Quiz 1	25	W Sep 9	M Sep 14
Exam 1	150	F Sep 18	M Sep 21
Shelf life for food safety assignment	100	M Sep 21	F Oct 16
Exam 2	150	F Oct. 23	M Oct 26
Environmental sampling assignment	100	M Oct 12	F Nov 6
Hygienic design at home assignment	100	M Nov 2	F Nov 27
Quiz 2	25	W Nov 11	M Nov 16
Processor sanitation comparison assignment	100	M Nov 16	F Dec 11
Exam 3	150	F Dec 11	M Dec 14
Discussion board participation (4 topics)	100	monthly	within 7 days
TOTAL:	1000		

B. Grading Scale (%):

93 + = A	90 - 92 = A-	87 - 89 = B+	83 - 86 = B
80 - 82 = B-	77 - 79 = C+	73 - 76 = C	70 - 72 = C-

C. Policy on Posting of Grades:

Grades will generally be posted one week after an assignment or exam due date. The final course grade will be available on Friday, December 18.

D. Virginia Tech Honor Code:

We will abide by the Virginia Tech Honor System. Your attendance at a test or your submittal of any written or electronic materials shall be your pledge that you subscribe to and accept the Virginia tech honor code and honor system.

Specifically, you are expected to:

- Do all written or electronic assignments independently and without assistance.
- Turn in all assignments on time or with a documented excuse if they are late.
- Report any Honor Code violations that you have directly observed, including cheating on exams.