

**Public Health and Food Microbiology Biology 339/539  
Spring 2017**

**Lecture Instructor:** Dr. Sabrina Mueller-Spitz  
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**Office Hours:** Monday 1:50-3:50 pm  
Wednesday 12:40-1:40 pm  
Other times available by Appointment

**Course Format:** Lecture Monday & Wednesday 11:30-12:30 pm ---- Halsey 310  
Lab Tuesday 1:20-4:20 pm ---- Halsey 165

**Course Description:** A study of microorganisms and microbial processes important to a variety of public health applications: special reference to food, water, wastewater, and environmental processes and their applications. 3 credits Prerequisite: Biology 309 or 233.

**Course Objectives:** After completing this course students will:

- 1) Grasp the how infectious disease transmission can be prevented or controlled.
- 2) Understand various places in the food chain that biological, chemical, and physical hazards can be introduced.
- 3) Recognize the factors that control microbial survival in foods and beverages.
- 4) Identify the relationship between sanitation and hygiene with drinking and surface water quality.
- 5) Evaluate the importance of vector transmission in the global burden of infectious disease.
- 6) Examine how immunization, isolation, and quarantine are effective tools to reduce the spread of disease.
- 7) Address the microbial components of indoor air quality and these "hidden" hazards.
- 8) Appreciate how we need to be prepared for natural disasters, emerging infectious diseases, climate change, and political unrest may impact presence infectious disease.

**Reading Materials:** A variety of book chapters, primary literature, and review articles will be used to provide in depth information about lecture content. The reading materials will be posted on D2L. Various chapters from the following books will be used:

- 1) Microbiologically Safe Foods eds N. Heredia, I. Wesley and S. Garcia ISBM 9780470439074 This book is available from Wiley Online Library.
- 2) Water and Sanitation-Related Diseases and the Environment: Challenges, Interventions, and Preventive Measures eds JMH Selendy Online ISBN: 9781118148594 This book is available from Wiley Online Library.
- 3) Wastewater Microbiology, Fourth Edition G. Bitton Online ISBN: 9780470901243

## Graded Elements of Course

	Point Breakdown
<b>Items for Lecture and Lab</b>	
3-Exams <i>Exam 1 and 2 will be held in the Testing Center.</i> Exam 1- March 3 <sup>th</sup> or 4 <sup>th</sup> Exam 2- April 21 <sup>st</sup> or 22 <sup>nd</sup> Exam 3-May 9 <sup>th</sup> in during lab time	300 points
Study Guide Questions	10 points
Class Participation	25 points
Case Study Discussions Participation	30 points
Current Topic in Public Health Microbiology	15 points
Food Safety Tip	10 points
2-Lab Content Quizzes Quiz 1-April 4 <sup>th</sup> Quiz 2-May 10 <sup>th</sup>	100 points
6-Field Trip Write-ups	60 points
<b>Point Totals</b>	<b>550 points</b>

### Grading Scale:

<u>% of Total Points</u>	<u>Grade</u>
93-100	A
90-92.9	A-
87-89.9	B+
82-86.9	B
81.9-80	B-
77-79.9	C+
71-76.9	C
69-70.9	C
67-68.9	D+
61-66.9	D
60.9-60	D-
≤ 60	F

### Course Policies:

1) Regarding Email messages, to expedite a response your email, include Bio339 or Public Health Micro in the title, which allows me know the recipient of the message. Emails received during the evening or over the weekend may not be responded to until the following day. Only detailed email messages will be responded to in a timely manner.

2) All mobile devices will not be allowed in class (i.e. keep these stored in your coats or backpacks). If a mobile device is visible or interrupts class or lab for any reason, you will LOSE 10 points from your final grade.

3) Cheating on an exam, plagiarism, or any other form of academic dishonesty associated with presentations or any written element for class will be dealt with in accordance with the current UWS Student Code of Conduct section 14.01

([http://docs.legis.wisconsin.gov/code/admin\\_code/uws/14.pdf](http://docs.legis.wisconsin.gov/code/admin_code/uws/14.pdf)). Please read this document and understand what is considered academic dishonesty. ***Any violation of related to Student Code of Conduct will be dealt with on an individual basis according to the severity of the misconduct.***

4) If a student misses an exam because of extreme circumstances (e.g. death of a close relative or a documented medical excuse) the student will be allowed to take a replacement exam. It is the student's responsibility to contact the professor before or immediately following the missed exam to make arrangements for the make-up exam. Lack of planning on the student's part could result in earning a failing grade in the course. The grade earned on this replacement exam will be substituted for the one missed exam.

5) Late Assignment policy. All late materials will be accepted, however, your total grade will be docked 10% of the point total per day the assignment is late.

## Lecture Schedule\*

<b>Week/Date</b>	<b>Topic(s)</b>	<b>Readings</b>
Week 1 1/30-2/1	<b>SCOPE OF PUBLIC HEALTH</b> Pathogens of Concern Reportable Diseases Outbreak Investigations	Microbiologically Safe Foods: Ch1 & Ch 2 Water and Sanitation-Related Diseases and the Environment: Ch 5
Weeks 2-6 2/6 – 3/1	<b>FOOD SAFETY</b> Safety Through Food Supply Chain Food Processing, Preservation, & Preparation HACCP Restaurant Inspections: Professional Lecture, Jennifer Kloes-Feb 15 <sup>th</sup> Retail Establishment Polices: Guest Lecturer Feb 20 <sup>th</sup> Case Study I	Microbiologically Safe Foods: Ch 6, Ch 7, Ch 8, Ch12, Ch 20, Ch 21, Ch 22, Ch 23, Ch 24 Factors Affecting the Growth of Organisms in Food HACCP in Practice Commercial Food Service Establishments: The Principles of Modern Food Hygiene
Weeks 6-7 3/6--3/13	<b>VECTORS</b> Vector Borne Disease Lyme Disease Malaria	Peer Reviewed Publications
Week 7 3/15	Case Study II	To be determined
Week 8-10 3/27 to 4/12	<b>WATER QUALITY</b> Drinking Water Dr. Maureen Muldoon-Guest Lecture-April 2 <sup>nd</sup> Wastewater Recreational Waters Indicators of Fecal Pollution Alternative Fecal Indicators	Water and Sanitation-Related Diseases and the Environment: Ch 2, Ch 3 Wastewater Microbiology: Ch 4, Ch 5, Ch 6, Ch 7, Ch 8, Ch 20 Peer Review Publications
Week 11 4/17-19	<b>AIR QUALITY</b> Indoor Air Outdoor Air	Peer Reviewed Publications
Week 12 4/24- 26	<b>PUBLIC HEALTH MEASURES</b> STI & Immunizations Immunization TB Policies Antibiotic Resistance	Vaccine Preventable Disease Mass Immunization
Week 13 5/1-3	<b>EMERGENCY PREPAREDNESS</b> Emerging Infectious Disease Natural Disasters Driven Epidemics & Disease Risks	Emerging & re-emerging infectious diseases Water and Sanitation-Related Diseases and the Environment: Ch 31 Peer Reviewed Publications
Week 14 5/8-10	Case Study III Exam 3	To be determined

\*Topic order may change.

<b>Lab Schedule</b>	
<b>Week</b>	<b>Topic(s)/Field Trips * (Order may change)</b>
1 1-31	Lab Safety for BSL2 Introduction to Culture Techniques
2 2- 7	Supply Chain Food quality- Spoilage and Pathogens
3 2-14	Kitchen Safety and Milk quality Collect data on food supply chain food quality
4 2- 21	Collect data milk quality and Unknown from Kitchen identification
5 2-28	Kitchen Unknown Identification <b>Tour of Blackhawk</b> (During Lecture February 27 <sup>th</sup> )
6 3-7	Vector Entomology Lab <b>To be determined</b>
7 3-14	<b>To be determined</b>
8 3-28	<b>Tour of Outagamie Co County Recycling &amp; Solid Waste Facilities</b>
9 4-4	Fecal Pollution Source Comparison Lab Quiz 1
10 4-11	<b>Tour of Fond du Lac WWTP</b>
11 4-18	<b>Back-up for Tour Fond du Lac WWTP</b> Continue: Fecal Pollution Source Comparison
12 4-25	<b>Tour of Small Wet Anaerobic Biogas System Allen Farms</b> Lab exercise back-up: Drinking (Municipal–Well water) or Recreational Water Quality (Pools, Beach and surface water quality)
13 5-2	<b>Back-up Tour of Small Wet Anaerobic Biogas System Allen Farms</b> Lab exercise back-up: Drinking (Municipal–Well water) or Recreational Water Quality (Pools, Beach and surface water quality)
14 5-10	Quiz 2