

University of Maryland
Department of Animal and Avian Sciences
Course Name: Zoonotic Diseases and Control
Course number: ANSC 688J/489R
Academic Session: Spring 2013

Instructor: Debabrata Biswas, Ph. D.	Credits: 3
Animal and Avian Sciences	Time:
E-mail: dbiswas@umd.edu	Room:

Course Description:

This course takes a global perspective of foodborne diseases common to animals and man, specifically those caused by farm animal-originated human pathogens (zoonoses) and their control. A selection of important zoonoses and food safety issues will be specifically covered with an emphasis on the principles of zoonotic disease transmission and control, risk factors to humans, and surveillance methods.

Many diseases involve an intermediary pest or vector that plays an important role in the transmission of the pathogenic organism to humans. This course examines zoonotic diseases and their current importance in the United States and around the world. This course will also study the impact of rodent and arthropod vectors of disease — including those of historical importance as well as endemic and emerging diseases. Identification, surveillance and control methods will be examined, with attention paid to replacing pesticide use with natural organic antimicrobial components, regulations, and safety measures.

Prerequisites:

General introductory and or advanced microbiology with laboratory instruction.
Basic and/or advanced food microbiology.
Basic knowledge of molecular biology.
Or permission of instructor.

Objectives:

Upon completion of the course, the students will:

1. Develop an understanding of the relationships of microorganisms in foods, specifically in meat, milk and poultry, and apply this understanding to food processing situations.
2. Understand the significance of microorganisms in the production of food.
3. Know and understand the principles of detecting microbiological contaminants present in food, including rapid as well as traditional techniques.
4. Understand the importance and cause of foodborne disease as well as the mechanisms of microbiological pathology as it relates to foodborne disease.
5. Understand the principles of food preservation.
6. Become familiar with the use of reference books and journals as related to food microbiology.

Course Policies:

Attendance is importance. Unexcused absences may result in a lowered course grade. Late work will not be accepted. Make-up exam and quizzes will not be given unless the cause of absence is justified according to university policy.

Responsibilities:

It is the student's responsibility to obtain as much information as possible concerning food safety during the semester in which this course is taught. Good study habits and continuous effort have their rewards. It is the instructor's responsibility to provide the student with assistance, guidance, facts and philosophy concerning the subject matter.

Academic Honesty/Plagiarism:

Students are expected to maintain a high standard of academic integrity. Plagiarism on exams, quizzes, or term papers and other acts generally considered unethical will not be tolerated. Any unethical activities will result in a grade of F and referral to the appropriate University officials. Please read carefully the section on academic honesty in the current edition of the UMD student handbook at www.umd.edu.

Accommodations for Learners with Special Needs:

Students with documented disabilities or other special needs should notify the instructor no later than the first week of the term.

Additional information:

Students whose names do not appear on the official class roster will not be allowed to attend the class after the add period ends. Eating and cell phone usage are not allowed in the class.

Precautionary Disclaimer:

“The instructor reserves the right to amend the course syllabus during the term. If changes must be made, students will be notified. Notice given during the class is considered proper action. Office hours are subject to change depending on the instructor's schedule.”

Course Outline:

1. Public Health and Zoonotic Infections
2. Economic consequences of contaminated food products and outbreaks due to zoonotic pathogens
3. Identification of major risk factors and health related consequences for food zoonotic illness in the United States.
4. Zoonotic bacteria
5. Zoonotic viruses
6. Other zoonotic microbes and parasites
7. Sources of zoonotic illness in animals and pests, rodents, birds and vectors
8. Control of zoonotic illness [with natural and organic components](#) at the pre-harvest level [and make a sustainable agricultural practice](#)

9. 9. Control of zoonotic illness at the post-harvest level **and replacement of synthetic chemicals with natural and organic antimicrobial plant products**
10. Identification of issues related to optimum food safety in the home.

Evaluation:

There will be three examinations, two quizzes, group discussion, class participation, and one presentation/paper. Examinations will cover lecture material and assigned readings. If a student cannot attend an exam or a quiz, the instructor must be informed in advance.

3- Written examinations	60%
Quizzes	10%
Group discussion/ Class participation	10%
1-Presentation/paper	20%

<u>Percentage</u>	<u>Grade</u>
97 to 100%	A+
90.9 to 96.9%	A
89.9 to 90.8%	A-
86.9 to 89.8%	B+
80.9 to 86.8%	B
79.9 to 80.8%	B-
76.9 to 79.8%	C+
69.9 to 76.8%	C
59.9 to 69.8%	D
< 59.9%	F

Presentation/paper:

Each student will write a paper on a particular topic related to food safety or consult with the instructor. Graduate students may prepare both an oral and a written presentation given at the end of the semester.

Textbook and assigned reading:

“Zoonoses Infectious Diseases Transmissible from Animal to Humans” by Krauss et al 4th edition. 2012. ASM

“Control of Communicable Diseases Manual” edited by David L. Heymann, American Public Health Association, Washington DC 19th edition.

“Modern Food Microbiology” by Jay, J. M 6th edition. 2000. ITP.

“Bacterial pathogenesis” by Salyers A.A, Whitt, D.D. 2nd edition. 2000. ASM.

“Bacterial Pathogenesis: A Molecular Approach” by Salyers A.A. and Whitt D.D.

Recently published related manuscripts such as:

Scallan, E. et al., Foodborne Illness Acquired in the United States—Unspecified Agents.

Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 17, No. 1, January 2011

Scallan, E., et al., Foodborne Illness Acquired in the United States—Major Pathogens. Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 17, No. 1, January 2011.

In addition, selected handout materials will be made available on the course website or reproduced and handed out in class.