

EEES 1170, Microbes and Society (Natural Sciences general education/core course)

3 credit-hours

Fall 2009

MW 12:30 – 1:45, Snyder Memorial Hall 2110

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Office hours: T/R 11:00 - 1:00 and by appointment

Prerequisites: None

Required text: Alcamo, I. Edward. 2003. *Microbes and Society*. 2nd ed. Jones and Bartlett Publishers.

Supplementary text: None required. Readings will be provided as necessary.

Course goal and objectives: Microbes play many roles in our lives ranging from agents of disease and bioterrorism to vehicles of biotechnology and agricultural advancement. The major goal of this course is to capture the interest of students by introducing them to the fascinating and important roles of microbes in everyday life including public health, environmental science, agriculture, and biotechnology. Specific objectives include:

1. To recognize the impact of microbes to our everyday lives.
2. To understand the role of microbes in recent events of public interest including bacteria contamination of food supplies, bioterrorism, antibiotic-resistant pathogens, etc.

This course satisfies the University of Toledo's **Natural Sciences core requirement** by:

1. Providing an understanding of major scientific concepts relating to the impacts of microbes on humans, including historic events, microbe structure and function, and benefits and detriments of microbes.
2. Offering information to allow students to critically evaluate the significance of microbe-related events analyzed in the mass media.
3. Provide fundamental information to answer common questions concerning microbes. For example, why do some bacteria cause infections, while others don't? Why are flu shots necessary every year, whereas other vaccines might be given once in a lifetime?
4. Demonstrating the value of microbes to society. For example, not all microbes are "bad". Many of our most important medications are synthesized by microbes.
5. Introducing scientific reasoning skills concerning important issues. For example, what measures can be taken to reduce public health risks associated with microbial contamination of food and bacterial antibiotic resistance.

Tentative course set-up/schedule: We will follow the text of Alcamo (*Microbes and Society, 2nd Edition*), which utilizes a “citizen science” approach to understanding microbes in our world. Two 75-minute lecture sessions per week will be dedicated to the discussion of conceptual issues surrounding the role of microbes in society. Occasionally, I will hand out supplementary reading materials or provide demonstrations to relate course material to real life events.

WEEK	TOPIC	READING	Quiz	HOMEWORK ASSIGNED
1	The Microbial World	Chapter 1		
2	Microbes in Perspective	Chapter 2		
3	Molecules of the Cell	Chapter 3	09/09	09/09 (Due 09/16)
4	Bacteria	Chapter 5		
5	Viruses	Chapter 6	09/23	
6	Protists	Chapter 7		
7-8	Growth and Metabolism	Chapter 9	10/07	10/07 (due 10/14)
8-9	Microbial genetics	Chapter 10	10/21	
10	Controlling microbes	Chapter 11		
11	Microbes and food	Chapter 12	11/04	
12	Food preservation and safety	Chapter 13		
13	Biotechnology and industry	Chapter 14	11/18	11/18 (due 12/02)
14	Microbes and the environment	Chapter 16		
15	Disease mechanisms	Chapter 17		
16	Emerging diseases and epidemiology	Notes	12/09	12/09 (due 12/16)

Students are also encouraged to utilize the online tools associates with the text's website:

<http://microbiology.jpup.com/microbes>

The site offers online activities to enhance your understanding of key concepts, including animated flash cards, quizzes, study guides, essay questions, and a “microbes in the news” link.

Online class notes will be provided prior to each class period at:

<http://www.utoledo.edu/as/envsciences/faculty/sigler.html>

Grading: It is expected that the majority of the students in this course will have a limited background in microbiology. However, to develop a broad understanding of the role of microorganisms in our world, some complex material must be covered. Therefore, to make your life easier, **there are NO exams in this course.**

A total of **330 points** is possible in this course:

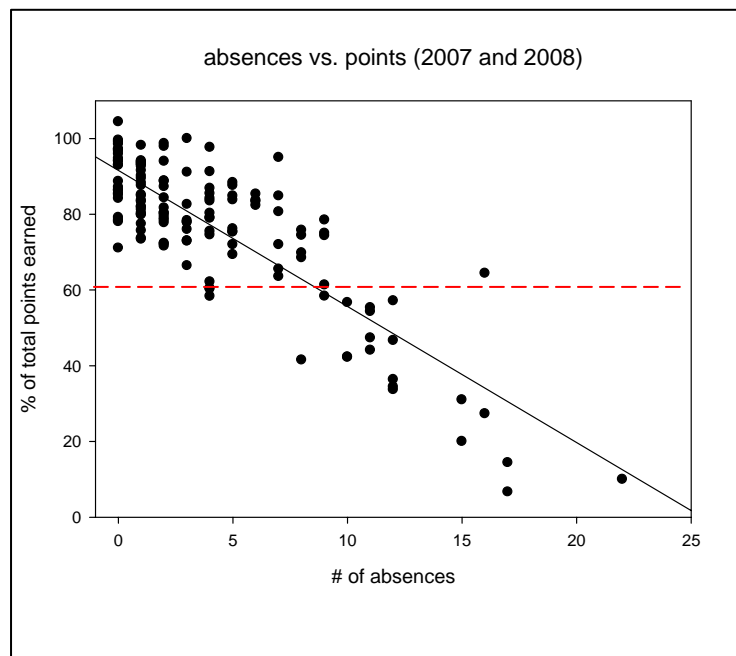
Four homework assignments (25 points each) These assignments will challenge your (i) comprehension and application of the course materials, (ii) awareness of current issues involving microbes in the news, as well as (iii) ability to research topics of course interest. Homework will be assigned on Wednesdays and will be due on the following Wednesday at the **beginning of class**. If you miss a class period during which a homework is assigned, it is your responsibility to get the assignment as soon as possible.

Seven, bi-weekly quizzes (30 points each) Quizzes will be administered at the *beginning* of the class period on every other Wednesday beginning September 9th. There will be no quiz on December 2nd, but will be one on December 9th. Quizzes will cover the lecture material presented since the previous quiz. You may drop one quiz, **but not the quiz administered on 12/09.**

Attendance (50 points) Attendance will be recorded on 10 random occasions, each worth five points.

Your overall grade will be calculated on a straight scale (A, 100 – 93%; A-92 – 90%; B+, 89 – 87%; B, 86 – 83%; B-, 82 – 80%; etc.) based on your earned points total.

Attendance: Your presence at each class meeting will greatly impact your grade. Historically, for each absence, students have noticed a *four percentage point decrease* in the number of points earned in the course.



If you miss a class, it is your responsibility to obtain any class notes or pertinent information from a fellow student.

All email correspondence will be sent to your UT account.

Academic dishonesty: Academic dishonesty in this course will not be tolerated. Students who violate the above policy can expect disciplinary action. Please see the University of Toledo's academic dishonesty statement for more details:

<http://www.utoledo.edu/dl/students/dishonesty.html>