EEES 1170, Microbes and Society (CRN 25296, Natural Sciences core course)
Spring 2014, Tuesday and Thursday 12:30 – 1:45, Bowman-Oddy 1014
3 credit-hours

This course describes how microbes impact everyday life in areas including food safety, agriculture and bioterrorism. Natural Sciences core course.

Instructor: Von Sigler, Associate Professor of Microbiology, Department of Environmental Sciences
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Office hours: W/R 2:00 – 4:00 and by appointment

Prerequisites: None

Text: None.

Technology requirement: Course notes will be posted to BlackBoard.

Learning outcomes: 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 introduce students to the fascinating and important roles of microbes in everyday life including roles in public health, environmental science, agriculture, and biotechnology. Students completing this course will be able to:

1. Understand the role of microbes in recent events of public/social interest including disease spread, bacteria contamination of food supplies, bioterrorism, antibiotic-resistant pathogens, etc.
2. Understand the purpose and design of hallmark experiments that have led to our understanding of infectious diseases.
3. Compare and contrast various important microbes with regards to infections, including treatment, and control.
4. Explain the dynamics of the pathological relationships between microbes and humans.
5. Understand how methods of microbial control are evaluated and applied in sample scenarios and case studies.
6. Summarize basic bacterial genetic principles and analyze the consequences of mutation and genetic recombination to microbes of societal importance.
7. Apply fundamental mathematical expressions and computer simulations to understand how bacteria grow, spread and cause disease.
8. Formally communicate the results of literature investigations using written communication skills.

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. Providing 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". Microbes synthesize many of our most important medications.
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.

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. To make your life easier, **NO exams are given in this course.**

A total of 380 **points** is possible in this course:

Six 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 Thursdays and will be due on the following Thursday at the **beginning of class**. If you miss a class period during which homework is assigned, it is your responsibility to get the assignment as soon as possible. Two points will be deducted for each day a homework assignment is late.

Seven, bi-weekly quizzes (30 points each) Quizzes will be administered at the *beginning* of the class period on every other Thursday beginning January 29th. Quizzes will cover only the lecture material presented *since the previous quiz*. Your lowest quiz score will be dropped, **but not for the quiz administered during finals week**. If you miss a quiz, you must produce a valid excuse (doctor's note, etc.) to me **before** the following Friday (i.e., the next day) at 5:00 PM and arrange for a re-take. Do not contact the UT Testing Center.

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

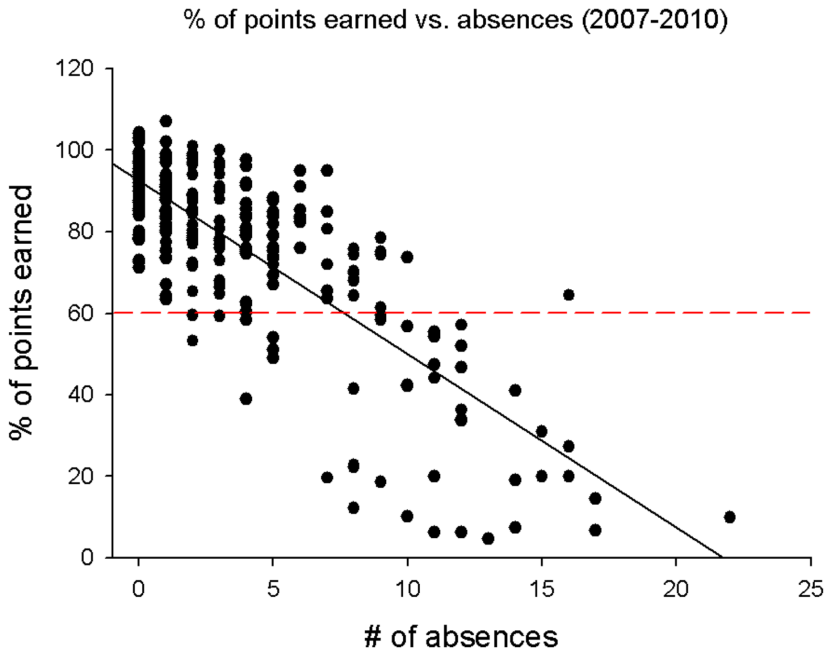
Your overall grade will be calculated on a straight scale (A, 100 – 93%; A-, 92 – 90%; B+, 89 – 87%; B, 86 – 83%; B-, 82 – 80%; etc.) based on your earned points total.

Online class notes will be provided prior to each class period on BlackBoard.

Tentative course set-up/schedule: 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	Quiz (Thurs)	HOMEWORK ASSIGNED
1	**The Microbial World**		
2	**Microbes in Perspective**		
3	**Molecules of the Cell**	01/29	01/29 (due 02/05)
4	**Prokaryotes**		
5	**Virus Structure / Disease**	02/12	02/12 (due 02/19)
6	**Protists**		
7-8	**Fungi Structure / Disease**	02/26	02/26 (due 03/05)
8-9	**Growth**		
-9	**Metabolism**		
10	**Microbial Genetics**	03/19	03/19 (due 03/26)
11	**Disease Mechanisms**		
12	**Epidemiology**	04/02	04/02 (due 04/09)
13	**Controlling Microbes**		
14	**Biotechnology and Industry**	04/16	04/16 (due 04/23)
15	**Microbes and Food**		
16	**Food preservation and safety**		
FINAL QUIZ		12:30, Tuesday, May 5th	

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. Examples of academic dishonesty include:

1. Obtaining or using work other than your own on tests, exams, quizzes or assignments.
2. Unauthorized use of notes, calculators or other programmable equipment during tests, exams, or quizzes.
3. Soliciting or providing answers on exams, tests or quizzes.

Students who violate the above policy can expect disciplinary action. Disciplinary action may consist of receiving a zero on the assignment, failing the course, being reported to the Dean of Students, or other action as deemed appropriate by the course instructors.

University policies Policy Statement on Non-Discrimination on the basis of Disability (ADA) The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

Academic Accommodations The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the Student Disability Services Office.