Summer 6-1-2020

BIOM 250N.01D: Microbiology for Health Sciences

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Microbiology for Health Sciences Summer 2020
BIOM 250N
Remote Course Syllabus

Instructor: Dr. Jim Battisti. Office – Health Sciences Building 510

Zoom Office Hours: Tuesdays and Thursdays 2:00-3:00pm
-or by appointment-
Email: jim.battisti@umontana.edu

Zoom link to live lecture:
Monday, Tuesday, Wednesday, Thursday 7:30-9:20am:
https://umontana.zoom.us/j/97619063439

Textbook: Microbiology An Introduction. Tortora, 13th Ed. You have already paid for this book through your tuition. It is available to you in Moodle. You should be able to access your Moodle account and use RedShelf to get access to the textbook and other course materials. Please contact the UM Bookstore to get your book access.

UMOnline – Moodle/Zoom: Live Zoom lectures will take place during the designated time slot (7:30-9:20am). Videos of these lectures will be recorded and made available to those who are unable to make it to the live feed. Powerpoint presentations used for zoom lectures will also be made available. I reserve the right to alter the amount of material that will be covered for each exam. This information may initially be emailed rather than posted on Moodle.

Course description
Microbiology for Health Sciences is an introduction to the basic principles of clinical immunology and infectious disease. The course is designed to give students an overview of the cellular structures and molecular processes that are used by prokaryotic cells (Bacteria and Archaea) and eukaryotic cells (Protozoa, Algae, Fungi, parasites) to live in nature and cause disease in humans and other vertebrates. Students are expected to learn the basics of host defense systems, infectious disease agents (bacterial, viral, fungal, and parasitic) and methods of treatment and prevention of these disease agents. **Upon completion of this course, students should have a basic understanding of how to protect themselves and others from infectious disease, and be academically prepared to enter courses of study in microbiology and/or health related professions.**

Learning outcomes
Part 1. Definition of types of microorganisms to be studied in class. Light and Electron Microscopy. Basics of inorganic and organic chemistry. Structure and function of prokaryotic and eukaryotic cells. Basics of metabolism in microbes and their metabolic pathways. Introduction to microbial genetics. Growth and growth conditions for microbes.
Part 2. Phylogenetic classification of micro-organsims, methods for classification, and nomenclature. Methods for identifying microorganisms by morphology, physiology, and

genetics. The Prokaryotic domains, Bacteria and Archaea with several selected species studied in detail. The Eukaryotes; characteristics of Fungi, Algae, Protozoans, and Helminths as time permits. Again, several selected species will be studied in detail. Arthropods as vectors of disease. Characterization of viruses and study of viral infections.
Part 3. The study of immunology including innate and adaptive immunity. Vaccination and vaccine preparation and effectiveness. Diagnostic immunology. Disorders of the immune system including hypersensitivity, autoimmunity, and immunodeficiency. Antimicrobial chemotherapy; antibiotics, their method of action, and commonly used antimicrobial drugs. Antibiotic resistance and the mechanisms that can cause its development in microorganisms.
Part 4. Study of selected human diseases. This course will cover a variety of common diseases found in or on various human organs or organ systems. The organisms we will study include bacteria and viruses and if time allows protozoans, fungi, and parasites. Each disease studied will focus on the responsible pathogen, disease symptoms, treatment, and epidemiology.

Quiz and Exam Schedule.

Due to the short time available for this class and the amount of material to be covered there will be weekly quizzes and exams. The quizzes and tests will be a combination of multiple choice and short answer questions. Quiz and exam questions will come from topics and materials covered in the lectures, and is supplemented by material from the textbook. There will be 5 quizzes and 5 lecture exams during the semester. Each quiz will be worth 40 points and each lecture exam will be worth 100 points. The 5th exam is comprehensive.

Quizzes and exams will be administered by 2 methods:

Method 1: ALL QUIZZES as well as Exams 1 and 2, will be administered by email, and students will be given 3 days (72h) to complete them to receive full points. For each day (24h) late, there is a 4-point reduction in score of quiz and a 5-point reduction in final score of exam.

Method 2: Exams 3, 4, and 5 will be available for 3 days, but students will be limited in their time to complete the exam. Rather than being allowed 72h to complete the task by email (as in Method 1), these 3 exams will be administered via Moodle with a time limit, to test your skills.

Quiz 1 – Thursday, July 9th
Quiz 2 – Thursday, July 16th
Quiz 3 – Thursday, July 23rd
Quiz 4 – Thursday, July 30th
Quiz 5 – Thursday, August 6th

Exam 1 – Tuesday, July 14th
Exam 2 – Monday, July 20th
Exam 3 – Monday, July 27th
Exam 4 – Monday, August 3rd
Paper Due – Monday, August 10th
Exam 5 (comprehensive)– Thursday, August 13th

Written assignment:

Topic due by Monday August 3rd .
Paper due by 5pm Monday August 10th.

Each student will choose a topic on a disease-causing microorganism or a specific disease of importance to human health for a **1 page single-spaced paper.** This paper is to be directed to a public audience of non-scientists. You will attempt to illustrate your topic in a way that will help the audience understand the science behind the topic.

As microbiologists or health professionals you must be able to clearly explain a pathogenic microorganism (*Borrelia, Yersinia, Vibrio, etc.),* **its mode of transmission** (arthropod, water-borne, air-borne, etc.), **pathology** (sepsis, fever, malaise, death, diarrhea, bacteremia, viremia, etc), **and treatment/prevention (**no treatment, fluids, transfusion, antibiotics, antifungals, wash hands, wear mask, go to emergency room, etc.) **to a public that might not understand these topics or may have been misled by other information outlets. . Maybe it's a microbe/disease that's of particular interest to you?** The paper will be graded on clarity of writing, scientific validity, and quality of the writing (grammar, spelling, completeness, etc.). Please cite a minimum of 2 references at the end of the one page paper. Good places to look for information are the Centers for Disease Control https://www.cdc.gov/ and PubMed https://pubmed.ncbi.nlm.nih.gov/ **Paper may be emailed to** jim.battisti@umontana.edu or if necessary, other arrangements can be made**. Late papers will be penalized 10 points for every day late.**

Grading:

In this course there will be 5 quizzes worth 40 points each for a total of 200 points. The 5 exams will be worth 100 points each for a total of 500 points. Your grade will be calculated as a percentage of the total possible quiz (200), exam (500), and written assignment (100) points combined (800). The following grading scheme will be used:

Total points		Percentage		Grade
800 - 720	=	100 – 90 %	=	A
719 - 640	=	89.9 – 80 %	=	B
639 - 560	=	79.8 – 70 %	=	C
559 - **480**	=	69.8 – 60 %	=	D
< 479	=	59.8	=	F

You need 480 points to Pass the course. If you are taking this course as Pass/No Pass the University requirement for a Pass grade is the equivalent of a "C" or 70% or higher cumulative average on quizzes and exams.

Lectures and Make-up exams.

Please keep up with the lectures and the reading in the textbook. This course is taught in a very short time and the material will be covered very quickly so missing a day could put you behind in the course. Although initially by email, the quizzes and exams will be available on Moodle so that you should be able to take them no matter what your work or home schedule. **Make-up quizzes and exams will be permitted only with compelling and supported reasons.** Make-ups will be scheduled at the convenience of the instructor.

Instructor's policy for accommodating disabilities
The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Instructor's policy on academic honesty and plagiarism.
All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code.