

**General Microbiology: BIOM 360**  
**Fall 2020**  
**MWF 10:00-10:50 am, Reid Hall 108**

**NOTE: The instructors of this class reserve the right to make changes to the syllabus as needed. If changes are made, you will be notified in lab, lecture, or through D2L.**

INSTRUCTORS AND OFFICE HOURS

Dr. Frank Stewart  
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Dr. Dan Colman  
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[daniel.colman@montana.edu](mailto:daniel.colman@montana.edu)

We do not have structured “office hours” but we welcome interactions with students. **Please reach out via email to schedule a time to chat via Webex.**

COURSE OVERVIEW

BIOM 360 is a one semester introduction to microbiology. The goal of this course is to establish an understanding of the primary concepts in microbiology and an appreciation of the role of microorganisms in natural systems, disease, and our everyday lives.

BIOM 360 is a 5-credit course (3 lecture credits, 2 lab credits) that serves a broad group of students at MSU. It is a required course for diverse curricula and many students take BIOM 360 as a science elective toward their Core requirements.

PREREQUISITE

BIOB 160 or BIOB 260

COURSE CONTENT

- Diversity and evolution
- Taxonomy and classification
- Cellular anatomy and growth
- Physiology and metabolism
- Genetics and information flow
- Microbial contributions to ecosystems
- Symbiosis and human microbiomes
- Medical microbiology and immunology
- Epidemiology and public health

LEARNING OUTCOMES

When students leave this course, they should be able to:

- Define, describe, use, and apply terms, concepts and theories of fundamental importance in microbiology.
- Summarize current knowledge of microbial diversity, using the Three Domain System of classification.
- Describe and discuss the use of microorganisms in biotechnology and industrial, environmental, and medical microbiology.
- Outline the impact of microorganisms on human health, both positive and negative. This involves summarizing the role of the human microbiome in human health; describing the interaction of factors, both human and microbial, involved in causing disease and maintaining health; making generalizations about the approaches used to diagnose and treat infectious diseases; summarizing the role of epidemiologists in controlling and preventing outbreaks of infectious diseases; and using information about infectious diseases to suggest appropriate measures for their prevention and control.

- Communicate the results of experiments or other types of scientific investigations. This involves: locating, reading, and evaluating scientific information, including primary literature, reviews, personal communications, and web-based publications; developing testable hypotheses or solutions to practical problems; using appropriate controls; collecting, analyzing and interpreting both qualitative and quantitative data; maintaining careful and complete records of investigations; and designing concise, informative tables and figures.
- Demonstrate proficiency in basic laboratory skills used routinely by microbiologists.
- Work safely in a microbiology laboratory.

### BLENDING COURSE STRUCTURE

BIOM 360 will be 'blended.' We have 120 students, but our classroom (Reid Hall 108) has space for only ~50 students under social distancing guidelines. We will therefore split the class into thirds, alphabetically by last name. Only 1/3 of the class will attend in-person on any given M, W, or F:

Students with last names A-F will attend in-person on Mondays.

Students with last names G-O will attend in-person on Wednesdays.

Students with last names P-Z will attend in-person on Fridays.

The 2/3s not in attendance will be able to either participate live online, or access a recording of the lecture/discussion on D2L at a later time.

### TEXTBOOK

The text for the lecture portion of the course is ***Brock Biology of Microorganisms, 16th edition*** (Madigan, Bender, Buckley, Sattley, and Stahl). You will be able to purchase a digital subscription via the bookstore. This digital subscription is called "*Inclusive Access*", which is just the buzzword the publisher uses. The subscription provides a suite of course materials, all of which should be accessible on multiple devices. Included within this material suite is a resource called *Mastering Microbiology*, which includes homework assignments accompanying each chapter. These assignments are optional but recommended, as they can help you to **1)** focus on the most important components of each chapter, **2)** review your knowledge base through ungraded practice assignments, and **3)** help you prepare for exams and quizzes.

Your *Inclusive Access* course materials are provided by the MSU Bookstore through D2L and are accessible to all throughout the add/drop period. Once the add/drop period has elapsed, all students who have opted out will be refunded on their student account. **If you decide to opt-out you must complete the process by September 4th, 2020, 11:59PM MDT** and you will be responsible for sourcing the materials elsewhere.

If you would like a printed version of Brock to accompany the online resources, you can buy an unbound, three-hole-punched version of the textbook via the *Mastering Microbiology* resource described above. However, this purchase would be in addition to (not in place of) the purchase of the online subscription.

**\*\*Note that the course will also cover material not included in the Brock textbook. Lecture attendance is therefore strongly advised.**

### GRADES & EXAMS

Your overall course grade will be comprised of:

D2L Exams	3 @ 150 points each	450 pts
D2L Quizzes	10 @ 15 points each	150 pts
Laboratory		300 pts
<b>Total</b>		<b>900pts</b>

Final grades are assigned based on your final total:

A	800 – 900
B	700 – 799
C	600 – 699

D 500 – 599  
F <499

### D2L Exams

The lecture portion of the course will have three one-hour unit exams and an **optional final exam**. All unit exams will take place ONLINE via D2L. You will be given a 24-hr window in which to take your timed, one-hour online exam. Exam dates and times are:

Exam 1	Mon, Sept 21	10 AM (exam window 24 hrs beginning at 10:00 am on the 21 <sup>st</sup> )
Exam 2	Wed, Oct 21	10 AM (exam window: 24 hrs beginning at 10:00 am on the 21 <sup>st</sup> )
Exam 3	Wed, Nov 18	10 AM (exam window: 24 hrs beginning at 10:00 am on the 18 <sup>th</sup> )
Optional Final Exam**	Tues, Nov 24	10 AM (exam window: 24 hrs beginning at 10:00 am on the 24 <sup>th</sup> )

**\*\*Note: the MSU-scheduled final exam date for this course is Nov 25, the Wed before Thanksgiving. To ensure your exam does not infringe on the holiday, the online exam window will begin at 10:00 am on the 24<sup>th</sup>.**

The final exam will be cumulative and can replace the grade of one of the partial exams. If you have a conflict with the timing of any of the exams, you can replace it with the final exam. **No make-up exams will be offered.**

**Review sessions** might be scheduled preceding the exam, contingent on progress in lecture. These will take place online via Webex. Dates/times will be announced the week before the exam and attendance is optional. Review sessions will be unstructured – please bring your questions.

### D2L Quizzes

Online quizzes will be used to evaluate lecture material and will be administered via D2L. A total of 10 D2L quizzes will be assigned and each will count as 15 total points. Quiz due dates are shown in the lecture schedule and will typically be assigned one week ahead of the due date. **Quizzes are timed to 30 minutes. Late quizzes will not count and no make-up D2L quizzes will be given (no exceptions).** At the end of the semester, we will compile all graded quizzes and these will count toward your grade.

### Laboratory (led by Dr. Colman)

A co-requisite laboratory is part of BIOM 360 and accounts for **1/3 of your overall grade**. The lab meets in sections of 10-15 students per room in a one-hour period on Mondays and Wednesdays.

If you miss a lab due to illness, be sure to see the student health center or your doctor. If your illness prevents you from attending for the entire week, we will make a best effort to accommodate a make-up lab. If this is not possible, you will be excused from that lab. You must present a note from your doctor or the health center to be excused from a lab. Absences that are unexcused will result in a grade of “0” for all assignments and quizzes administered on those days – **no exceptions.**

### Lab Exercises and Lab Assignments

Lab exercises will be posted to the D2L home page in the “Lab Material” folder. Each exercise is to be completed and turned in to your TA at the assigned date (see “Lab Schedule”). To complete some components of the exercises, it may be necessary to seek information from resources other than the lab exercise and *Brock Biology of Microorganisms*. Lab Quizzes: A total of 10 lab quizzes are scheduled. See lab syllabus and schedule for more details.

### Lab Safety

Laboratory safety and biosafety is a priority in BIOM 360. The procedures for laboratory safety will follow the guidelines published by the American Society of Microbiology (ASM) 2012 edition and all students are to abide by these rules when working with organisms and chemicals in the laboratory. While TAs will work to ensure compliance and work to ensure your safety, each of you will ultimately be responsible for ensuring safety in the lab and adherence to laboratory protocols. Please read over the document at the following URL: [http://www.asm.org/images/asm\\_biosafety\\_guidelines-FINAL.pdf](http://www.asm.org/images/asm_biosafety_guidelines-FINAL.pdf). This document is also available for download from the class D2L site.

Hyperlinks to all Material Safety and Data Sheets (MSDS) and Pathogen Safety Data Sheets (PSDS) will be provided for all chemicals and organisms, respectively, used in the lab prior to each laboratory. A current copy of the Biosafety in Microbiological and Biomedical Laboratories (BMBL) can be found in the document located at the following URL:

<http://www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf>. A copy of the BMBL is also available in each laboratory and is available on D2L.

#### Eye Protection

Eye protection is required for admission to and participation in the laboratory! You may use plastic safety glasses sold in the bookstore. Alternatively, your TA may have new laboratory goggles for purchase. Sunglasses, contacts, and regular prescription glasses are not acceptable eye protection!

#### Lab Dress Code

Laboratory coats are required for participation in all labs. The lab has a supply of lab coats from prior semesters. These coats have been laundered and will be made available for pick-up on the first day of lab for use during the semester. Alternatively, students can purchase disposable lab coats (~\$2.00/each to be replaced once during the course of the lab) or purchase one professional lab coat (~\$19.00; recommended if you will be taking additional courses in Microbiology). Professional lab coats must be laundered by the laboratory supervisor once during the semester. All laboratory coats need to be stored in your locker between laboratory classes. Other items that you bring to class (coats, backpacks, computers etc.) must be stored in the cupboards next to each lab bench space. Open toed shoes or shorts/skirts are not allowed in the lab. Students must wear pants or long dresses. Students that do not adhere to the dress code will not be allowed to participate in lab and will receive a grade of "0" for all lab activities (**no exceptions**). Your TAs will advise you when the use of gloves is necessary. All students are required to wash their hands upon entry and before exiting lab each day. Periodic washing of hands is encouraged during the lab.

#### Service Animals and Labs

It is a recognized fact that service animals play a very important role in the life of their handlers. To ensure the safety of service animals, the MSU Microbiology and Immunology department will set forth the following rule in student laboratories (Based upon the regulation coming from the U.S. Department of Health and Human Services Publication, Biosafety in Microbiological and Biomedical Laboratories, 5th edition, 2009): Animal and plants not associated with the work being performed must not be permitted in the laboratory. [Section B, number 9, page 36]. Service animals that do accompany their handlers to the lab areas will be placed outside of the lab in a pre-designated area. The need for service animal accommodations needs to be discussed with the lab instructor prior to the first day of lab. If a kennel is required for the animal, the student will be responsible for providing a suitable structure.

Should students have question or concerns, they are encouraged to contact:

Montana State University's Disability Services  
180 Strand Union Building  
Phone: 406-994-2824

#### YOUR RESPONSIBILITY

It is each student's responsibility to be on time for lecture, attend classes and labs, learn content, and complete evaluations (quizzes and exams).

#### CLASSROOM RULES AND EXPECTATIONS

- The lectures will frequently involve discussions of book or lecture material, primary literature, or other sources. Be prepared to participate in discussions and answer questions when called upon.
- Arrive on time and turn off all sounds on your cell phone, iPad, laptop or other electronic devices that you bring to class.
- If you choose to surf the internet during class, please sit in the back as to not distract your peers.
- Sit quietly but ask questions when you have them by raising your hand.
- Be respectful and courteous.

## HONOR CODE

All work done as part of the lecture or the laboratory must be done by the individual receiving the grade. If you are found using materials produced by someone else, you will be penalized according to academic misconduct policies of Montana State University.

## PLAGIARISM

Paraphrasing or quoting other people without citing the source is a form of academic misconduct. Even inadvertent or unintentional misuse or appropriation of another's work is considered plagiarism. If you have any questions about using and citing sources, CITE THE SOURCE and ask for clarification from an instructor.

## ACADEMIC MISCONDUCT

Section 420 of the Student Conduct Code describes academic misconduct as including but not limited to plagiarism, cheating, multiple submissions, or facilitating others' misconduct. Possible sanctions for academic misconduct range from an oral reprimand to expulsion from the university. Do not do this.

## ACCOMMODATIONS

University policy and federal and state law state that students with a documented disability are permitted reasonable accommodations in order to succeed in class. Please inform me ([frank.stewart@montana.edu](mailto:frank.stewart@montana.edu)) if accommodations are not sufficient to meet your needs.

## **COVID GUIDELINES**

### **WEARING MASKS IN CLASSROOMS IS REQUIRED**

Face coverings are required in all indoor spaces and all enclosed or partially enclosed outdoor spaces. MSU requires all students to wear face masks or cloth face coverings in classrooms, laboratories and other similar spaces where in-person instruction occurs. MSU requires the wearing of masks in physical classrooms to help mitigate the transmission of SARS-CoV-2, which causes COVID-19. The MSU community views the adoption of these practices as a mark of good citizenship and respectful care of fellow classmates, faculty, and staff.

The complete details about [MSU's mask requirement](#) can be found at <https://www.montana.edu/health/coronavirus/index.html>.

These requirements from the Office of the Commissioner of Higher Education are detailed in the [MUS Healthy Fall 2020 Guidelines, Appendix B](#).

For more information: <https://www.montana.edu/health/coronavirus/prevention/index.html>

Compliance with the face-covering protocol is expected. If a you do not comply with a classroom rule, you may be requested to leave class. Section 460.00 of the [MSU Code of Student Conduct](#) covers "disruptive student behavior." Please also see <http://www.montana.edu/facultyexcellence/news/07-24-2020-COVID19guidance.html> for procedures in the event of non-compliance.

### **HEALTH-RELATED CLASS ABSENCES**

Please evaluate your own health status regularly and refrain from attending class and other on-campus events if you are ill. MSU students who miss class due to illness will be given opportunities to access course materials online. You are encouraged to seek appropriate medical attention for treatment of illness. In the event of contagious illness, please do not come to class or to campus to turn in work. Instead notify me by email about your absence as soon as practical, so that accommodations can be made. Please note that documentation (a Doctor's note) for medical excuses is not required. MSU University Health Partners - as part their commitment to maintain patient confidentiality, to encourage more appropriate use of healthcare resources, and to support meaningful dialogue between instructors and students - does not provide such documentation.

**ACCOMODATIONS FOR NOT WEARING A MASK**

Individuals whose unique and individual circumstances require an exception to the face covering requirement, as indicated by a medical professional, may request one in accordance with the campus ADA policies. Students should contact the Office of Disability Services at 994-2824 or [drv@montana.edu](mailto:drv@montana.edu) to receive written permission from the Office of Disability Services at MSU. It is strongly recommended that students make contact prior to arriving on campus in order to provide adequate time for their request to be evaluated.