

BIOL3314 General Microbiology

Spring 2022 | MWF 8:00-8:50am | Bolin 127

Instructor Information

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Office Hours: TWR 11:00am-1:00pm

General Information

Description

This course is an introduction to the biology of microorganisms including viruses, bacteria, archaea, protozoa, and fungi. Cell structure and function, metabolism, information flow and genetics, evolutionary relationships, and microbial ecology will be covered. A conceptual and experimental background sufficient to enable students to successfully pursue more advanced courses in related fields is provided.

Core Concepts

The learning outcomes for this course are derived from the six core concepts and 27 fundamental statements identified by the curriculum proposed by the American Society for Microbiology¹. The five core concepts covered by this general microbiology course are: Cell Structure and Function; Metabolic Pathways; Information Flow and Genetics; Evolution; and Microbial Systems. After completing this course, students will be able to describe how different microbial groups survive and thrive in the varied ecosystems presented to them by nature.

Purpose of the Syllabus

The purpose of the syllabus is to inform you of course expectations, policies, and content. Ignorance of course policies because you did not read your syllabus will not be an acceptable excuse for not adhering to these policies. Because the syllabus is also available online, you cannot lose it. By accepting this syllabus and remaining enrolled in the course, you affirm that you understand the contents of this syllabus and that you will adhere to its requirements.

Expectations and Goals

It is expected that you will try your best to understand the material; complete all quizzes, exams, and assignments; ask for help when you need it; and seek to understand why you are in this class (what purpose does it serve to you, your major, and your future?).

Prerequisite(s)

BIOL2114 and CHEM 1241/1243, each course with a grade of C or better.

Co-requisite

The 3-hour laboratory **MUST** be taken with the lecture (you may not take one without the other). **Note: the laboratory may require you to come in outside of scheduled laboratory hours and it is likely that labs will run over the allotted time period. Therefore, you must be willing to commit to the time requirement for this course from the beginning.**

¹ ASM Curriculum Guidelines, Part I (Concepts and Statements).

Required Materials

1. **TEXTBOOK:** Any RECENT edition of *Prescott's Microbiology* by Willey, Sandman, and Wood will do. I will be lecturing out of the 11th edition, but older copies of the book can usually be found FOR FREE online as PDFs or DIRT CHEAP as actual books through various booksellers. I do NOT use any of the electronic online homework or study aides.
2. **ACCESS TO D2L:** PowerPoints, journal articles, answer keys and other materials will be posted on D2L, so you need access to it. Any issues with accessing D2L if you are enrolled in the course should be addressed to the IT department.
3. **DISPOSABLE LAB COAT** (or an actual lab coat). All lab coats MUST remain in the lab during the semester; you may NOT use the same lab coat for more than one class.
4. **SAFETY GLASSES OR GOGGLES.** All safety glasses or goggles MUST remain in the lab during the semester; you may NOT use the same glasses/goggles for more than one class.
5. **LABORATORY NOTEBOOK:** composition books with graph paper inside make the best notebooks for this course. All notebooks MUST remain in the lab during the semester. You may NOT remove them, even to write up your reports.

Final Grade Assessment

Final grades will be calculated using the following distributions:

ONE Midterm Exam (125pts)	30%
Journal Article Assignments (variable)	10%
Comprehensive Final Exam (200pts)	20%
Laboratory Grade	40%

Final course grades will be based on the following scale: A (90% or higher); B (80-89.9%); C (70-79.9%); D (60-69.9%); F (59.9% or less). If you do not get 90% or better on every assignment, you should not expect to get an A in the course.

Additional Information and Resources

Lecture Attendance Policies

1. Lecture attendance is required. Just because you will be given the PowerPoints doesn't mean you get to stay home and do whatever. I will NOT Zoom. Students with excessive absences may be instructor dropped from the course with an "F".
2. Students are expected to always be ON TIME, to have read all required materials before walking into class, and to be willing to learn. Get up EARLY and take an EARLY bus if needed!!!
3. No make-ups will be given for missed quizzes, assignments, or exams due to lack of attendance, regardless of the reason you did not attend.
4. No one is allowed to miss the final. Missing the final exam will result in an "F" for the course.
5. To monitor attendance, a seating chart or attendance sign-in sheet may be kept. Students who sign-in for students that are not present will be referred to the Dean of Students.
6. If you need to leave class early, it must be for a good reason and you must tell me before class begins or you will be marked absent. EXCEPTION: if you become ill during class, you may leave and tell me after the fact.
7. **GO TO THE BATHROOM BEFORE CLASS!** It is incredibly disruptive for students to wander in and out of class.
8. For further information on Class Attendance policies, see the MSU [Student Handbook](#), available online through the Student Conduct section of the MSU website.

Journal Article Homework Assignments

1. You will be assigned occasional journal articles to read. These assignments are mandatory. One of the skills you must develop as a scientist is the ability to read and understand the literature.
2. You will be given questions or problems associated with the journal article you read. These assignments will be turned in for graded credit.
3. All assignments must be typed; no handwritten answers will be accepted.
4. Assignments will be due as specified when the assignment is handed out.

Late Assignment Policy

No late assignments will be accepted from any student for any reason. This policy is not negotiable. All class assignments are due IN LECTURE on the dates specified. Assignments are due no later than the beginning of class. If you come in late, your assignment is late.

Exam Policies

1. There will be **ONE** midterm and **ONE** comprehensive final; 50% of your grade will come from these two exams.
2. The **midterm** will consist of two parts: an in-class portion, and a take-home portion. The in-class part of the midterm will be a composite exam, consisting of a mix of multiple-choice questions, fill-in the blank (NO you don't get a word bank) and short-answer questions. The take-home portion of the exam will consist of a 25-point essay that is open-book and likely will require literature research to answer.
3. The **final** will be all multiple-choice questions. These questions will range from simple identifications and terms to more complex questions involving the interpretation of data, tables, or graphs. The final will be weighted towards the material covered after the midterm.
4. Exam dates are listed on the Lecture Schedule and will not be moved. No make-up midterm will be offered. Students are not allowed to miss the final exam. Failure to take the final exam will result in an F in the course.
5. All graduating seniors are required to take the final exam.
6. Students with a legitimate, excusable reason for missing the midterm will be given consideration, **but only if you contact me before the exam as to the reason for your absence and it is approved as an excused absence.** A substitute score based on the comprehensive final will be used to replace the zero received. In other words, if you miss the midterm, half of your overall grade will depend on ONE exam.
 - a. Excusable reasons for missing an exam include: a) extreme and verifiable illness (you must provide doctor/hospital verification; you must be sick enough to seek professional help); b) accident or injury (must present verification); c) MSU sanctioned event (active participant and you must have provided documentation BEFORE the exam); and d) extreme family emergency (e.g., funeral the day of the exam; must show proof; immediate family only).
 - b. Inexcusable reasons for missing an exam include: a) scheduling doctor/dentist, therapy or other appointments for the day/time of the exam (possible exception: court dates); b) failure to show up (including sleeping through the exam); c) weather (if MSU is open, then you must be here); d) congested exam schedule or overlapping classes; e) failure to obtain babysitter or caregiver; and f) work schedule conflict.
7. Students **MUST** notify me **PRIOR** to the start of the exam to receive consideration for an excused absence. Notifying me after the fact will result in an unexcused absence.
8. Absolutely no electronic devices of any kind may be used during exams. This means **NO** phones, **NO** computers, **NO** smart watches, **NO** earbuds, **NO** electronic **ANYTHING**. All exams are

closed book and will be monitored for cheating. If you are caught doing anything suspicious, your exam will be taken away from you and you will receive an automatic zero for the exam.

9. NOTE: using old notes and exams from other students to prepare for this class is considered cheating and is not allowed. Copying your notes or exams to give to others either in or out of this class is considered cheating and is not allowed. Working in small groups for the purposes of skewing exam scores is considered collusion and is not allowed.

Course Policies Regarding Disruptive Behavior

1. Do not walk through the classroom or leave once class has begun (exception: sudden illness) and NEVER WALK IN FRONT OF ME ONCE I HAVE BEGUN TO TALK.
2. Do not talk during lecture except to ask questions of the instructor
3. Do not engage in disruptive or disrespectful behavior
4. Do not play games on your electronic devices or play with your social media sites, do homework for other classes, read books or newspapers, sleep, listen to music, etc. during the lecture; pay attention to the lecture!
5. Do not eat or drink in class unless you can do so quietly; no one needs to listen to crinkling food wrappers or worse, listen to you chew or slurp
6. Disruptive students will be given one (1) verbal warning to improve their behavior. Second offenders will be asked to leave the classroom and will be referred to the Dean of Students. Abusive students will be dismissed from the class permanently.

Policy on Electronic Devices [READ THIS TWICE]

1. **Turn off or silence** (note: vibrate is not the same as silent) all cell phones, pagers, music players/headphones, and other electronic devices that make noise or have the potential to disrupt the class before you walk into the room.
2. **NO cell phones are permitted to be out and/or in my (or your) sight in this class.** If your phone is out and/or in sight and/or you are caught using it and/or it goes off during lecture, you will be asked to put it away and you will lose 1% from your final lecture grade in the course for each violation. If your phone is so important that you need to keep playing with it, then you don't need to be in my classroom.
3. If you want to use your phone to record the lecture, it must be placed at the front of the room and out of your reach.
4. No laptops/tablets are allowed PERIOD. You need to physically take notes to learn the material. Exception: tablets with stylus where you are actually writing.
5. ALL ear buds, blue-tooth buds, and headphones to phones and music devices must be turned OFF during class **AND REMOVED FROM YOUR HEAD** and put in your backpacks.

University-Sponsored Teams and Organizations

All members of **in-season sports teams** or other campus organizations who will be missing class because of university sanctioned events **MUST** present to me a written statement on university letterhead and signed by a university official indicating those dates that will be missed because of travel or participation in the university-sponsored event. Athletics documentation must be presented to me within the first 2 weeks of the beginning of the semester. Other documentation (such as for theater, etc.) must be presented to me at least one week prior to the time that will be missed.

Students with Disabilities

1. The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities.

2. Students with disabilities are required to register with Disability Support Services (DSS) before classroom accommodations can be provided. The instructor then needs to be notified by the student of the nature of these accommodations. This notification will take the form of an official letter obtained from DSS by the student and given to the instructor. Every effort should be made to provide me with this documentation within the first 2 weeks of the semester to avoid losing accommodations because you failed to provide proper notification in a timely manner. It is always the responsibility of the student to arrange accommodations with DSS. Students with disabilities must still take their exams on the same day as the rest of the class.

University Code of Conduct

For university standards of conduct please refer to the MSU Student Handbook. In general, students are to attend all meetings of all classes; instructors may drop students for excessive absences, indifference, disruptive behavior, or failure to complete class assignments; students are prohibited from cheating, plagiarizing, or colluding. Students are expected to have read the Student Handbook.

Academic Dishonesty

1. Cheating, plagiarism, and collusion (as well as several other forms of conduct) are all strictly prohibited at MSU. Please read the MSU Student Handbook definitions of cheating, plagiarism, and collusion and MAKE SURE that you do not engage in any of these behaviors. If you are unclear on what may count as cheating, plagiarism, or collusion after reading the material below, please see the instructor or the Dean of Students.
2. The term “cheating” includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; or (3) the acquisition, without permission, of tests or other academic material belonging to a member of the university faculty or staff or another student.
3. The term “plagiarism” includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. Plagiarism also includes the use of someone else's thoughts, words, ideas, or lines of argument in your own work without appropriate documentation (a parenthetical citation at the end and a listing in "Works Cited") whether you use that material in a quote, paraphrase, or summary. It is a theft of intellectual property and will not be tolerated, whether intentional or not.
4. The term “collusion” means collaboration with another person in preparing any work offered for credit if that collaboration is not authorized by the faculty member in charge.

Student Honor Creed

“As an MSU Student, I pledge not to lie, cheat, steal, or help anyone else do so.”

“As students at MSU, we recognize that any great society must be composed of empowered, responsible citizens. We also recognize universities play an important role in helping mold these responsible citizens. We believe students themselves play an important part in developing responsible citizenship by maintaining a community where integrity and honorable character are the norm, not the exception. Thus, We, the Students of Midwestern State University, resolve to uphold the honor of the University by affirming our commitment to complete academic honesty. We resolve not only to be honest but also to hold our peers accountable for complete honesty in all university matters. We consider it dishonest to ask for, give, or receive help in examinations or quizzes, to use any unauthorized material in examinations, or to present, as one's own, work or ideas which are not entirely one's own. We recognize that any instructor has the right to expect that all student work is honest, original work.

We accept and acknowledge that responsibility for lying, cheating, stealing, plagiarism, and other forms of academic dishonesty fundamentally rests within each individual student. We expect of ourselves academic integrity, personal professionalism, and ethical character. We appreciate steps taken by University officials to protect the honor of the University against any who would disgrace the MSU student body by violating the spirit of this creed.”

Written and adopted by the 2002-2003 MSU Student Senate.

Safe Zones Statement

The professor considers this classroom to be a place where you will be treated with respect as a human being regardless of gender, race, ethnicity, national origin, religious affiliation, sexual orientation, political beliefs, age, or ability. Additionally, diversity of thought is appreciated and encouraged, provided you can agree to disagree. It is the professor's expectation that ALL students consider the classroom a safe environment.

Instructor Drops

According to the 2012-2013 MSU Student Handbook, p. 47, “An instructor may drop a student any time during the semester for excessive absences, for consistently failing to meet class assignments, for an indifferent attitude, or for disruptive conduct.” For the purposes of this course, “consistently failing to meet class assignments” includes consistently not turning in assigned work or turning in work that consistently receives a failing grade.

Intellectual Property

By enrolling in this course, the student expressly grants MSU a “limited right” in all intellectual property created by the student for the purpose of this course. The “limited right” shall include but shall not be limited to the right to reproduce the student’s work product to verify originality and authenticity, and for educational purposes.

Campus Carry

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University’s [Campus Carry](#) homepage. If you have questions or concerns, please contact MSU Chief of Police Patrick Coggins at patrick.coggins@mwsu.edu. **NOTE: under no circumstances are guns allowed in laboratory spaces.**

Tips on How to Study

It is very important to come to class and take good notes. Do NOT try to write down everything that is said; rather, listen to what is being said and write down key phrases, not full sentences or thoughts. Go over these notes, annotating them if needed, after each lecture while the material is fresh. Do not simply try to memorize the information. Rather, figure out how the information flows together, builds upon itself, and helps explain why microbes are found where they are and why they do what they do. Draw pictures, make flow charts, etc.—DON’T just passively read your notes or the book, or randomly highlight things. You only learn by writing things into memory.

Class schedule appears on the next page.

(Tentative) Lecture Schedule

WEEK	DATE	Topic	Chapter (Prescott)
1	Jan 10	Course Introduction (READ the syllabus on your own!!)	Syllabus; 1
	Jan 12	Show 1: Microscopy	2
	Jan 14		
2	Jan 17	MLK DAY	
	Jan 19	Show 3: Bacterial Cell Structure	3
	Jan 21		
3	Jan 24		
	Jan 26	Show 4: Archaeal Cell Structure	4
	Jan 28		
4	Jan 31	Show 5: Eukaryotic Cell Structure	5
	Feb 2		
	Feb 4	Show 6: Viral Structure	6
5	Feb 7		
	Feb 9	Show 7: Growth	7
	Feb 11		
6	Feb 14		
	Feb 16	Show 8: membrane Transport	3, 5
	Feb 18		
7	Feb 21	Show 9: Energy Conservation	10
	Feb 23		
	Feb 25		
8	Feb 28		
	Mar 2	MIDTERM	
	Mar 4	Show 10: Catabolism	11
9	Mar 7		
	Mar 9		
	Mar 11		
10	Mar 14 – 18	SPRING BREAK	
11	Mar 21	Show 11: Anabolism	12
	Mar 23		
	Mar 25	Show 12: Comparative Genome Structures	13, 15, 6, 26
12	Mar 28		
	Mar 30	Show 13: Gene Expression	13, 15
	Apr 1		
13	Apr 4		
	Apr 6	Show 14: Gene Regulation	14
	Apr 8		
14	Apr 11	Show 15: Genetic Diversity	16
	Apr 13		
	Apr 15	HOLIDAY BREAK	
15	Apr 18		
	Apr 20	Show 16: Motility	3, 4, 5, 14
	Apr 22		
16	Apr 25	Show 17: Reproduction	7, 24, 25, 26
	Apr 27		
	Apr 29		
FINALS WK	May 4	Wednesday, May 4, 2022 FINAL EXAM 8:00am – 10:00am	Comprehensive