

Biology 31 (BIOL 31) Microbiology

| <i>Semester: Spring 2021</i> | <i>Reedley Community College</i> |
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| Instructors: Lecture Andrew Strankman | <i>Class No. 55083, 55084, 55085</i> |
| Email: andrew.strankman@reedleycollege.edu | Lecture/Lab: Asynchronous |
| Phone: 559-638-0300 ext. 3196 | Optional Time: Tu/Th 9:30-11:00am |
| Office Hours: All Digital for Spring 2021 | Office: LFS 5 |
| | Mon 5:00-6:20pm |
| | Tu/Th (BIOL 31 only) 12:00-1:30pm |
| | Friday: 10:00-11:20am |
| <i>Date: 01/11/20-5/21/20</i> | *virtual office hours can be accessed through zoom, email, or live:andrewstrankman_3 on the skype application for messaging, voice calls, or live chat |

Catalog Description: Microbiology, 5 units, 3 hours lecture, 6 hours lab, including classification, morphology, identification, and physiology of microorganisms. May include a field trip.

This course provides an introduction to the structure, metabolism and ecology of microorganisms with special emphasis on microbe-related human diseases. This course is designed to introduce the student to a variety of topics in the area of microbiology. The text, lab manuals, and lectures are geared to students in biological, medical, physical education and health-oriented programs. PREREQUISITES: Biology 1 or 5 or 11A and Chemistry 3A or 1A. ADVISORIES: English 1A Math 201. (A, CSU-GE, UC, I)

Prerequisites: Successful completion of Biology 1 or Biology 5 or Biology 11A and Chemistry 1A or 3A. Recommended: Successful completion of Biology 20 and Biology 22.

Learning Outcomes:

- Develop important critical thinking skills as they evaluate the results of laboratory experiments and demonstrations.
- Develop important manual dexterity skills associated with operation of technical laboratory equipment (microscope, autoclave, agar plates, sterile technique apparatus, Enterotubes).
- Identify the basic structure, metabolism and ecology of a variety of microorganisms (viruses; bacteria; fungal, protozoan, and helminth parasites) which in turn, will allow them to better understand how these microbes function in their specific environments
- Learn how some microorganisms are beneficial to mankind while others cause a variety of human diseases.
- Learn to use the scientific method and be able to evaluate a variety of laboratory experiments (such as Identification of Unknowns, Biochemical Tests, Temperature Effects on Growth, Antibiotic Sensitivity).

Objectives:

- To have a basic understanding of microbes as living organisms.
- To become familiar with laboratory techniques necessary to work with microorganisms.
- To understand and practice aseptic techniques.
- To become familiar with microbial morphology, classification, and identification.
- To understand the role of microorganisms in health and disease and the mechanisms used to control microbial populations.

CSLOs:

- Diagram and be able to log genus, species, type of organism, whether it is considered normal flora or not, and its potential as a pathogen.

- Diagram and label the schematics and working of an autoclave, mechanics of a microscope, inoculation of sterile agar plates, and identification of microorganisms with biochemical testing.
- Perform basic staining and identification techniques allowing them to perform basic identification procedures (i.e., gram stains).
- Perform labs which hone critical thinking skills, for example: antibiotic susceptibility allows them to understand that some organisms can be controlled by chemicals and others cannot. In the clinical setting they will be able to evaluate a test sample.

Required Materials

- Recommended: Tortora, Gerard J. et al., Microbiology, 13th Edition, 2018. Benjamin Cummings Publishing Company with NO ACCESS CODES, etc. **OR** Openstax Microbiology available free at <https://openstax.org/details/books/microbiology> (or as a print copy if you want to buy one)
- White Laboratory Coat (or some similar coat you can use when demonstrating some of the lab techniques from home)
- Disposable Gloves (or some similar coat you can use when demonstrating some of the lab techniques from home)

Technology Requirements

- Many files and materials will be available through the learning management system Canvas. All students must have access to a device with internet access to that allows students to retrieve and complete assignments through Canvas.
- Check Canvas and your Reedley College email accounts regularly (multiple times per week) for announcements.

Attendance and Drop/Add Policy

You are required to attend **course scheduled zoom sessions OR post on weekly check in boards (more on this below)**. There are NO excused absences except as defined in the Reedley College Catalog. Students will sign in during the zoom sessions they attend by typing their names into the chat in the meeting.

During the early term of the course, students will be dropped for inactivity in the course. To avoid being dropped from this class, you must complete the following tasks:

- Web/Online requirements: The following tasks must be completed on Canvas by the end of the day on Tuesday of week 1 (1/12/21 @11:59PM)
 1. Complete the Syllabus Quiz
 2. Post a profile picture
 3. Participate in the Check-In: Meet & Greet Discussion Board
 4. Reply to office hour scheduling google form
 5. Complete extra credit survey of prior micro knowledge

Failure to complete ALL the tasks listed above, will result in a student being dropped from this course after the first week of instruction.

If you miss more than 3 weeks of zoom sessions/check in discussion board by the end of the semester, your final grade will be lowered by one letter grade. For example, if you earned an A but didn't attend any zooms/post in the check in board for 3 weeks (or post on the alternative discussion board mentioned below), your final grade will be a B. If you miss more than 5 weeks of zoom/didn't post in the course check in the semester, your grade will be lowered by two letter grades. For example, if you earned an A but missed 5 weeks of zoom class, your final grade will be a C. If you miss more than 7 weeks of zoom/didn't post in the check in board. in the semester you will fail the class, no questions asked.

Zoom Attendance and Netiquette:

Zoom Attendance:

This course is asynchronous. This means that you will not need to attend any sessions on zoom. However, there will still be attendance requirements for this course (more on

that below). There will also be optional zoom class sessions and zoom office hour zoom sessions available for you to attend should you choose to do so.

During zoom sessions active participation is expected. This means **cameras on**, and **engaging with either chat, or verbal responses**. If you are in a position where you feel uncomfortable or are unable to have cameras on during a session, just send me a quick private chat note to let me know during the session. Something as easy as “Mr. S, I’m at work, I can’t have my camera on today” or “Hey Mr. S... got my kids running around everywhere, I can’t have my camera or microphone on today”. Life happens, and I get it, I promise to make things as flexible and understanding as I can.

Students who do not attend an online office hour zoom session each week due to extenuating circumstances (work schedule, childcare, etc) then you can post in the “check in discussion board” available in the course modules page.

Your post must include:

1. How is your week going? How are you feeling with where you are at in the course?
2. What work have you completed so far this week? What is left to complete?
3. Do you have any questions for me?
4. One joke that you think is funny (PG/Disney appropriate).
5. Posted by Thursday of the week you will be missing zoom.

Netiquette:

1. **Make sure identification is clear in all communications.** Begin all communication with a salutation (“Hi, Jason” etc) and end with your signature (“Hannah Kay, BIOL 10”).
2. **Review what you wrote and try to interpret it objectively.** When we speak face to face and are misunderstood, we have an on-the-spot opportunity to rephrase our words. In writing, we must strive twice as hard to be understood, as we do not have the benefit of modifying or elaborating in real time. All caps (“I’M SHOUTING”) and exclamation points (“Give me a break!!!”) can be misinterpreted as intense anger or humor without the appropriate context.
3. **If you wouldn’t say it face to face, don’t say it online.** When you’re working online, you’re safe behind a screen, but that’s no excuse to be ill-mannered or say things you would never say in public.
4. **Don’t assume everyone understands where you’re coming from.** Sarcasm and wit is often the spice of in-person conversation, but in online discussion, it can not only lose its edge, it can bite! In your high school classroom, all students were the same age, came from similar backgrounds and lived in the same area. In contrast, your online classroom is made up of people of all ages and cultures who have varied backgrounds, lifestyles and geographic locations. With this in mind, review what you wrote before contributing to the conversation and ask yourself, “Will *everyone* get the joke?”
5. **Don’t spam.** Please don’t take advantage of your connection with the other students in your online classroom to forward emails and links regarding your political/spiritual beliefs or to sell your services.
6. **Use emoticons.** In casual chatroom settings, emoticons can help convey feelings that may otherwise get lost in translation, including humor, exasperation, exhaustion and even confusion.
7. **Respect others’ privacy.** Don’t give out another student’s personal email address without permission.

8. **Remember, if it's on the internet, it's everywhere.** Don't share personal information about yourself in a public online forum, especially something that could put your safety or security at risk.
9. **Follow the rules.** Just as your online college posts guidelines related to [academic integrity and student expectations](#), online forums also have rules of conduct. Make a point to read them every time, as they can vary from class to class.
10. **Forgive and forget.** If you're offended by something another student says online, keep in mind that you may have misunderstood their intentions. Give them the benefit of the doubt.

Expectations and Policies:

- Be respectful and discipline yourself so others don't have to.
- No makeups without prior arrangement.
- Cheating and plagiarism will result in failing the assignment and discussed further with administration.
- Please keep electronic devices silent and electronics of any kind are not permitted during exams.
- No food or drink in the trash cans.
- I will do my best, I expect you to do the same.

Late Assignments and Makeups

No late assignments will be accepted **EVER**. NO EXCEPTIONS.

Make up exams will be allowed only in the event of extenuating circumstance (as determined by the instructor) Lecture Exams can be made up unless arrangement with prior arrangement. You must arrange with the instructor before the scheduled exam period (at least 3 hours prior).

Lab Exams can NOT be made up. Period. No makeups, no exceptions.

Tests and Evaluations

| Description | Possible Points |
|--------------------------------------|-----------------|
| 3 Lecture Exams (100 points each) | 300 |
| 1 Final Exam (Cumulative) | 150 |
| 9 Lab Quizzes (10 points each) | 90 |
| 2 Laboratory Exams (150 points each) | 300 |
| 1 Unknown Laboratory | 30 |
| Lab Reports (as assigned) | 150 |
| 16 Case Studies (3pts each) | 50 |
| 3 Reading Assignments (10pts each) | 30 |
| Misc. Activities and Attendance | 50 |
| 1 Term Paper | <u>150</u> |
| Total points | 1,300 |
| Extra Credit (see VII below) | Maximum of: 25 |

To calculate your grade, total all points earned and divide that number by the total points available (1,300). **Course grades are non-negotiable; Instructor reserves the right to curve individual tests and/or assignments. FINAL GRADES WILL NOT BE CURVED... ALSO, I DO NOT round up your grades to the next letter grade.**

The final course grade is based on:

| Percent Range | Grade |
|---------------|-------|
| 90-100 | A |
| 80-89.99 | B |
| 70-79.99 | C |

| | |
|--------------|---|
| 60-69.99 | D |
| Less than 60 | F |

Lecture exams may be any combination of multiple-choice, true-false, matching, short-answer and essay questions based on the main objectives of each chapter. Please note that I require correct spelling and grammar. If I can't read it, I can't grade it! Write neatly!

Misc activities and attendance may be attending zoom sessions, posting on check in board, and/or completing small online activities.

Homework will be in the form of assigned masteringmicrobiology activities. You will need to access these assignments from the masteringmicrobiology link in the modules section of the course.

Lab exams will be practical based on the work done in the laboratory. They may include multiple choice, true-false, matching, essay and short answer questions.

Lecture final exam will be comprehensive. Since this course is a prerequisite for all other Biology classes, it is important that you retain as much knowledge as possible from this course to ease your way in the following semesters.

Quizzes Quizzes are given at random during the lab class period and last for 20 minutes, if you are late your quiz will still be collected 20 minutes from when the quiz began. Material may include and combination of multiple-choice, true-false, matching, and short answer questions.

Case Study/Term Paper will be assigned in the 5th week of class. At this time, the class will select a topic for presentation from the list of approved microorganisms. At the conclusion of the semester, each student will record and submit a 10-15 presentation to the class describing their microorganism, and a formal written report must be submitted. Specific directions will be provided online.

Extra Credit At the discretion of the instructor extra credit MAY be available at intermittent points in the term, if you feel you have a borderline grade this is the only opportunity for grade increases. In the past, extra credit has included, reflection papers, exam reviews, in zoom kahoots.

**** I reserve the right to make changes in this syllabus with notification ****

Laboratory Conduct: (if we were in person)

- A. Students are to maintain clean areas at all times. Keep unnecessary books, papers, purses, etc., off the laboratory tables.
- B. Disinfectant laboratory tables at the beginning and at the end of every lab period.
- C. Aseptic techniques are to be followed at all times.
- D. Lab coats are to be worn in the lab at all times. Students with long hair must keep it contained with pins, clips, headbands, or rubber bands, etc. so that it will not sweep across desks, Bunsen burners, and/or microscopes. Legs are to be covered at all times. Close toed-shoes and socks are to be worn at all times.
- E. Caution must be exercised in handling stains and other reagents, as they may be harmful to clothing, skin, eyes, floor, etc. Safety glasses must be worn when handling and using caustic or other dangerous chemicals. They are available in the classroom.
- F. Any spills of living organisms must be reported to your instructor immediately! Should a spill occur and not be reported immediately, these are grounds for removal from the class.
- G. If you spill on anything, bags, jackets, shoes, accessories, it WILL go into the autoclave for sterilization (and could be destroyed).
- H. Food and drinks are NOT allowed in the laboratory! NEVER eat or drink in the laboratory and avoid putting any objects in your mouth. Some organisms used in class are potentially pathogenic or are pathogenic.
- I. Wash your hands thoroughly and dry them before you leave the laboratory.

J. Adhere to the Reedley Community College rules of student dress and conduct.

IF YOU ARE UNDER THE AGE OF 18, YOU MUST HAVE A PARENT/GUARDIAN SIGNED CONSENT FORM TO WORK IN THE MICROBIOLOGY COURSE. YOU WILL NOT BE ALLOWED AROUND ANY MICROORGANISMS AND WILL BE DROPPED FROM THE COURSE IF THIS IS NOT COMPLETED

Communication Policy

The best way to get ahold of me is to email me at andrew.strankman@reedleycollege.edu or by sending me a direct message through canvas. Don't know how to send a message in canvas? Check out this quick guide [How to send a message in canvas](#).

- Please allow a 24hr response time. I am very prompt with my email responses, however, there are times when it may take me up to 24hrs to respond. If you do not receive a response from me after 24hrs then please double check that you have the correct email address, and resend. Most likely, I didn't get it if I didn't respond quickly.
- Emailing and messaging can be used 24/7. If I expect to be away from my computer for any significant length of time, you will be notified in advance.

Office Hours

For Spring 2021, all office hours will be virtual. If you would like to meet with me outside of these office hours, please email me to arrange an appointment to meet. My virtual office hours are held through the canvas messaging function. You can expect an immediate response during this time frame if you message me.

Canvas

All lecture and lab handouts, lecture notes, course schedules, and announcements are available at <https://scccd.instructure.com/login/ldap>. Your user name and password will be discussed in class.

Course Policies

Professional Behavior: You are an adult, act like it. If you act in a manner deemed inappropriate by the instructor, you will be removed from the course.

Children In Class: With the course being offered 100% online, everyone's schedule is different. If you are in a situation where your kids/young siblings etc are around that is no problem. No worries. Please note, if you have your camera on during a zoom, their images may be recorded if they run by the camera, by turning on your camera during zoom you consent that any recording that may contain them is authorized to be posted for course usage.

Dress code: While on zoom, please be dressed... you want to wear PJs, go for it... sleeveless tank and shorts, no problem... just please don't be naked on camera.

Grade Disputes: You have two weeks to dispute a grade once it is posted on Blackboard. This includes any documentation of medical/ legal issues that may have prevented you from completing the assignment/ test.

Drops: You have until the end of the 9th week to drop the class. If you elect to do so, drop yourself. Do not assume you have automatically been dropped. After the 9th week you must be assigned a grade by state law, whether you attend class or not. Students are responsible for understanding the policies and procedures about the adding/dropping of classes, academic renewals, etc.

Plagiarism Detection: The campus subscribes to Turnitin and the SafeAssign plagiarism prevention service through Canvas, and you will need to submit written assignments to Turnitin/SafeAssign. Student work will be used for plagiarism detection and for no other purpose.

Tutoring: Tutors are available in the tutorial center. If you have not had a biology class since high school, working with a tutor will get you up to speed. The tutors are former students who know how to study for the class. "With this statement on my course syllabus, I am referring each of my enrolled students in need of academic support to tutorial services. Referral reason: Mastering the content, study skills, and basic skills of this course is aided by the use of trained peer tutors".

College Policies

The university has several policies that you will be expected to adhere to in my course. The **Policy on Students with Disabilities, the University Honor Code, the Policy on Cheating and Plagiarism, a statement on copyright, and the university computer requirement**, portions of which are below, can all be found in the University Catalog (Policies and Regulations) and Class Schedule.

"Students at the Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share responsibility for seeing that their education is honestly attained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences." Reedley College Catalog pg. 45 o Please see Disciplinary Procedures in the Student Conduct Standards and Grievance Procedures Handbook available in the Vice-President of Student Services office, or at the link listed below. For a comprehensive list of Student Conduct Standards, see: <http://reedleycollege.edu/index.aspx?page=233>

If you have a verified need for an academic accommodation or materials in alternate media (e.g. Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the instructor as soon as possible.

Cheating and Plagiarism:

I DO NOT TOLERATE CHEATING. PERIOD. Most of you are entering into the health care field and could harm or seriously injure other human beings if you do not know the basic information in this course.

Any student caught cheating or plagiarizing will be subject to the Reedley College disciplinary procedures (review the Reedley College catalog section on academic dishonesty). Electronics of any kind are not permitted during exams and will result in an automatic zero for that exam.

Students with diagnosed disabilities should contact the Disabled Students Programs and Services' (DSP&S). Please give me a copy of the letter you receive from DSP&S detailing class accommodations you may need. If you require accommodation for test-taking please make sure I have the letter no less than three days before the test. If you have a need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

Tentative Schedule

Please bring your textbook to lecture and your textbook and lab manual to every lab. This is very important! Schedule is subject to change with notification from instructor.

| Week | Dates | Lecture (Book Chapter) | Laboratory Experiments |
|------|-----------|--|---|
| 1 | 1/11-1/17 | Introduction, and Syllabus Chapter 1 | Lab 1: Introduction to Microscopy, Safety and Culturing |
| 2 | 1/18-1/24 | Chapter 2 and Chapter 3 | Lab 2: Staining: Simple Stains Quiz 1 |
| 3 | 1/25-1/31 | Chapter 9 and Chapter 13 | Lab 3: Staining: Differential Stains Quiz 2 |
| 4 | 2/1-2/7 | Lecture Exam 1 | Lab 4: Morphologic Unknown and Media Making Quiz 3 |
| 5 | 2/8-2/14 | Chapter 7 | Lab 5: Bacterial Growth, Culturing and Ubiquity of Life Quiz 4 |
| 6 | 2/15-2/21 | Chapter 8 | Lab 6: Isolating and Differentiating Medically Relevant Microbes: Special Medias Quiz 5 |
| 7 | 2/22-2/28 | Chapter 10 and Chapter 11 | Lab 7: Isolating and Differentiating Medically Relevant Microbes: Macromolecule Tests and Biochems Quiz 6 |
| 8 | 3/1-3/7 | Lecture Exam 2 Classification of Microorganisms (Tortora) or canvas for Openstax | Lab 8: Serial Dilutions and Dilution Problems Lab Exam 1 |
| 9 | 3/8-3/14 | Chapter 4 Chapter 5 (Fungi) | Lab 9: Environmental Effects on Microbial Growth Quiz 7 |
| 10 | 3/15-3/21 | Chapter 5 (Rest) Chapter 6 (Start) | Lab 10: Exoenzymes Quiz 8 |
| 11 | 3/22-3/28 | Chapter 6 (Finish) Chapter 16 Rough Draft Term Paper Due (Sunday 11:59) | Lab 11: Enteric Microbe Determination Quiz 9 |
| | 3/29-4/4 | Spring Break (No Class) | None :) |
| 12 | 4/5-4/11 | Chapter 15 Lecture Exam 3 | Lab 13: Eukaryotic Microbes Quiz 10 |
| 13 | 4/12-4/18 | Chapter 17 and Chapter 18 | Lab 14: Microbiota and Bioinformatics |
| 14 | 4/19-4/25 | Chapter 18 and Chapter 14 Final Draft Term Paper Due (Sunday 11:59pm) | Lab 15: Unknown Microbe Determination |
| 15 | 4/26-5/2 | Diseases of Skin and Eyes Diseases of the Nervous System | Lab 15: Unknown Microbe Determination |
| 16 | 5/3-5/9 | Diseases of the Cardiovascular System Diseases of the Respiratory System | Lab 15: Unknown Microbe Determination Lab Exam 2 |

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|----|-----------|--|---------------------------------------|
| 17 | 5/10-5/16 | Diseases of the Digestive System Diseases of the Urinary and Reproductive System | Lab 15: Unknown Microbe Determination |
| 18 | 5/17-5/21 | Final Exam Review Final Exam (Cumulative) PHY 76: 12:00-1:50pm | No Labs |

Important Dates

- January 22: Last day to drop with full refund
- January 29: Last day to add/drop a class (no "W" on transcript)
- February 5: Last day to declare pass/no pass (P/NP) grade option
- March 5: Last day to be dropped with a "W"