

The Indiana Academy for Science, Mathematics, and Humanities
Introductory Microbiology SCI04304
Fall Semester 2022 (Dual Credit for BIO 113)

Instructor: Donald Winslow, Ph.D. donald.winslow@bsu.edu
Office: Elliott Hall B027 phone: 765-285-7462

Office hours: Monday 2:30-5 PM
Tuesday 1-1:30 PM
Wednesday 2:30-5 PM
Thursday 1-3 PM on Zoom (Email me, and I'll send you a link.)
Friday 2:30-5 PM

Class: MWF 10-11 AM in BU211; Lab Tues. 10 AM-12 PM in BU211

On the second Wednesday of every month I have a board meeting in Richmond and will not hold class. However, I will have an assignment for you to complete on Canvas during that time. I will provide you with details beforehand, but please write these dates on the calendar now.

Due to the nature of microbes, there may be times when cultures will be streaked on one day and then checked 24 hours later. Therefore, some lecture days might be used as lab days. During some labs students will work with lab partners. Please review the lab exercise and any relevant training materials before lab so that you know what you are doing before you begin. Please check your email and Canvas regularly for any updates.

Texts: Baumann, Robert W. 2017. *Microbiology*, 5th ed., Pearson: United States.
Chess, Barry. 2015. *Laboratory Applications in Microbiology*, 3rd ed., McGraw-Hill, New York.

There is a lot of valuable information in your textbooks; however, you may note that they were both published before there was such a thing as SARS-CoV-2. We will supplement these texts with other relevant material throughout the semester.

Materials: 3-ring binder (about 1-1.5 inches thick) with paper, Sharpie marker, colored pencils

Please note that some aspects of this course may need to be changed during the semester, so this syllabus is subject to revision. If the syllabus is revised during the semester, the updated syllabus will be posted on Canvas. Please refer to Canvas for updated information.

Course description: (from the Course Catalog, <https://academy.bsu.edu/catalog/>)

Prerequisite: One year laboratory biology

Co-requisite: Biology II: Microbiology Lab (SCI4304L)

Credit: 1.5 credits

Offered: Fall

The history of bacterial discovery, the scope of bacterial effects, biotechnology, and the classification of micro-organisms are studied. The course includes the study of the structure, function, and ecology of microbes and viruses. Basic aseptic and sterile techniques for isolating, culturing, and identifying bacteria are discussed and practiced in the laboratory as a prelude to learning fundamental staining techniques, biochemical tests, etc. that are used in the identification of unknown bacteria. Some consideration is given to the medical concerns related to bacterial and viral pathogens.

*Ball State University offers 5 college credit hours in BIO 113 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

Course Learning Objectives:

Students successfully completing this course will understand the fundamental principles of microbiology and classification of microorganisms, safely apply basic microbiological techniques in the laboratory, and relate microbiological concepts to issues in health and medicine.

Safety:

Safety will be a primary concern of all participants in the course. We will spend much of our time in lab learning by doing. Even when we do not intentionally work with pathogenic microbes, careless technique may lead to the growth of potentially harmful organisms. Like any course, we may also be affected by outbreaks of COVID-19 or any other pathogen and will abide by any public health restrictions that may be instituted during the semester. Although we anticipate that this will be mostly a face-to-face, “hands-on” course, there may be occasions where we will meet on Zoom rather than in the classroom. Please check your email and Canvas frequently to be aware of any changes.

Preparing for class:

Readings from the textbook and lab manual will be assigned. Course material may be supplemented with interactive computer programs, handouts, and online materials. Reading the assigned material before coming to class is critical.

Attendance:

Please arrive on time to class. The instructor is required to take attendance so that all students are accounted for. If you arrive late to class, someone might start checking to see where you may be. If you are late, you may need to remind the instructor to change the absence to tardy. This will disrupt our workflow and possibly the workflow of others, so please try to avoid it.

If you miss lecture for any reason, you are responsible for getting any notes, announcements, reading material, or assignments from the instructor or a classmate. If you miss a lab, it may be difficult to arrange for you to make it up. Participation in lab is essential for your own success and for that of any student working with you. If an unavoidable emergency or illness prevents you from attending class or completing an assignment on time, please inform the instructor as soon as possible (preferably beforehand).

The Academy and not the instructor determines whether an absence is excused or unexcused. If an absence is excused, the instructor will make every reasonable effort to ensure you have the opportunity to make up any assignments (see assignment table below for categories of graded assignments) associated with the absence. If the absence is unexcused, the instructor may accept late work as time allows, but a penalty of 10% per day late will be assessed. No direct grade penalty is assessed for an absence, but missing class is likely to make it very difficult for you to be successful in the course.

Classroom Conduct:

Because we hold class in a science lab, no food, gum, or drinks can be brought into the classroom. Your work area should always be free of clutter and only have the necessary materials (pens/pencils, notebook, etc.). Before the first lab meeting, make sure to read Case Study Exercise 1 in the lab manual (pp 1-7). If you don't have a hardcopy yet, look for it on Canvas.

Please be considerate of other classmates. Keep any devices not used for classroom activities silenced or off. Your phone should be put away if it's not being used for class. Laptops can be used in class for

class activities, but repeated use for non-class activities may result in a loss of that privilege. Please do not annoy others, and treat each other with respect. Do not interrupt another student or the instructor. If you are having difficulty getting a word in, you can raise your hand. Examples of improper conduct include having extended conversations, working on assignments for other courses, sleeping, etc. Serious and/or chronic problems may be cause for dismissal from the course.

Academic Conduct

It is important to prepare for each class meeting by completing the reading and any assignments that are due. Assignments should be submitted on Canvas or in class, depending on the assignment. Although some activities such as labs may be completed in pairs or groups of students, each student is individually responsible for submitting assignments with original writing (not copied from your lab mate). You are encouraged to discuss answers to lab activities with other class members, but the wording should not be the same. Do not share word processing files with each other, but make sure each student has access to the raw data for analysis.

You are expected to conduct yourself according to the Indiana Academy Student Handbook (<https://academy.bsu.edu/handbook/>), especially the Code of Conduct and the section on Academic Integrity. On writing assignments, please be sure to use your own wording and cite all sources of information, whether from the Internet or otherwise. If you are not sure how to cite something, ask the instructor. Note that language copied verbatim from a book, website, another student's paper, or any other source is considered plagiarism unless it is in quotation marks and cited. Plagiarism is a form of academic dishonesty. Please do not plagiarize or cheat in any other way. An infraction may result in a 0 for the assignment. Also, the instructor is required to report any ethics violations to the Academic Integrity Board or (the Director of Academic Affairs and your parents).

Course evaluations:

At the end of the semester, each student will have the opportunity to evaluate the course, instructor, and materials. The instructor will not see the results of the evaluations until after grades have been submitted. Your frank and constructive responses will help improve the course for future semesters.

Assignments:

The assignments for the course are shown in the table below.

Assignment type	Points	Number	Total
Examination	100	4	400
Quiz	10	15	150
Lab write-up	20	11	220
Lab report	100	2	200
Presentation	20	1	20
Participation and conduct	10	1	10
Total			1000

Although each exam is weighted equally, the last one is a comprehensive final exam. Some exam questions may include lab stations where you answer questions about specimens, cultures, or lab equipment.

Approximately once a week, quizzes will be given. Some of these may be given during lecture. Others will be administered over Canvas. Quizzes will cover basic material from the last 1-3 class periods.

For most labs, you will complete simple write-ups in which you answer questions from the lab manual about the activity on your own paper and turn it in. For two lab activities, you will write more extensive lab reports with word processing software to submit on Canvas at a later date. This will allow you to practice writing in the form of a scientific research report (Abstract, Introduction, Materials and methods, Results, Discussion, Conclusions, References).

Toward the end of the semester, each of you will give a presentation on food microbiology. I will also assign a few points at the end of the semester to reflect your degree of participation in lab and lecture and your conduct. Good conduct entails adhering to safety guidelines, being polite to others, and not causing disruptions. This will be done on a holistic basis; I do not intend to count every time you raise your hand or don your safety glasses.

Grading Scale:

100 – 93% = A	< 90 – 87% = B+	< 80 – 77% = C+	< 70% = D*
< 93 – 90% = A-	< 87 – 83% = B	< 77 – 70% = C	
	< 83 – 80% = B-		

Grades will be posted on Canvas and Powerschool. If I am late posting grades, you can easily calculate your standing in the course by adding all the points you have earned from all assignments. There are 1000 points available in the course, so each point is worth 0.1%.

Late assignments:

If you are late submitting an assignment because you missed class, see the section above on attendance. If you are late submitting an assignment for a reason unrelated to missing class, the instructor may grade the assignment as time allows, but 10% will be deducted from the grade for each day it is late (unless resulting from an event associated with an absence excused by the Academy).

Lab notebook:

You should keep your lab papers organized in a 3-ring binder. Sections for reference materials, notes, lab write-ups, and graded quizzes should be included.

Lab equipment breakage:

If there are glassware breakage or equipment problems, please notify the instructor immediately to ensure proper safety and equipment protocols are followed.

Topics:

This course will cover the basics of microbiology, biochemical concepts, cell structure and function, classification of microorganisms and viruses, microscopy and staining, microbial growth and metabolism, immunity, epidemiology, environmental microbiology, and food microbiology. In the laboratory, we will practice lab safety, measurement techniques, isolation and culturing of microbes, microscopy, detection of pathogens, and microbial control and explore cell morphology and stains, microbial growth requirements, metabolism of carbohydrates and other molecules, antibiotic sensitivity, water quality, fungi, parasites, and food microbiology. A schedule of course topics,

laboratory exercises, and assignment due dates will be posted on Canvas and updated throughout the semester.

Special Circumstances:

If you need accommodations because of a disability, have emergency medical information to share with me, or need special arrangements in case the building needs to be evacuated, please make an appointment with me as soon as possible.

If you are struggling with study habits, stress, and/or personal issues, I encourage you to discuss this with your SLC and/or contact the Guidance Office for help in dealing with these issues so that you can thrive at the Academy. Many resources are available for students, and important contact information is listed below:

- | | | |
|---------------------------------|--|-------------------------|
| <u>For Academic assistance:</u> | Rebecca Hammons (rebecca.hammons@bsu.edu) | |
| | <i>phone:</i> 765-285-8108 | <i>office:</i> WA 160-B |
| <u>For Tutoring:</u> | iaguidance@bsu.edu | |
| | <i>phone:</i> 765-285-2889 | <i>office:</i> WA 160-D |
| <u>Mental Health:</u> | Dr. Mindy Wallpe (mcwallpe@bsu.edu) | |
| | <i>phone:</i> 765-285-5483 | <i>office:</i> WA 160-C |

Ball State University Inclusive Excellence Statement:

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff and student body. We are committed to ensuring that all members of the community are welcome through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our [Beneficence Pledge](#). For Bias Incident Response information, please click [here](#) or e-mail reportbias@bsu.edu.