*The Indiana Academy for Science, Mathematics, and Humanities*

**Introduction to Microbiology SCI04304**

**Fall Semester 2024 (Dual Credit for BIO-113)**

**Instructor**: Mr. Justin Crowder email: [justin.crowder@bsu.edu](mailto:justin.crowder@bsu.edu)

Office: EL 009G phone: (765) 285-7458

**Office Hours**: MWF 1:00 – 3:00, Thursday 10:00 – 2:00, or by appointment

**Class Schedule**: Lecture: MWF 12:00 – 1:00 p.m. in B-211

Lab: Tues. 2:00 – 4:00 p.m. in B-211

**Course description:**

“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.” (<http://www.bsu.edu/academy/catalog/>)

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.

**Course materials:**

Lecture textbook: *Microbiology* by Robert Bauman

Lab textbook: *Laboratory Applications in Microbiology* by Barry Chess

Lab notebook: 3-ring binder (1 – 1.5 inches thick); 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.**

**Assignments:**

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

|  |  |
| --- | --- |
| Category | Percentage |
| Exams and Quizzes | 50% |
| Assignments (Reports, Presentations, Participation) | 25% |
| Laboratory Exercises and Reports | 25% |
| Total | 100% |

**Grading scale:**

Your course grade and Dual Credit Grade will be determined as a percentage of earned points with weighted categories on the following scale:

A = 94 – 100% B = 83 – 86% C = 74 – 76%

1. = 90 – 93% B- = 80 – 82% C- = 70 – 73%

B+ = 87 – 89% C+ = 79 – 77% D\* < 69.9%

Grades will be posted on Powerschool. If I am late posting grades, you can estimate your current grade in the course by adding all the points you have earned or anticipate earning from all assignments. Please check Powerschool regularly and notify me of any potential errors within 10 school days. **Please make an appointment to talk with me if you are concerned about your grade or uncertain about your standing in the course.**

**Attendance**

You have made a commitment toward academic achievement by attending the Academy – both attendance and integrity are essential components to that success. Class attendance is **mandatory**.

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 (see Absence Policy section below). 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.

**Absence Policy**

It is the policy of the Indiana Academy that any absence from class is unexcused, except for illness, death in the family, college or school-related activities, and extenuating circumstances. When a student is absent from a class, the instructor reports the student absence to the Faculty Attendance Coordinator in the Office of Academic Affairs. Unless the absence is excused by a school official, it is considered unexcused. The decision as to whether an absence is excused is not determined by the instructor. Four or more unexcused absences in any particular class a student takes will lead to academic and residential consequences to be determined by the Office of Academic Affairs and the Office of Residential Life that may include detention, residential groundings, parent/principal conference, among others.

**Late work**

If an absence is excused, the instructor will make every reasonable effort to ensure the student has the opportunity to make up any assignments associated with the absence. A student who has an excused absence on the day an assignment is due must communicate with the instructor regarding an appropriate due date for missed work. If you are late submitting an assignment for a reason unrelated to missing class or due to an unexcused absence, the instructor may grade the assignment as time allows, but 10% may at the instructor’s discretion be deducted from the grade for each day it is late.

If an exam is missed, it is the student's responsibility to contact the instructor as soon as possible to set up a time to make it up. If the exam is missed due to an unexcused absence, the student will be permitted to make up the exam, but a penalty of one full letter grade will be deducted from the exam score at the instructor’s discretion. All makeup exams must be completed within one week of the student returning to class. Re-takes of exams and quizzes are generally not allowed. If the instructor decides to schedule a retake, all students will have the opportunity to retake the exam or quiz.

**Safety**

Please familiarize yourself with lab safety protocols and perform procedures with care. 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.).

Safety will be a primary concern of all participants in the course. We will spend much of our time in lab learning by doing. Because we are dealing with live organisms, safety in the laboratory is a high priority. Even when we do not intentionally work with pathogenic microbes, careless techniques may lead to the growth of potentially harmful organisms.

Laboratory and classroom conduct will be observed and evaluated during the semester. Students are expected to be attentive and encouraged to actively participate – especially in the lab while working in groups. Positive behavior and attention to safety will be rewarded. **Unsafe and/or irresponsible behavior will result in loss of points and privileges\***.

*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.

**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. For violations of academic honesty, please refer to the “Academic Dishonesty” portion of your student handbook. In particular, please read the “Academic Integrity Board”. Remember that you always have the right to refute any accusation (or ramification dictated by your instructor) of academic dishonesty by having your case brought before the AIB. Note that if the AIB is used, its decisions are final.

**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).

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.

Please do not engage in conversations that are not relevant to the class. Please be respectful 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. Phones, tablets, and 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 treat each other with respect and refrain from disruptive behavior. Do not interrupt another student or the instructor. If you are having difficulty asking questions or contributing to discussions, 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.

**Wireless Device Policy:**

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being. The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

**Special circumstances**

If you need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case of a building evacuation, 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 the situation 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:

For tutoring: Justin Crowder ([justin.crowder@bsu.edu](mailto:justin.crowder@bsu.edu)) to find an Academy student tutor To find a tutor through Ball State: [iaguidance@bsu.edu](mailto:iaguidance@bsu.edu)

phone: 765-285-2889; office: WA 160-D

Mental health: Dr. Mindy Wallpe ([mcwallpe@bsu.edu](mailto:mcwallpe@bsu.edu))

phone: 765-285-5483; office: WA 160-C

**Student Accommodation Policy**

Students possessing an educational 504 or IEP should contact the instructor as soon as possible to arrange for any accommodations that may be needed. Likewise, if you feel that you could benefit from an educational 504 or IEP, feel free to contract the instructor to this regard.

**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. As a reflection of Ball State’s commitment to respect, civil discourse, and the Beneficence Pledge, Inclusive Excellence at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive. Unfortunately, there might be occasions when something occurs that disrupts our progress toward meeting these objectives. In this case, we encourage any member of the Academy community to file a Campus Climate Report (CCR) <https://bsu.qualtrics.com/jfe/form/SV_6mbRbL5acAntUTI>.  All reports will be taken seriously, and appropriate responses will be carried out by Academy administration.

**Tentative Microbiology Schedule:**

Listed below is a *tentative* schedule of course content and may be subject to change*.*

\****Note: Chronic Safety violations and/or disruptions may result in grade deductions and/or dismissal from course***

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Date** | **Topic** | **Chapter** |
| 1 | 8/12 | Introduction to Microbiology | 1 |
| 2 | 8/19 | Cell Structure and Function **(Lab Safety Quiz)** | 3 |
| 3 | 8/26 | Microbe chemistry, Microscopy and Classification, Metabolism basics | 2, 4, 5 |
| 4 | 9/2 | Catabolic and anabolic metabolic pathways | 5 |
| 5 | 9/9 | Microbial nutrition and growth, **Exam 1** | 6 |
| 6 | 9/16 | Microbial genetics, Recombinant DNA technology | 7,8 |
| 7 | 9/23 | Controlling microbial growth, Prokaryotic classification | 9, 10, 11 |
| 8 | 9/30 | Eukaryotic classification, viral classification | 12, 13 |
| 9 | 10/7 | Epidemiology and infectious disease | 14 |
| 10 | 10/14 | Immunity, **Exam 2** | 15, 16 |
| 11 | 10/21 | Pathogenic bacteria | 19, 20, 21 |
| 12 | 10/28 | Pathogenic fungi and protists, and viruses | 22 - 25 |
| 13 | 11/4 | Unknown Testing |  |
| 14 | 11/11 | Unknown Testing |  |
| 15 | 11/18 | Morbidity and Mortality, **Exam 3** |  |
| 16 | 11/25 | *Thanksgiving – no classes* |  |
| 17 | 12/2 | Applied and Environmental Microbiology | 26 |
| 18 | 12/9 | Food Microbiology **Presentations** |  |
| 19 | 12/16 | Final Exams |  |

*I reserve the right to change the syllabus on an “as needed” basis. Students will be notified of these changes through e-mail and/or Canvas announcements.*