

# MCB 2010LV – Microbiology for Health Sciences Virtual Lab

Course Reference #: MCB 2010L -V- \_\_\_\_ \_\_\_\_ \_\_\_\_

## COURSE DESCRIPTION:

This is the lab component for MCB-2010. Lab experiences include the following topic areas of viruses, bacteria, protozoans, and multicellular parasites.

## Prerequisites:

BSC 1020 and BSC 1020L or BSC 2010 and BSC 2010L and student must score into college-level mathematics and reading on placement test.

## Corequisites:

MCB2010 Lecture must be taken during the same semester as the laboratory.

## COURSE RATIONALE:

MCB1020L focuses on the fundamental knowledge and application techniques of basic microbiological laboratory techniques. Through several exercises, learners will demonstrate how they achieved objectives of the course. Mastering both the knowledge and skills presented in this course will help to prepare the learner with a sound approach and understanding of microbiology techniques that are applicable in the health field. Students will learn major concepts and relate how these are connected within various areas of the biological sciences in a laboratory setting. Students will apply critical thinking skills to provide the foundation for lifelong learning and career development.

## COURSE LEARNING OBJECTIVES:

At the completion of this course, the student will be able to:

- Demonstrate competency using a compound microscope with an oil immersion objective to view bacterial cells.
- Distinguish between darkfield and phase contrast microscopy.
- Compare and contrast prokaryotic and eukaryotic cells.
- Demonstrate competency in smear preparation, simple, and differential staining (including Gram and acid-fast staining techniques).
- Delineate the differences between the Gram positive and the acid-fast positive organisms in terms of morphological differences of the cell wall.
- Identify common protozoan, fungal, and helminth pathogens and the diseases they cause.
- Evaluate the effectiveness of antiseptics on Gram positive and Gram negative organisms.
- Evaluate the results of biochemical tests and use these results to identify microorganisms.
- Describe how antibiotic resistance genes in bacteria are spread and how the overuse of antibiotics contributes to the development of resistance.
- Evaluate the results of morphological, biochemical, and immunological tests to positively identify an unknown bacterial specimen.

## REQUIRED MATERIALS:

As this is an online course, it is expected enrolled students will have a working computer and access to the internet.

- Labster Access code for lab simulations/dynamic models.

Contact the IRSC bookstore for Labster access code at: <https://www.bookstore.irsc.edu>

## TENTATIVE SCHEDULE:

The course schedule with associated assignments will be located in the ‘**Schedule of Activities**’ in the course control panel in Blackboard. Please see the ‘**Schedule of Activities**’ for specific assignments and due dates. Below is a *tentative outline* of activities. Assignments and due dates may be changed with advanced notice via Blackboard announcements and Rivermail.

| Week:     | Lab Topic                                | Source     |
|-----------|------------------------------------------|------------|
| Module 1  | Introduction to Lab                      | Blackboard |
| Module 2  | Microscopy                               | Labster    |
|           | Dark-field and Phase Contrast            | Blackboard |
| Module 3  | Bacterial Cell Structure                 | Labster    |
|           | Motility (SIM agar)                      | Blackboard |
| Module 4  | Bacterial Isolation                      | Labster    |
|           | Pure Culture                             | Blackboard |
| Module 5  | Bacterial Quantification by Culture      | Labster    |
|           | Bacterial Growth Curves                  | Labster    |
| Module 6  | MIDTERM EXAM                             |            |
| Module 7  | Control of Microbial Growth              | Labster    |
|           | Kirby Bauer                              | Blackboard |
| Module 8  | Gram Stain                               | Labster    |
|           | Simple Stain                             | Blackboard |
|           | Acid-fast Stain                          | Blackboard |
| Module 9  | Identification of Unknown Bacteria       | Labster    |
|           | Protists, Fungi, Helminths               | Blackboard |
|           | Genetic Transfer in Bacteria – Superbugs | Labster    |
|           | Hunting the Nightmare Bacteria Video     | Blackboard |
| Module 10 | Intro to Immunology                      | Labster    |
| Module 11 | FINAL EXAM                               |            |

## CONTACT INFORMATION:

When questions arise during this course, please remember to check these three sources for an answer:

1. Course Syllabus
2. Schedule of Activities
3. Announcements in Blackboard

If you have questions of a personal nature such as relating a personal emergency, questioning a grade on an assignment, or something else that needs to be communicated privately, please contact the instructor via email and/or Course Messages. Please allow 24/48 hours for the instructor to respond. You can find your instructors email and contact information on Blackboard and the Biology Weebly site:

**Biology Faculty:** <http://biology-irsc.weebly.com/full-time-faculty---websites-and-office-information.html>

**Adjunct Faculty:** <http://biology-irsc.weebly.com/find-adjunct-faculty-and-tlss.html>

**Technical Lab Specialist (TLS):** <http://biology-irsc.weebly.com/find-adjunct-faculty-and-tlss.html>

|                                   |
|-----------------------------------|
| <b>Instructor of Record, IOR:</b> |
| <b>Email:</b>                     |

On Day 1 of your lab class, your Instructor will introduce themselves as the **Instructor of Record (IOR)** for this course. **Please write their name and contact information above** (both can also be found with the links provided). The IOR is responsible for the selection of experiments and exams developed and approved by Biology Department Faculty, approves all assignments, and assigns the student's grade for the course. In addition to the IOR, a **Technical Lab Specialist (TLS)** may also be assigned to this course. The role of the **TLS** is to facilitate the performance of the assigned experiments within the laboratory setting. The **TLS** also assists with the grading of assessments under the direction of the course instructor and other biology faculty. If you have any questions or concerns, please first try to work with the course **TLS/IOR**. If the issue cannot be resolved, Lab Coordinator Sarah Rodgers (772-462-7149, srodgers@irsc.edu) is also available to assist. **Any correspondence must include the student's name and course reference number.** The IOR/TLS/Coordinator will generally respond to the student within 2 business days (*note: failure to include name and reference number in initial correspondence, may result in delayed to no response*). The IOR reports the grade the student earns over the course of the semester and will issue any incompletes (I) or withdrawals (W) that are needed.

## GRADES:

Virtual labs, quizzes, worksheets, video discussions, and exams will be used to determine your final course grade. Remember, you earn your grade; your Instructor does not give it to you. The work for the course has been broken down per category. Blackboard automatically calculates your grade based on

the average score you earned per category (see below) and your overall grade is a running score and updated continuously throughout the semester.

The final course grades are based on the following categories:

- 40% - Labster quizzes/Blackboard Quizzes/Worksheets
- 20% - Video Discussions (Midterm and Final)
- 20% - Midterm Exam (Modules 1-5)
- 20% - Final Exam (Modules 7-10)

Course grades are assigned on the following basis:

**A:** 90% - 100%

**B:** 80% - 89%

**C:** 70% - 79%

**D:** 60% - 69%

**F:** below 60%

Students must continually complete assignments/exams over the semester. It is the student's responsibility to be aware of all due dates. All online assessments are due at the time posted. It is your responsibility to complete the work on time and submit it. Remember all electronic communication is time stamped. Please review the make-up and late policy posted below.

Grades will be posted on Blackboard, but technical and human errors may not reflect the true grade in Blackboard. Instructors reserve the right to manually calculate grades to verify the blackboard grades. It is the student's responsibility to monitor their grade and to approach the instructor if any grade discrepancy is noted within Blackboard. **Instructor contact must be administered promptly**, as last-minute concerns cannot always be addressed or remedied.

W = The student withdrawal deadline is October 25, 2021. Please contact the instructor before withdrawing.

I = An incomplete for passing students is only given in EXTREME cases. Students must be passing the course, the incomplete **must be approved by the IOR**, and are only given on a case by case basis.

**If a student withdraws from the course, the student must email both the TLS and IOR. A "W" is submitted through students and their advisors. The IOR will respond with a confirmatory email that the student has been withdrawn once the workday process is complete.** Requests for Instructor Withdrawal (WI) after the student has taken the final exam are prohibited. If you are concerned about your grade and the Student Withdrawal date has passed, then you need to discuss "WI" with your Instructor before taking the final exam.

## ASSESSMENT POLICIES:

Students are responsible for knowing their exact dates and times of their assessments as listed in the **Schedule of Activities!** Assignments and due dates may be changed with advance notice via Blackboard announcements and Rivermail. Please review the following policies for each type of assessment.

**Labster Virtual Laboratory Simulations:** Each module has one or more virtual laboratory simulations. To access the Labster labs, please use the links posted on Blackboard in the **CONTENT** tab. These simulations are meant to help you study and master the concepts. As such, they may be completed an unlimited number of times throughout the semester. Only your best score will count for a grade.

**Blackboard quizzes:** It is recommended that student's study and prepare for post-lab quizzes after each assessment. The quiz is used to assess the student's knowledge after completing the unit's work. The quiz is untimed. You may complete the quizzes an unlimited number of times for practice and to study the material. Only your best score will count for a grade.

**Worksheets:** Some units will have an additional assignment. See the assignment posted on Blackboard for instructions and grading policies. No late work accepted.

**Video Discussions:** In order to demonstrate mastery of key learning outcomes, you will create 2 "teaching" videos throughout the semester – at the midterm and the final. Instructions and a rubric for these videos are provided in Module 6 and Module 11.

**Practical Exams:** Students are responsible for knowing the exact dates and times of the Lab Exams listed in the Schedule of Activities. These Lab Practical Exams are set to open and close at specific times, thus any late submissions will NOT be allowed, *regardless if it is 10 seconds past Due Date/Time, so plan accordingly.* This is to ensure all students have fair and equal testing experience.

Lab Practicals are closed book/closed note/no open resources exams. Any instances of plagiarism (copying answers from websites, Powerpoint slides, Labster Theory, other students, etc.) will result in the student being issued a zero for the exam. Lab Exams will be **timed** Practical exams, in which the students will view parts of the experiments they conducted in the labs prior and will be expected to answer questions about those specific labs. Students will not be able to return to a question and the questions are timed (so you are not able to Google or look-up answers as you will run out of time). Just like a Face-to-Face Lab Practical Exams, you will need to know the material by memory to be able to complete the exam during the time allotted. **The Midterm and Final Exam will be proctored via Honorlock.**

## LATE SUBMISSION POLICY:

Late work is not permitted. This course is organized so you have plenty of time to complete each weekly unit. It is YOUR RESPONSIBILITY to manage your time so that work is submitted on time. It is strongly advised that most work is completed before the day it is due IN CASE you experience loss of computer or internet and/or experience software issues that prohibit you from finishing the work on time. *Schedule your work, activities, and personal needs around the Schedule of Activities Dates as there is no flexibility to "catch-up" as labs are changed (or locked) weekly and cannot be "set-up" again.*

## MAKE-UP POLICY:

All assessments are open for multiple days. Therefore, there are no make-ups allowed. Work not completed will receive less than 100% (grade determined by amount completed). Any work not started will receive a zero grade.

If awarded an Incomplete “I”, the student and the faculty must arrange a time frame to complete all missing work during the next sequential semester. A document with due dates for missed work will be generated by the instructor and agreed upon by the student. If any of these due dates are missed, a zero will be assigned as the grade for the assessment.

## ATTENDANCE:

**Beginning of the Term Attendance Verification.** IRSC requires instructors to mark student attendance at the beginning of the term for financial aid purposes. To be marked as attending the course, students must log into to the course by the date posted in the Blackboard Announcements and complete the “Introduce Yourself” discussion post.

**Weekly Attendance.** Attendance via logging into Blackboard at least once per week is mandatory. Students who do not frequently log into Blackboard and access material typically will miss due dates and perform worse in the course. Successful students will access material 3-5 times a week.

**Blackboard Collaborate.** Collaborate review sessions are at the instructor’s discretion and the date and time will be announced based on student request. To effectively utilize any collaborate discussion or review session, preparation is required on the part of the student. The student should keep up with reading the assigned laboratory exercises **before these sessions** to become familiar with details.

## EXTRA CREDIT:

No extra credit is given.

## CHEATING/PLAIGURISM:

Cheating of ANY kind **WILL NOT** be tolerated by this Department or the College. Anyone caught cheating will automatically receive a minimum of a zero for that assignment/test. Any further episodes will result in an F in the class. Anyone who witnesses this inexcusable behavior and does not report it is also considered to be guilty of improper conduct. Examples of cheating include, but are not limited to, taking photos and screenshots of assessments and exams and sharing images with others and the internet, taking the exam next to a classmate and discussing and sharing questions and answers, and copying your assignment answers word for word from a peer, past student, textbook, or the internet. Post-lab quizzes and practical exams must be taken individually. Group efforts will be considered cheating.

Additionally, all electronic communication devices are prohibited during Practical Exams. The only electronic device in hands reach should be the device you are taking the exam with. Your practicals will be virtually proctored (or proctored in the assessment center when open). Additional information on virtual proctoring can be found on Blackboard. During exams, any student who uses a cell phone to make or answer a call, or send and/or read text messages or emails during one of these sessions may be asked to leave, and if testing will be considered cheating (see details below). Cell phones must be set on *silent* or *off* during any Collaborate live discussion session (unless using it for the session).

Please review IRSC’s policy on Plagiarism: <https://irsc.libguides.com/copyright/plagiarism>. This course follows the same policy. Plagiarism on an assignment is subject to a zero grade.

## TECHNICAL REQUIREMENTS FOR ONLINE COURSES:

### 1. IRSC RiverMail:

Students must be able to log into IRSC's email system, RiverMail, every 48 hours (or two days) to see if there are updates regarding your course. You can forward your RiverMail to any other mail system, but YOU are responsible for this system to be reliable. Failure to check your email may result in missed information essential to your course success.

### 2. IRSC Computer Requirements:

Students must have a reliable computer and an Internet connection throughout the course, **with a microphone and camera for exam testing**.

For Exam testing, students will be instructed to [download Honorlock](#), an online proctoring service and have a valid photo id. Information on Honorlock can be found at <https://www.irsc.edu/admissions/honorlock.html> and details will be provided in the course.

### 3. Blackboard Learning Management System (LMS):

The entire course is constructed within the students Blackboard course shell, thus students should expect to spend a significant amount of time each week within this system.

*Blackboard LOG IN:*

*USERNAME: Student ID number (no dashes)*

*PASSWORD: IRSC web registration/pay pin*

Blackboard preferred browsers are Google Chrome and Mozilla Firefox.

If you need assistance with Blackboard, please review the [Blackboard Help Videos](#) by clicking on the link provided on the course menu.

Technical Support: If you can't find your answer within the Blackboard Help Videos section, visit the [Blackboard Help Center](#) or call 772-462-7480 or email the help desk at [helpdesk@irsc.edu](mailto:helpdesk@irsc.edu)

## ADDITIONAL STUDENT RESOURCES:

**Biology website:** <http://biology-irsc.weebly.com> is a resource that list Biology faculty, instructor, and staff contacts, provides information on all offered courses, lists information on both the AA and BS guided pathways as well as other information.

**Library:** The Miley Library serves as IRSC's main library. A library is an information place providing professional assistance, library books and media, and access to the library's electronic resources. Each branch campus also has a library. Additionally, there is an extensive online database system also available through IRSC's website as well as useful libguides on plagiarism, citations, and more. <https://irsc.libguides.com/c.php?g=824505> and [www.irsc.edu](http://www.irsc.edu)

**Tutoring:** If the student is not earning the grade, they desire then it is the student's responsibility to contact the instructor for academic support/suggestions. In addition to receiving instructor help, please utilize the following services. Tutoring is provided by the IRSC ASCs. It's free! The ASC has

also made virtual tutoring. <https://irsc-asc.weebly.com/> Additionally, you can receive tutoring through the “SmartThinking” link on Blackboard. Use it!

## STUDENT ACCESSABILITY SERVICES:

Indian River State College provides reasonable accommodations to students with documented disabilities through the Student Accessibility Services (SAS) Office. The rights of students with disabilities which pertain to post-secondary education are provided under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. Students who wish to request an accommodation for a documented disability may contact Student Accessibility Services at 772-462-7808, 772-462-7782 or e-mail [accessibilityservices@irsc.edu](mailto:accessibilityservices@irsc.edu). The **Student is responsible to inform the instructor at the beginning of the semester** so lab managers, staff, and the instructor have ample time to prepare any testing accommodations that will be needed.

## NON-DISCRIMINATION AND HARRASSMENT POLICY:

Indian River State College and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. IRSC does not discriminate on the basis of race, color, national origin, ethnicity, sex (pregnancy), religion, age, disability, sexual orientation, marital status, veteran status, or genetic information in its programs and activities. If you have encountered any form of discrimination or harassment, including sexual misconduct (e.g. sexual assault, sexual harassment, stalking, and domestic or dating violence), we encourage you to report this to the Title IX Coordinator. If you report such an incident of misconduct to a faculty member, that faculty member is required by law to notify the IRSC Title IX Coordinator. The following person has been designated to handle inquiries regarding non-discrimination and non-harassment policies: Adriene B. Jefferson, Equity Officer, and Title IX Coordinator, 3209 Virginia Avenue, Fort Pierce, FL 34987; IRSC Main Campus, W Building, Room 207; (772)462-7156; [ajeffers@irsc.edu](mailto:ajeffers@irsc.edu).

## STATEMENT TO STUDENTS:

If you are having trouble in your course, **your first obligation is to work directly with your instructor to resolve the issue**. If you are unable to settle your concerns with the assistance of your instructor, you should contact your Instructor of Record (IOR). If issues are not addressed, you may contact the Department Chair (Dr. Robin Willoughby, 462-7498), or the Assistant Dean (Dr. Anthony Dribben, 462-7503) who will assist you or advise you and if necessary help you contact the Vice President (Dr. Heather Belmont, Vice President of Academic Affairs, 462-7215).

## SYLLABUS DISCLAIMER:

**Syllabus Disclaimer:** The instructor views the course syllabus as an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule, but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified promptly of any syllabus changes in the course Announcements or course e-mail.